

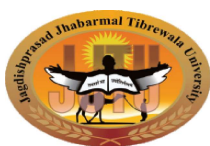
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INDEX

1.	IMPACT OF COVID19 ON AGRICULTURAL ACADEMIC LIBRARY SERVICES IN MAHARASHTRA A.B. Deshmukh ¹	5-10
2	Managing Water Resources in Sustainable Manner S.C.Deshmukh	11-14
3	Aerospora and plant growth: Concepts and implications Ingle Dnyaneshwar	15-17
4	TRANSPORTATION PROBLEMS UTILIZING OBJECT ORIENTED PROGRAMMING AND NORTH – WEST CORNER STRATEGY Narendra Swami	18-24
5	A NEW ANALYTICAL METHOD DEVELOPMENT AND VALIDATION FOR THE QUANTITATIVE ESTIMATION OF BILASTINE IN BULK FORM AND MARKETING PHARMACEUTICAL DOSAGE FORM BY USING RP-HPLC Subhashchand Gupta	25-34
6	A DESCRIPTIVE STUDY TO ASSESS THE KNOWLEDGE REGARD TO MULTIPLE DRUG RESISTANCE TUBERCULOSIS AMONG TUBERCULOSIS PATIENTS IN SELECTED TUBERCULOSIS CENTRE AT BINA, MADHYA PRADESH Mr. AJITH V M	35-38
7	To Study the Synthesis Mechanism and Quantitative Analysis of Nickel Doped Iron Oxide Nanomaterials. Anita Yadav	39-43
8	A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING SUBSTANCE ABUSE AMONG ADOLESCENT AT THE SELECTED NURSING COLLEGE OF MUMBAI Mrs. Ankita Achut Keni	44-50
9	A study to assess the effect of Buerger Allen Exercise on peripheral vascular circulation among the patients with impaired peripheral circulation admitted in selected hospital of Metropolitan city Bhagyashree A. Kale	51-57
10	Survey of Clustered, Trust and Cryptography based approach in VANET security with overview of Cryptography techniques Megha V Kadam	58-62
11	Telemedicine and Pediatric Asthma Gauri Siddhesh Kelshikar	63-66
12	The Study of Consistency for Distribution of Five Dimensional cosmological model in Lyra Geometry Suchita Ankit Mohta	67-68
13	Study about Benefits of E Library over Traditional Library with special reference to Jalgaon District Ashish V Chaudhari	79-81
14	Applications of Nanomaterials in Solar Energy Kumar Ashok	82-87
15	Biotechnology industry in India: Opportunities or challenges Atul S Pandey	88-90
16.	Study of Increasing Trend in Forest Fires and Environmental Impact Deepak K Ghosh	91-94
17.	Public Library System in India: A Positive Approach to Make it more Useful and productive Deepali Sharma	95-101
18.	Benefits and use of traditional spices during COVID19 pandemic to boost immunity Sonia Singh	102-106
19.	Dynamics of Non-static Plane Symmetric Isotropic Universe with Special Form of Deceleration Parameter D. R. Manekar	107-113
20.	Evaluation of Hepatoprotective and Antioxidant potential of seed and fruit extracts of Lagenaria siceraria and Luffa acutangula against antitubercular drugs induced hepatotoxicity in experimental rats Mohd Mumtaz Ahmed	114-123
21.	GREEN CLOUD COMPUTING: A STEP TOWARDS SAVING GLOBAL ENVIRONMENT Dileep Singh	124-126
22.	Machine learning and deep learning for stress detection by multimodal physiological data Fasiha Anjum Ansari,	127-134
23.	STUDENT'S PERCEPTION TOWARD ONLINE LEARNING OF MATHEMATICS SUBJECT Mrs. Madhuri Mangesh Nandanwar	135-139
24.	ETHNOBOTANICAL STUDY ON PLANTS OF RAJGARH AND SIDHMUKH TEHSILS OF CHURU DISTRICT RAJASTHAN USED IN DIABETES Neha Sharma	140-143
25.	STUDY AND ANALYSIS OF WEDM BAL KRISHNA TIBREWALA	144-145

26.	THE STUDY INFORMATION SEEKING BEHAVIOUR OF STUDENTS IN TECHNICAL DIPLOMA COLLEGE LIBRARIES IN GOA Ms. Vijaya V. Sawant	146-152
27.	FUTURE DIRECTIONS IN APPLIED ANIMAL SCIENCE STUDIES Raju Chaganrao Sarvade	153-158
28.	Frameworks and Methods for Improvement of Data Analysis Techniques towards Digital User Interface K Md Mohsin Ashfaqh	159-164
29.	Effect of Health-Promoting Lifestyle Modification Education on Knowledge, Attitude, and Quality of Life of Postmenopausal Women Manisha Shinde	165-167
30.	A Study To assess the Prevalence of Menopausal Symptoms Among Post Menopausal Working Women in Government Hospital, Solapur District, Maharashtra. Manisha Shinde	168-171
31.	Recommendation System for Voters using Naive Bayes Sarita Avinash Patil	172-175
32.	An Analysis of the Impact of Innovative ICT tools on Academic Excellence of Higher Education Institutes with reference to Business Schools in Navi Mumbai Supriya Kamale	176-180
33.	Machine Learning Algorithms for Predicting Personality Traits from Videos Sumaiya samreen	181-187
34.	A STUDY TO ASSESS THE EFFECTIVENESS OF SELF INSTRUCTIONAL MODULE TO GAIN KNOWLEDGE REGARDING BEHAVIORAL OUTCOME AFTER CORONARY ARTERY BYPASS GRAFTING SURGERY REHABILITATION AMONG CLIENTS OF SELECTED CARDIAC HOSPITAL IN JABALPUR IN THE YEAR 2020 MRS. SUSHMA WILSON	188-198
35.	To Assess The Effectiveness Of Video Teaching Method On Breast Self Examination Among From A Selected School In Mumbai Neha Karle	199-205
36.	Analysis and Implementation of defocused images based On different Point Spread Functions Mrs. Suhasini S Goikar	206-208
37.	A PRE-EXPERIMENTAL STUDY TO EVALUATE THE EFFECTIVENESS OF PLANNED TEACHING PROGRAMME ON KNOWLEDGE AND ATTITUDE REGARDING ROBOTIC CARDIAC SURGERY AMONG THE NURSING OFFICERS WORKING IN SELECTED HOSPITALS KOLHAPUR, MAHARASHTRA INDIA MR. MANJUNATH BETH	209-213
38.	Advance Synthetic Methods for Succinimides Kasar Madhukar Gangadhar	214-221
39.	The growth of CryptoCurrency in india: Its challenges and potential impacts Radhika Goriparthi	222-225
40.	Advance Heterocyclic Molecules Of Medicinal Interest Kasar Madhukar Gangadhar	226-234
41.	Study on Effect of Nutritional Education and Dietary Intervention on Nutritional Knowledge of College going girls in Kanpur City Komal Yadav	235-237
42.	Adapting to the New Teaching Strategies during the Covid Period: A Teaching Scenario in Secondary Schools Shri. Pravin V. Kamat	238-242
43.	THE IMPORTANCE OF MATHEMATICS SUBJECT IN DAILY LIFE Mr. Jamkar Vijayanand Manoharrao	243-246
44.	Effect of Incentive Spirometry in Promotion of Respiratory Function among Children with Respiratory Infections JYOTI KHIMANAND PANDEY	247-255
45.	SYSTEMATIC REVIEW ON MOBILE PHONE USAGE PATTERN & IT'S HEALTH EFFECTS ON STUDENTS KAVYA K N	256-261
46.	Acetone Gas Sensing Studies of SnO₂ Thin Films Annealed at Different Temperatures Mangesh B. Deore	262-265
47.	A STUDY ON LATEST MODUS OPERANDI OF CYBER CRIMINALS ATTACKING ON INNOCENT VICTIMS USING PHISHING (VOICE PHISHING) TECHNIQUES MANJINDER SINGH	266-270
48.	Ultra-Wide Band Antenna Application for Ultra Smart Retail Market Durgesh Chaudhary	271-276
49.	A STUDY TO DETERMINE THE EFFECT OF SOCIAL SUPPORT DURING LABOR AMONG MOTHERS AT SELECTED HOSPITALS OF INDORE Mary Kalihari	277-281
50.	CYBER SECURITY- THE EMERGING ACTIONS TO PREVENT CYBER CRIMES IN TODAY'S DIGITAL WORLD MR. RUPESH SUDHAKAR PATIL	282-287
51.	Data Mining In Assistive Technology for Learning Disabilities Dorin Benhur Dsilva	288-292
52.	STUDY ON PREVALENCE OF MENSTRUAL PROBLEMS AMONG ADOLESCENT GIRLS IN SELECTED AREAS	293-296

	R.Nimmi	
53.	Education's response to the COVID19 pandemic: Building a sustainable and democratic future Neelam	297-300
54.	Limnological Investigation of Water Quality of Traditional Water Resources in Nagaur, Rajasthan. India Using Palmer Algal Genus Index Abhilasha Choudhary	301-305
55.	A thorough research on Python Data Visualization Sujitha Mohan	306-312
56.	IN SMART CITIES, IOT EXPLORATION, KNOWLEDGE EXPANSION, AND DEVELOPMENT Ms. Monika M. Raut	313-321
57.	A descriptive study among GNM 2nd year students on knowledge regarding management of dehydration in children Mr. Bheemraj Prajapat	322-326
58.	Impact of advanced teaching programme on knowledge regarding TB prevention in children among mothers in selected rural area Mr. Narendra Singh Solanki	327-332
59.	Nurses Role in Medication Management and Strategies to Prevent Errors Sheeju Mony	333-340
60.	A study to assess the effect of acupressure on premenstrual syndrome among nursing students in selected nursing colleges of metropolitan city Rupali Ram Mhaskar	341-347
61.	Malware Detection in Cloud Computing: Advantages and Issues Meha Mathur	348-351
62.	Dual Role in Nursing: Knowledge and perception among nurses Preeti	352-354
63.	VEDIC MATHEMATICS IN MODERN TIMES PRIYA	355-358
64.	Safe pregnancy workouts Kamna k yusuf	359-363
65.	ETHICAL CONSIDERATIONS: BARRIERS DURING HIV TESTING AND COUNSELLING AMONG PREGNANT WOMEN: A NARRATIVE REVIEW Sunita Ahlawat	364-368
66.	A Study to Assess the Levels of Internet use among Students of Selected College of an Urban Area Reena Ojha	369-372
67.	Information Technology:- Importance, Role and Contribution in Health Care Mr Shreyas M Shirahatti	373-377
68.	PREPARATION AND EVALUATION OF MICROSPHERES CONTAINING SPARFLOXACIN FOR TREATING PERIODONTITIS Roopesh PT	378-384
69.	EFFECTIVENESS OF VIDEO ASSISTED TEACHING PROGRAMME ON USE OF MOBILE PHONES AND ITS ILL EFFECTS ON HEALTH AMONG SECONDARY HIGH SCHOOL STUDENTS (13-15 years) AT SELECTED HIGH SCHOOLS Rosemary Olagundi	385-390
70.	INFECTION CONTROL PROCEDURES USED IN ICU IN DISTRICT HOSPITAL, NAVANAGAR BAGALKOT (KARNATAKA) Mr. Rudrappa H	391-395
71.	Emerging Career Opportunities in the Field of Biotechnology: An Analysis in the Pandemic Era Ms. Taqdees Faruk Shaikh	396-401
72.	AN OVERVIEW OF CHARACTER RECOGNITION Sidagouda Patil	402-407
73.	AN APPROACH TO DETECT MALICIOUS APP USING EMBEDDED METHOD Prachi Gadhire	408-410
74.	Soil Stabilization using Sisal fiber with Banana Yarn Ash Rohtash Kumar	411-416
75.	BREAST FEEDING AND COVID 19 PANDEMIC MS. SHEELA GRACE	471-420
76.	Peripheral Intravenous Cannulation and Vein Visualization Device Ms. Snehal S. Patil	421-426
77.	ANALYSIS OF QUARRY WATER FOR THE USE OF AGRICULTURAL PURPOSES Shashikala Kokcha	427-430
78.	Survey on Privatization of Data Using Association Rule Mining and Neural Network SUVARNA HARIBHAU ISHTAKE	431-434
79.	Selenium Nanoparticles for Photovoltaic Applications: Synthesis & Characterization. Dipak Ashok Zope* Sandhya Nitin	435-440
80.	Effectiveness of a lifestyle management program on knowledge of holistic health with relation to healthy lifestyle practices among adolescents in selected colleges at Hassan (Karnataka) JACINTHA	441-444
81.	REVIEW OF LITERATURE RELATED TO HEALTHY LIFESTYLE PRACTICES Jacintha	445-448

82.	CHILD ABUSE–A Review Vidya V Thokal	449-451
83.	To assess the knowledge on sedentary lifestyle of childhood obesity among mothers of primary school children of Pune city Mrs.Ranjana Chavan	452-454
84.	EFFECTS OF COVID-19 PANDEMIC LOCKDOWN IN INDIA Mr.Daniel Tamilselvan	455-458
85.	PAIN MANAGEMENT IN PHYSIOTHERAPY Abdul Hakeem	459-461
86.	The effect of fly ash and laterite soil on some physiological parameter of strawberry KAKALI JANA	462-466
87.	Formulation and Evaluation of two Incompatible Anti- Hypertensive Drugs (Telmisartan and Amlodipine Besylate) in a Single Dose Abhishek Kumar Singh	467-470
88.	CURRENT STATUS OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN EDUCATION SYSTEM OF RURAL INDIA Summiya A Pathan	471-473
89.	Physicochemical Analysis and Quality Assessment of Water from Different Sources in Nagaur district of Rajasthan Sulochana Sharma	474-479
90.	Feature Selection Technique for Massive Gene Expression Data Using Unsupervised Deep Learning-Based Clustering M. K. Deshmukh	480-483
91.	A study to assess the knowledge & practices about self care of antenatal mothers with diabetes mellitus in selected hospitals of Mumbai Mrs. Jayashree V. Ghadage	484-489
92.	Disseminating Knowledge and Impart Awareness against Covid-19 Health concern in Slum Areas of Bhiwandi Metropolitan City. Aafrin Atique Shaikh	490-496
93.	A STUDY ON LATEST MODUS OPERANDI OF CYBER CRIMINALS ATTACKING ON INNOCENT VICTIMS USING VISHING (VOICE PHISHING) TECHNIQUES MANJINDER SINGH	497-500
94.	ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING ANTENATAL AND POSTNATAL EXERCISES AMONG ANTENATAL MOTHER. Suman Satyal	501-504
95.	IMPACT OF VIDEO ASSISTED TEACHING PROGRAM (VATP) ON KNOWLEDGE AND ATTITUDE REGARDING PRE -MARITAL COUNSELLING ON REPRODUCTIVE AND SEXUAL HEALTH EDUCATION AMONG THE SCHOOL GOING ADOLESCENT GIRLS Suman Satyal	505-510
96.	THE EFFECT OF A CUSTOMIZED AWARENESS PROGRAM ON BEHAVIORAL OUTCOMES IN CONNECTION WITH THE ADVERSE EFFECT OF TECHNOLOGY ADDICTION ON PARENTING AMONG PARENTS Punam R Wase	511-516
97.	INDIAN AGRICULTURE UNDER WTO REGIME Aanand Kumar Pandey	517-519
98.	IMPACT OF WTO ON INDIAN AGRICULTURAL TRADE: A GRAVITY MODEL APPROACH Aanand Kumar Pandey	520-523
99.	Global Pandemic threat in Living Life, West Bengal: A review work Moumita Bahubalindra	524-528
100.	Managing Agriculture with the implementation of Sustainable Development Goals in India Meena Rani	529-532
101.	Level of Fatigue, Depression and Sleep Quality among Hemodialysis Patients Mrs. Sonam Dubey	533-537
102.	Barriers in Self Care Management of Diabetes Mellitus Among Diabetic patients Mrs. Sonam Dubey	538-544

IMPACT OF COVID-19 ON AGRICULTURAL ACADEMIC LIBRARY SERVICES IN MAHARASHTRA

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Abstract:- This paper emphasizes the various roles of agricultural academic libraries during the pandemic situation like COVID-19; it also identifies the advocacy role that Library Professionals have taken up. It traces the number of digital platforms available around the world. It also promotes the use of social media/networks. Many libraries can support the entire community in their scholarly endeavours. The role of the Libraries is to trace down information as per the user requirement, act as an information disseminator, and organizer of knowledge through the varied information pools. During such situations the Library Professionals can show their expertise with the assistance of experience in addition to the varied skills they need. Almost all Libraries can provide E -contents, information links, their commitment to customer service. As a result the role of Libraries defines the whole community a new way of doing work and gets the information remotely in the period of a lockdown/pandemic situation. This study helps the Agriculture Libraries and library Professionals to improve their skill set as per the tough conditions and serve the information like a responsible citizen of the country. In this paper, the researchers provide a brief introduction to different information channel support in information dissemination.

Keywords: Impact of COVID-19, coronavirus, librarian, Digital information, pandemic

Introduction:- Covid-19 Pandemic has overwhelmed the entire world, and India also has burnt of the same. Presently all over the globe has been witnessing much panic and discussions are going on the medical emergency caused by the deadly disease namely Corona virus what is termed as "COVID-19". The novel coronavirus disease 2019 (COVID-19), was reported on December 8, 2019 in Wuhan city of China, has spread rapidly around the world, sent billions of people into lockdown. The World Health Organization (WHO) declared the coronavirus epidemic a pandemic. As the world responds to the COVID -19 pandemic, most Governments have temporarily, closed all educational institutions. These nationwide closures have impacted 90 per cent of the world's student population. Localized closures in other countries have affected millions of additional learners. Large number of countries was affected by the dangerous disease. India saw its first corona virus case on January 30, 2020 according the WHO. As a part of it the Prime Minister Modiji has announced Janata Curfew on 22 March 2020 at the nation level and subsequently declared national lockdown for 57 days lasting to 17th May 2020 and it is was continued in some of affected areas, with a view to prevent the effect of this virus on humanity. It is evident that its arrival is changing and influencing everything in all spheres of life and education in not an exception. The news, both print and electronic media, is full of stories about the need to reduce social contact and stay at home is a safe means. The measures include closing of all educational institutions including libraries, airports, rail and road transports, restricting on the social gathering and propagating to observe social distancing restricting of certain services by the governments. In light of rising concern about the current COVID -19 pandemic, a growing number of universities across the world have either postponed or cancelled all campus events such as Classes, Research, Teaching Extension activities, workshops, conferences, sports and other activities and almost all education institutions are engaging classes through online. Faculty members are already in the process of transitioning to online teaching platforms. In this situation, there is a need of hour to highlight the potential impact of the terrible COVID -19 outbreak on the education systems as we as academic Library Services.

Objectives:- The main objective of the study is to find out the facilities and services provided by the academic libraries during COVID-19 pandemic through multiple modes:

- Type of facilities and services provided to the users.
- The mode of dissemination of services during the period.
- What are the Preventive measures taken to combat coronavirus?

Scope of the Paper :- This paper reflects on the impact of COVID-19 during a pandemic in the context of academic libraries in the dissemination of library services to the end users. Impact of Corona virus (COVID-19) Lockdown Period on agricultural Libraries. Most governments around the world have temporarily closed educational institutions in an attempt to contain the spread of the COVID-19 pandemic. Governments around the world are making efforts to mitigate the immediate impact of agricultural academic institutions closures, particularly for more vulnerable and disadvantaged communities, and to facilitate the continuity of education for all through remote learning. As the coronavirus pandemic rapidly sweeps across the world, it is inducing a considerable degree of fear, worry and concern in the population at large and among certain groups in particular, such as older adults, care providers and people with underlying health conditions, for the reason, schools, colleges and universities as well as the libraries attached to educational institutions have all been shut down. This affecting students and learners who are not able to attend classes or go to libraries to their books and learning materials. Following post pandemic, libraries should prepare themselves for re-opening when lockdowns will be lifted. IFLA has framed guidelines regarding such transitioning through post COVID-19 pandemic. I have discussed such issue and analysed the health risks to library staffs constantly exposed to contagious infections, and mentioned measures that should be in place to handle post Covid-19 scenarios.

Shutting down libraries has a tremendous impact on the academic user communities that we serve. In this lockdown period librarians must try to keep upgrading to its users probably by using online tools. On the same way lockdown period effects on the routine work of the library also lockdown period affects all the library works like acquisition, cataloguing, Circulation serial control on campus library series etc. Always librarians are already being with user community by providing many services to its users and it doesn't have to stop just because of our buildings are closed at the moment. We can make the difference by using social networking sites. Today, librarians are expected to manage digital libraries, organize digital knowledge and information and disseminate digital information owing to the fact that we are all have become a global village as result of the internet.

Emergence of Digital Technology

In response to COVID-19 mandates, teachers, students and librarians globally are being forced to transition to an online-only environment, as many prominent schools, libraries and universities are closing their campuses. Through this transition, all parties within the educational system are being challenged to quickly adapt to this new environment, with librarians being responsible for ensuring all library resources are available from a remote location. Today we live in a world of instant global communication. Everyone is well known with the technological developments that have come with dazzling rapidity. New techniques for recording and transmitting texts, sound or visual images have proliferated. Digital technology has created prodigious capacities to store, disseminate and retrieve knowledge. This technology provides unprecedented possibilities for communication between people as well as for the development of academic libraries and the exploitation of works all over the world. Electronic resource collections indeed are going to become the essential mainstay of every library's collection.

Type of Services Library Services

In all the sector of education, online learning has emerged to address the restrictions imposed in the wake of coronavirus pandemic and considered as a feasible option to overcome the challenges. Consequently libraries have been exploring the collection of potential e-resources and providing remote access to those which may be of interest to the fraternity in support of

academic and research activities. Many libraries have provided direct link on the home page to increase the visibility. While many libraries have significant digital services, some even have introduced multi-mode access to e-resources in order to deal with the demand.

Remote Access of E-resources

The main aim of any agriculture academic library is to enhance and strengthen the teaching, learning and research process by installing seamless document/information delivery system and around the country all libraries of higher education system have been working hard to provide services and access to collections to the users who have been displaced due to COVID-19. While all the libraries under study have provision of remote access to subscribed e resources, many have taken a lot of effort in leveraging and expanding existing online services. Notably almost all libraries have displayed step by step user guide on remote login to get access to the licensed E-resources.

Free and Expanded Access

In response to the uncertain and difficult time, some publishers are providing expanded access to e-resources (access to additional materials than subscribed by the library) including e-books, e-journals, e-databases etc. for a limited period during this pandemic. Libraries have highlighted the links of these free and expanded e-resources on their portal to facilitate visibility of these options available for users. This has enhanced the possibility of users availing the virtual services and hence, visiting library portal frequently. Almost all the libraries have facilitated access point to provide digital version of the newspaper and magazine that can be read using any convenient handy digital devices.

Open Access Resources

Beyond this, there are many scholarly freely available resources available notably National Digital Library of India (NDLI), Shodhganga, CeRA Consortium a repository of Electronic thesis and Dissertation, Directory of Open Access Journals (DOAJ), AMS Free online books, book boon, Directory of open Access books (DOAB) and many more, and most of libraries have brought together all such resources onto a single page and made these available for their users in anticipation to the information need.

Resources Related to COVID-19

Access to licensed electronic resources is subject to the terms and conditions under which they are procured. As the scientific community across the globe is racing against time to develop a definitive treatment for the disease, access to as and as quickly as possible published literature to accelerate the ongoing research is the need of the hour. Notably, a lot of commercial publishers and vendors have taken a significant initiative and have provided open access to materials related to COVID-19. Many libraries have facilitated access by making it easier to log-in and access materials from outside of official networks. National Digital Library of India (NDLI), an IIT Kharagpur initiative throws open its services to all, providing special COVID-19 related literature and information ranging from research writings, projects, funding, start-ups, datasets, multimedia contents under the a single section 'COVID-19 Research Repository'. Almost all the academic libraries were proactive in promoting and amplifying the use of these useful resources by highlighting NDLI link on their website homepage.

Role of agriculture academic libraries under Pandemic

Agriculture Libraries are passing through difficult times as the COVID-19 pandemic is forcing us to change our lifestyle and reshape our daily routines. The COVID-19 crisis has highlighted the importance of electronic resources and internet access as a key to education.

- Libraries can also provide information about Corona virus, its precautionary measures and tips on work from home. It's time to librarian to show their professionalism energy, creativity and drive in each services, further just say yes to all the queries raised by user community and find the online solution without entering the physical library. In the

lockdown period doing something is better than doing nothing so stand up, step up and lead by saying YES.

- Librarian may be called as Cybrarian in this lockdown period, because ICT tools are the only way to serve the user community, and now a day's all educational institutes are partially opened and managing information services to the user communities either online or on campus.
- The change in the information related field particularly in collection, storing, processing and dissemination of information which have resulted into the evolution of digital library services.
- Academic libraries website act as virtual front door and libraries have had to rethink their websites now that they represent the primary path of interaction for patrons. The library websites to evolve to be more users friendly, responsive and customizable.

Role of Publishers under Pandemic

In response to the COVID -19 epidemic, many academic publishers have granted free access to their resources. In addition, the tufts libraries are currently working remotely, which means that there have been some changes to the services we can provide. The purpose of this guide is to organize and provides convenient information to help you find these resources and other tufts library services during this challenging time.

The main page contains information about how the libraries are responding to the situation and also links to how to make use of our resources remotely. The free and expanded access page has links to textbooks, e-books, and journals that have been made temporarily available to access. Links to publishers, journals and other resources related to COVID -19 are freely available on the Resources related to COVID -19 page. Finally, since this is a stressful time for everyone.

Renew Books Online

Do not worry about overdue books during this time. The library will adjust all due dates so that there are no fines on your library account, including interlibrary loan materials. If you have any library materials borrowed, please continue to keep them. If you are still near campus, please feel free to return the books to the Hirsh Health Sciences Library book drop near the library services Desk, located on the 4th floor of the MedED building. The MedED building is currently opened to card swipe, however, things are evolving rapidly, so please see the library's website and blog for updated information. If you are away from campus, you may also mail the books back to us at the address below. If you have any questions please feel free to contact us!

Inter Library Loan (ILL)

We are doing our best to get you access to what you need. With staff working remotely, getting scans from books within the library is suspended. However, you can request articles and book chapters through ILL and we will try to get chapters or possibly whole e-books, but it depends on who is able to fill the request. Learn more about Inter Library Loan.

Preventive Measures in Agriculture Libraries against Covid-19 Pandemic

Library staffs are at equal risk of getting exposed to contagious disease like COVID -19 in a much similar but analogous manner like healthcare worker for both deals with people. So academic, school, public, community and special libraries must adhere to the rules and regulations in order to maintain post COVID -19 preventative measures. The guidelines as protocols have been outlined by the IFLA as Follows:

- Access to liquid soap or hand wash/hand sanitizers with warm water should be maintained before entering the library.
- Special precaution should be in place on loan (circulation) desks in a circulation or lending section here books are borrowed or returned. Circulation section, therefore, should take enough precautions to avoid getting infected.

- During lending or borrowing of books in the circulation section, special systems should be in place to sanitize library cards as well as books returned to the library.
- Reading rooms must be cleaned and sanitized before and after library hours.
- Computer rooms and computer accessories should be kept clean.
- Library staff and users/patrons need to be aware of whether they are feeling unwell or ill or show any signs of COVID-19.
- Social distancing should be maintained within the reading rooms and overcrowding must be avoided and
- Limiting the number of users to the library.

Since libraries are public gathering places and people from all walks of life come to visit public libraries in search of information and knowledge, library staffs are equally exposed to contracting contagious infections like H1N1 or COVID -19. Librarians, on the other hand, have a definite role to play regarding safety measures that they should adopt to minimize the risk of exposure to Covid -19 like infections . As Friedman and Friedman elucidates, transitioning out of Covid -19 lockdown is an important aspect of developing a zone -based social distancing. On account lockdowns due to Covid -19 Pandemic, libraries have developed planned ideas regarding access to their materials via online mode. Online access to digital contents and materials have made it possible for students and learners to search and retrieve accessible materials like journals, periodicals, books, thesis materials, magazines and other materials for their educational needs. Since public libraries, school libraries, academic and college libraries have all been shut down to prevent gathering of people who could transmit Covid-19 infection among them, it has become necessary for libraries to opt for alternative modes of operation.

They tend to remain “active” without being “open”. For, libraries are sources of knowledge, and as such knowledge must be accessible to the patrons. I have already discussed on the issue to post -COVID-19 scenarios when libraries are like to open to the students and the public. This could raise concern regarding the risk of spreading contagious infections. Several outlined measures as guidelines have been formulated by the IFLA when libraries prepare for their re-opening.

Role of Librarian: Concluding Remarks

In this era of information explosion where thousands of bits of information are chunked out on daily basis, librarians are expected to collect, organize, store and disseminate the information for consumption of the users. In the current global pandemic, there are new ways to deliver information both real and fake; it is left for librarians to sort out the real information for their users to avoid misinformation. It is expected that librarians work independently to deliver service-oriented, researcher-centred application, instructional programmes, projects and services. The librarians may be indispensable in the era of the information dissemination because they play a distinctive and dynamic role in providing easy access to authoritative information at the right time and disseminating to the user in appropriate formats based on local user needs. Librarians must also possess high level of security to prevent hackers from users' personal details and the type of information they accessed. Librarians should serve as catalyst for the effective dissemination of information to promote true knowledge. Librarians should serve as catalysts for the effective dissemination of information to promote true knowledge. Librarians should disseminate information via existing and digital media platforms to educate users. For better dissemination of information, especially in a time of great need for accurate health-related information resources in an ever-increasing digital environment, libraries should establish working relationships with health agencies and communication organizations with the objective of cooperative developments of collections, referrals and information shared and learning for users and a new breed of reimagined librarians

Conclusions

It is observed that, many academic libraries share information only about the library itself; however, there is an opportunity for information to be provided that will benefit patrons and likely reduce their anxiety about these pandemic. Librarians should not overlook their unique skill and the important role they may play in curbing the spread/impact of diseases like COVID-19 by combating fake news/misinformation and providing reliable information to patrons.

The outbreak of the COVID -19 pandemic has necessitated sudden and drastic changes in delivery of library services, as strict social distancing and lockdown measures were imposed in the early phases of the pandemic. The Internet and web technologies have created a new and unparalleled environment and enabling the libraries to enhance and strengthen the research, teaching and learning even in this difficult and uncertain time. The concept and practice of providing remote access of e-resources by libraries is not new, but the user friendly way adopted by many libraries and the number of resources made available by them during the pandemic is exemplary. Considerable planning by the library professionals will be required even after the opening of educational campuses. It will be imperative to reassess every existing service and re-design it in view of the government protocols to deal with the situation. Following strict social distancing measures visit to library could be restricted when institutions re-open. Users may demand for additional digital resources if the situation does not improve much for a longer period of time. The points discussed in the article are aimed in providing evidence which can be the basis for sound decision making while selecting any new features or refining the existing features in the services to be planned even after post COVID-19 which will at least reduce the gap that students are likely to experience if restriction to visit the physical facilities of the libraries will continue even after re-opening of the institutions. While many academic libraries in India are still struggling to build a strong e-platform to render their services, adoption of tech-led holistic approach is the only way out which can help tide over the challenge and kept the libraries functioning without a halt. Libraries have acted smart even this time and evolved as a continuous learning factory. It can be said from this study that libraries are emerging as new genre of knowledge hubs capable of playing a vital role in supporting our nation to settle into a new normal situation.

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Managing Water Resources in Sustainable Manner

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Abstract:-Substantial quantities of plant nutrients and organic matter, contained in the soil are lost due to soil erosion. Also, water falling on the ground finds a way to river channels and further, if not trapped in agricultural fields. However, for improving the overall soil conditions for plant growth and availability of moisture for plants, conservation of soil and water is extremely important. Hence, every drop of water needs to be conserved, so that it will be available for drinking & domestic purposes, as well as for supportive irrigation in Rabbi Season. This paper typically deals with the idea of carrying out watershed development works undertaken for water and soil conservation. The paper also presents the 'Jalyukt Shivar' project of Maharashtra State Government for 'Water Scarcity Free Villages by 2019'. The project aims to scientific water management of water and In situ Soil and Water Conservation. The objectives of 'Jalyukt Shivar' are also in line with the idea of 'Sustainable Development'. This paper also includes our observations of implementation of the 'Jalyukt Shivar' scheme in the watershed area.

Keywords:-Jalyukt Shivar, watershed, water management, compartment bunding, continuous contour trenches

Introduction:-Land, water and vegetation are the three basic resources of the life support system. The ecosystem tends to become fragile and precariously balanced due to rapid increase in human and bovine population, over exploitation of natural resources to meet their food, fodder and fuel requirement and unscientific management of these resources. The effective conservation and management of land, water and vegetation resources aimed at obtaining optimum and sustained return from these resources without degrading them can be achieved by adopting watershed as basic unit of development. Watershed being a natural hydrological entity, it responds most effectively to various engineering, biological and cultural treatments. Monitoring of runoff and silt at the outlet of the watershed can help assess the impact of various treatments aimed at conserving soil and water, and protecting vegetation. Watershed management involves protection of land against all forms of degradation, restoration of degraded land, sediment control, pollutants control, and prevention of floods, etc.

Jalyukt Shivar Project of Maharashtra State Government

Maharashtra government has launched the project "**Jalyukt Shivar Abhiyaan**" in a bid to make Maharashtra a drought-free state by 2019. The project involves deepening and widening of streams, construction of cement and earthen stop dams, work on nallahs and digging of farm ponds. The mobile app, developed by MRSAC, is being used to map these locations. The mapped location can be monitored through this web page. The user will be able to download the application, view instruction manual and view mapping locations along with photographs. District-wise, taluka-wise, work-wise statistics is also available both in tabular and graphics form. The project aims to make 5000 villages free of water scarcity every year. The key aim of Jalyukta Shivar Abhiyan is to establish belief in a farmer that "every drop of rainwater is owned by me and it should percolate in my land". The flagship program launched by Chief Minister [Devendra Fadnavis](#), Jalyukta Shivar Abhiyan aims to bring water empowerment to 25,000 drought-affected villages in Maharashtra within next five years. With the passing time, the scheme has been going strong with villages building

infrastructure and making the program one of the largest Government initiatives in terms of public participation.

Mission of Jalyukt Shivar

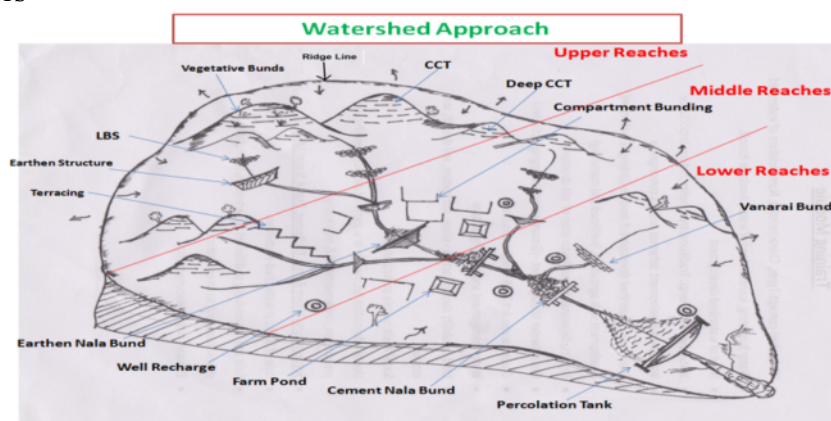
- Water scarcity free villages by 2019.
- Scientific water management
- Crop diversification
- In-situ soil and water conservation
- Increasing area under irrigation in the state.
- Guaranteeing availability of sufficient water for all in the state.
- Creating decentralized water storages and initiating new projects to create water storage capacity.
- Extracting sludge from existing water resources through public participation and increasing water

Vision of Jalyukt Shivar

- Compartment bunding
- Well recharge
- Desiltation of nallah and river
- Cement nallah bund
- Repair rejuvenation and restoration of existing irrigation structure
- Scientific water management and crop diversification

Watershed Management Principles

- (I) To restore the ecological balance by harnessing, conserving and developing degraded natural resources such as soil, vegetative cover and water in a holistic and sustainable manner
- (ii) To initiate demand driven and need based watershed planning with active participation of community members
- (iii) Preventing soil run-off and regenerating of natural vegetation with low cost technological solution complemented by indigenous knowledge
- (iv) Recharge the ground water table through rain water harvesting inculcating a sense of conservation among the community.
- (v) Enable multi-cropping and the introducing diverse agro-based activities, which help to provide sustainable livelihoods to the people residing in the project area
- (vi) Promote eco-friendly and locally suitable activities with the required capacity building of the stakeholders



Area treatment for different zones

- Continuous contour trenches
- Compartment bunding
- Deep continuous contour trenches
- Well recharge
- Tube well recharge
- Drainage line treatment


Advantages of Jalyukt Shivar scheme


- Rivers Deepened, Water Level In The Wells Enhanced .
- Water-Filled Dams, Healthy Crops.
- Efficient Management of Rainwater.
- Use of Mobile App And Representation On GIS

Area Treatments

1. Continuous Contour Trenches

- Planning and excavation should be from the ridgepart
- 0.60 x 0.45 msize
- 'ties' are kept at 5 -10minterval
- cost norm – 1000 m/ha., 15000Rs/ha.
- Contour should be followed strictly
- Useful for soil and moistureconservation





CompartmentBunding

- On Waste Lands and arable lands to improve soil moisture retention and controlerosion.
- Cost norm –

Area Treatment

CB & CCT

Focus area -

- Compartment bunding - Total area
- CCT-Fallow and forest area

A. 1,31,015 ha
CB complete

B. 691 ha CCT
complete

C. 912 ha deep CCT
complete

Well recharging

Focus area -

- Water supply and farm wells
- Public participation and contribution

- Wells recharged –

A. Total :-29926

B. Water supply:
5400
Farm

C. wells :
24526

CONCLUSIONS

- Jalyukta Shivar is an integrated approach as it includes watershed management, area treatment for different watershed zones.
- Jalyukta Shivar works hand in hand with Indian Remote Sensing Technique.
- Jalyukta Shivar Campaign has become a people's movement in Maharashtra, and it is proving to be useful for irrigation and enhancement of groundwater level.
- This program should be strictly implemented as a campaign through government departments, voluntary organizations, public participation and funds available with private businessmen, to ensure drought does not occur in future in drought prone areas and remaining area.
- In order to create public awareness it is important that along with the JYS promotion vehicle travelling to villages, village maps showing all the proposed and existing interventions should be displayed in the Gram Panchayat (Village Council) office and schools. Implementing Jalyukta Shivar Campaign in other parts of country will be helpful to overcome permanently drought and water scarcity problems.
- With unique initiative like Jalyukta Shivar, water scarcity will surely be a thing of the past!

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Aerospora and plant growth: Concepts and implications

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Abstract:- Aerobiology is a branch of biology that studies organic particles, such as bacteria, fungal spores, very small insects, pollen grains and viruses, which are passively transported by the air. It is a discipline, which takes in to account the atmosphere transport of the microorganism causing bio deterioration, allergy and disease in animals and plants. The aerobiological observations are useful to interpret processes proceeding in biology, meteorology and ecology but also these disciplines are of great help in understanding of aerobiological processes. Aerospora are wide spread all over the world and high environmental burdens have been affected by various factors, such as wind, moisture, and temperature and air pollution on aerospora this leads to various changes with respect to aerospora species and quantities from one season to another. The concentration of airborne air born spores has been linked to wind, humidity, temperature rainfall, altitude, vegetation and various contaminations. The present study will investigate the effects of aeroflora on the growth and yield of plants in agricultural fields. The study would also try to reveals effects of pollutants of the responsible for the generation of aerospora. The aerospora studies are being carried out continuously and will also be helpful for allergy patients, allergologist, agriculturist, plant pathologist and related worker in the field.

Keywords:- Aerospora, Growth, Fungi, Spores, Plants

Introduction: - Aerobiology is a scientific and multi-disciplinary approach focused on the transport of organisms and biologically significant materials (Edmonds and Benning off The air surrounding us forms a major part of the global ecosystem and, depending upon its constituents, it regulates the quality of the environment. It has long been known that there are different types of particles present in the atmosphere. These particles may be biological (for example, pollen grains, fungal spores, viruses, actinomycetes and other bacteria, fern and moss spores, algal colonies, plant fragments, small seeds, protozoa, mites and insect fragments) or non-biological (for example, soot, diesel exhaust particles ashes, sand and mineral fragments such as silicate minerals). Aerobiology is a scientific discipline that deals with the transport of organisms and biologically significant materials through the atmosphere (Isard and Gage, 2001). Aerobiology also encompasses the generation, uptake, translocation, dispersion, viability, deposition and infection/infestation of seeds, viruses, fungi, bacteria and other agents, including insects such as aphids and mosquitoes, which act as virus vectors. Finally, this discipline deals with agriculturally significant insects such as locusts, bush flies and moths. Aerobiology is mainly an experimental science and it is interdisciplinary, with applied aspects. It involves the interests of allergists, plant pathologists, microbiologists, entomologists, palynologists, mycologists, air pollution specialists and biometeorologists. Aerobiology is basically concerned with the study of airborne organisms, with their sources; take off, dispersal, deposition and their effects on other organisms, a sequence termed the aerobiological pathway (Edmonds, 1979) and the effect of environmental factors on each of these stages. Broadly Aerobiology is classified into two categories i. e. Indoor or Intramural Aerobiology and Outdoor or Extramural Aerobiology. Intramural Aerobiology deals with the problems of contagious allergens and storage pathogens in a rather closed atmosphere.

Extramural Aerobiology concerns with dissemination, dispersion and consequences of microbial components in the outside air. The airborne particles released from its substrate or environment in different ways are transported up in the atmosphere due to turbulence and air currents. The concentration of particles in a volume of air above the ground depends on the amount of particles release from the source per unit time, on the meteorological conditions . It has been found that intramural aerosols have a large range that is smaller than in outdoor air. In many work environments very high total counts have been found which are much higher than usually found in outdoor environments. The composition and concentration of the airborne flora shows great variations depending on geographical locality, meteorological situation, time of day and sampling techniques used (Gregory, 1973). When a microorganism becomes airborne the immediate fate of the particle largely depends on the local meteorological conditions. The turbulence is dependent on the ground topography, the temperature in the air mass and the wind speed. Deposition mechanisms can be either dry or wet. Most wet deposition occurs as a result of washout by rain. The efficiency of raindrops to capture spores depends on the size of the spores and the raindrops, the rate and duration of rainfall, as well as the depth of the precipitation and spore layers. Wet and dry depositions are closer in number than has been suggested by their relative deposition rates because there are many more dry hours than wet hours. Spores delivered during rain will be more likely to initiate disease because leaves will be wet and infection can begin immediately. The uncertainty in estimating the rate of wet deposition is large and it is difficult to ascribe to this mechanism a representative role (Smith, 1981). The fungal spores and hyphal fragments are commonly recorded in the air and are important for the survival and subsequent continuation of generations. Many of the fungal spores are endowed with unique structures and capacity to survive under unfavourable environmental conditions and this probably accounts for the predominance in the air. Numerous airborne organisms, fragments as well as particles of biological origin passively float in the atmosphere. Small insects, bacteria, viruses, plant pollen, Diasporas fragment of tissue and such organic compounds mycotoxins or allergens can be found in the air. Along with temperature and relative humidity, the UV component of solar radiation, which is the most lethal, controls survival of spores in the atmosphere. Most spores, which will be transported through the atmosphere and deposited within a few hundred kilometres of the source, remain with the mixed layer of the atmosphere (Clarke *et al.*, 1983)

Airborne Pathogens and Allergens :-The classification of airborne pathogens and allergens is broadly defined here to include all microbes that can transmit diseases by the airborne route, all allergenic airborne microbes, and all organisms or microbial products that cause respiratory disease or cause respiratory irritation. Pathogens are parasitical disease-causing infectious microorganisms. Allergens are microbes or materials from microbes and other organisms that induce allergies or allergic reactions. Respiratory irritants are a loosely defined class of microbes or agents that cause temporary symptoms and are considered here to be included under a broader definition of allergens. Although most airborne pathogens and allergens cause respiratory diseases, some may cause other types of infections like skin diseases, eye and ear infections, and even some gastrointestinal infections. The single defining characteristic of these agents is that they are transported in whole or in part by the airborne route, either by natural or man-made mechanisms. Airborne microorganisms consist of viruses, bacteria, fungi, pollen, and sometimes protozoa. Bacteria can be subdivided into bacterial spores and nonsporulating bacteria. Bacterial spores include an important class of bacteria called actinomycetes. The remaining allergens and respiratory irritants are not microbes but consist of material or parts of organisms that include dust mites, dander, insect allergens, toxins, mycotoxins, endotoxins, and *microbial volatile organic compounds* (MVOCs). Three microbial groups, viruses, bacteria, and fungi, include all the airborne

pathogens and many of the most common airborne allergens. No protozoa have been identified as being a major airborne hazard. Pollen, dust mites, and dander form a separate group of allergens and respiratory irritants.

Plant growth against aerospora:-Airspora constitutes fungal spores, pollen, bacteria, hyphal fragments, insect's scales, etc. Some of them are toxic and causing serious health hazards in human being, as well due to their higher concentration in the air creates environmental pollution. Among them fungal forms were taken into consideration to find out the status of various types of allergic and pathogenic spores at various places and their role in causing health hazards to plants and human beings. In vegetables and fruit market, airspora contain mostly fungal spores which are known to cause the diseases to vegetables and fruits and various allergies to human beings.

Shukla et al. (1978) while studying the phyllospheremycoflora colonizing the leaf litter of sal reported that the fungal population was low in summer and winter, and was highest in the early rainy season. The importance of rising temperature and decreasing relative humidity for the decline in spores during summer has also been emphasized by Sharma & Dwivedi (1972). *Alternaria alternata*, the major contributor, along with *Aspergillus fumigatus*, occurred throughout both years of the study but they were abundant in summer. Gupta et al. (1960) also reported that *Alternaria* exhibited a peak in March -April at Jaipur, and Vishnu -Mittre & Khandelwal (1973) recorded it to be maximal in May at Lucknow. These workers, however, did not identify *Alternaria* up to a specific level. *Aspergillus funiculosus*, *Curvularia lunata* and *C. pallescens* were recorded to occur in high concentrations in the rainy season. Jogdand (1984) reported greatest concentration of ascospores over others during rainy season while investigating aerospora on Jowar crop.

Conclusion:-Some of these fungal spores are allergenic causing diseases to human and plant also while some pollen grains are also allergenic. Appearance of these particles is characteristic and meteorological useful factor. By knowing the period and allergenic characteristic one can prepare a personal calendar to avoid allergenic diseases as well as meteorologically forecasting the weather conditions and to control the plant diseases.

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TRANSPORTATION PROBLEMS UTILIZING OBJECT ORIENTED PROGRAMMING AND NORTH – WEST CORNER STRATEGY

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Abstract:-The problem of transport is one of the subclasses of the problems of linear programming where the goal is to move diverse quantities of a homogeneous object to different birthplaces in order to obtain the maximum transportation expense. The objective of the transportation problem is to determine the shipping schedule that minimize that total shipping cost while satisfying supply and demand limits. The goal is to decide the quantity of units of a thing that ought to be delivered from an inception to an objective so as to fulfill the necessary amount of merchandise or administrations at every objective community. The data sources for this study are the accumulated knowledge is modeled on the transport model Linear Programming and addresses the transport problem as a stage and illuminates it with the computer software solver, thereby producing an optimal solution. We can conclude that the transportation problem is a special class of linear programming problem, which deals with shipping commodities from source to destinations. The objective of the transportation problem is to determine the shipping schedule that minimize that total shipping cost while satisfying supply and demand limits.

Keywords: - Transportation Problem, Object, Programming, North-West Corner, etc.

1. INTRODUCTION The problem of transport is one of the subclasses of the problems of linear programming where the goal is to move diverse quantities of a homogeneous object to different birthplaces in order to obtain the maximum transportation expense. The transport models or problems are concerned primarily with the optimal (most optimal) way to transport products from different industrial sites or plants (referred to gracefully as causes) to different dealer centers (referred to as objections to requests). Anywhere there is an evolution of the products, from the manufacturing intent up to the last consumer through a variety of means of

use (buyers, dealers, traders, etc.), the objective of a transport issue is to fulfill the objective requirements fully within job limiting requirements at the base conceivable costs. In both of these instances, transport problems occur. The transportation problem is a special class of linear programming problem, which deals with shipping commodities from source to destinations. The objective of the transportation problem is to determine the shipping schedule that minimize that total shipping cost while satisfying supply and demand limits.

1.1 Transportation Problems

The structure of transportation problem includes countless delivery courses from a few gracefully sources to a few interest objections. The goal is to decide the quantity of units of a thing (item or item) that ought to be delivered from an inception to an objective so as to fulfill the necessary amount of merchandise or administrations at every objective community. It depends on gracefully and request of items transported from a few sources to the various objections. The sources from which we have to transport allude the gracefully while the objective where items show up alluded the interest. The transportation model is an extraordinary class of linear projects. It got this name on the grounds that huge numbers of its applications include deciding how to ideally transport merchandise. Nonetheless, a portion of its significant applications (e.g. creation booking) really have nothing to do with transportation.

- **Fuzzy transportation problem utilizing multi-choice object programming:**

Transportation problem (TP) assumes an important part for dynamic problem to think about the problem of genuine circumstances. The TP can be depicted as an uncommon instance of a direct programming problem and its model is utilized to decide an ideal arrangement of a dynamic problem. The classical TP decides the number of units of ware is to be sent from each starting place to different destinations, fulfilling source availabilities and destination demands, while limiting the absolute cost of transportation alongside cutting down the costs per unit of things for the buyers. The fundamental TP was originally evolved by Hitchcock and later grew freely by Koopmans. Various works have been corned out by a few authors in the field of TP. Fuzzy set theory is taken as a device to tackle optimization problems. Basically, the idea of fuzzy numbers is presented in the transportation boundaries (cost, supply and demand) to make it a fuzzy TP (FTP). Apparently, the idea of choice variable in TP as a fuzzy variable has not been talked about in the writing. We consider that the assumptions in the destinations of TP are fuzzy numbers and they are taken as fuzzy objectives. In the destinations, there are multi-choice fuzzy assumptions.

2. LITERATURE REVIEW

Samuel Chiabom Zelibe and Chika Ugwuanyi (2019) the transportation problem assumes an essential function in industry, trade, logistics and so forth. To augment benefit, associations are continually searching for better approaches to reduce cost and improve income. Essentially, the standard arrangement of a transportation problem is a two-phase measure. First is to locate an underlying essential achievable arrangement and furthermore, perform optimality test to improve the arrangement. This cycle is tiring and time squandering. In this study, another arrangement is presented which conquers the two-phase measure and solves the transportation problem in a one phase measure. In many cases the method had the option to give an ideal arrangement.

NurilLutviAzizah (2019) RASKIN / RASTRA is a programme to improve food safety for the helpless family from the family point of view. The aim of this study is to determine whether the scientific evidence can be used in transport methods to organize the expenditure on rice transport in the Sidoarjo region in detail. The procedure used to investigate the underlying monetary arrangement is the NWC (Northwest Corner) technique, refined by MODI to determine the optimum expenditure. The ideal cost is lower than Rp 85.186.040 estimated by the company from the calculation by means of transport, while Rp 87.209.690 is 750.

M. L. Aliyu, et al (2019) this analysis uses a models for transporting the base cost for transporting goods from manufacturing lines to warehouses to (merchants). As well as the transportation data collected from the company BUA collection, CCNN data were used by OBU concrete transportation. The data were seen as a linear model of transportation programming and spoken of as a transport scene which was solved with the 1.0.0 adaptation of R Programming and TORA programming to establish the underlying solution and ideal solution. The results of this inquiry show that each of the three simple possible starting methods (the North-West corner, the Least Cost (least) and the Vogel Approximation method) offered different answers.

Sri Redjeki Pudjaprasetya (2018) this book offers a starter diagram of transport marvels. Points secured are the essential presentation on a few parts of war mth move, mass exchange, and liquid mechanics, zeroing in on issues emerging from conservation laws. Preservation laws emerge when a few (physical) amounts are monitored, for instance, mass or energy. Consequently they are much of the time experienced in a wide scope of logical and building fields. Protection laws when communicated as far as incomplete differential conditions, they are generally non-linear, and frequently they likewise concede intermittent stun wave

arrangements. In applications, stun wave arrangements might be found as bores in waterways, sonic blast, or gridlock. This book contains a thorough inclusion of mathematical strategies and investigation, just as hypothetical turn of events, which is indispensable to the comprehension and usage of uses.

3. OBJECTIVES

1. To analyze a case study on the Novel Transportation Problem Solving Algorithm utilizing North – West Corner strategy.
2. To determine the object oriented programming way to deal with transportation problem.

4. RESEARCH METHODOLOGY

4.1 Data Sources

This study would consider the proposed model of transport of the products produced to the consumer (key distributors). The accumulated knowledge is modeled on the transport model Linear Programming and addresses the transport problem as a stage and illuminates it with the computer software solver, thereby producing an optimal solution. Internet and mathematical books from the Mumbai Library and Mathematics branch will be the source of knowledge for the industry. Problems of the various true circumstances are modeled as the linear programme model of assignment and type of transport and relate to the linear programming or the problem of assignment and transport as a scene.

4.2 Mathematical Formulation

Assumed a company has m warehouses and n retail outlets. A solitary product will be transported from the warehouses to the outlets. Each warehouse will have a given degree of flexibly, and every outlet has a given degree of interest. We will additionally give the transportation cost between each pair of warehouse and outlet, and these costs are thought to be linear. All the more unequivocally, the presumptions are:

- The absolute supply of the products from warehouse $i = a_i$, where $i = 1, 2, 4..., m$
- The absolute Demand of the products at the outlet $j = b_j$, where $j = 1, 2, 3, ..., n$.

- **The Decision Variables:**

The variables in the Linear Programming (LP) model of the TP will hold the values for the number of units shipped from one source to a destination.

- **The Objective Function**

The objective function contains costs associated with each of the variables. It is a minimization problem. Consider the shipment from warehouse i to outlet j . For any i and j ,

the transportation cost per unit C_{ij} and the size of the shipment is X_{ij} . Since we assume that the total cost function is linear, the total cost of this shipment is given by $c_{ij}x_{ij}$.

5. RESULT AND DISCUSSION

The proposed North-East corner method is applied to different sorts of transportation problems and afterward contrasted and its partner North-West corner method to test its capacity to acquire a base transportation cost and time. The proposed method is at first applied to tackle a basic balanced transportation problem and afterward the complexity of the problem is expanded by taking unbalanced transportation problem and time based transportation problem. The proposed method is likewise applied to take care of a continuous transportation problem and the acquired outcomes are contrasted and the North West corner method.

• 4-Sources 5 Destinations Problem:

The transportation scene of the problem is given beneath. The problem comprises of 4 sources of supply and 5 destinations for the interest of supply. The absolute interest at the destination place and the all out supply at the source are equivalent and consequently this problem is considered as a balanced problem as demonstrated in table 1.

Table 1: 4-Sources and 5 Destination Problem

	D1	D2	D3	D4	D5	Supply
S1	11	3	10	2	5	14
S2	2	7	3	8	1	13
S3	12	2	4	5	7	22
S4	9	4	6	3	5	16
Demand	15	10	15	10	15	

5.1 North-East Corner method

- ❖ The method is applied by involving the north east corner cell or upper right corner cell.
- ❖ From cell (S1, D5) the allocation is finished by moving evenly with a similar row. When the allocation of either supply side or the demand side is met, the allocation is moved to next row and the interaction is rehashed until every one of the demands at the destination place are met.
- ❖ In along these lines, the supply from S1 is totally apportioned to D5, for example 14. The leftover 1 unit of demand of D5 is provided by S2.
- ❖ The S2 likewise satisfies the entire need of D4, for example 10 and a demand of 2 units of ware at D3.
- ❖ With 13 units of demand staying at D3, it is met by S3 with 22 units of supply. The excess 9 units of supply are distributed to D2.

- ❖ The D2 and D1 destination focus are left with 1 unit and 15 unit of demand. This is met by S4 what imparts its supply of 16 units to D1 and D2. The cost of transportation is given as

Table 2: Solving of the 4 Sources and 5 Destination Problem using North East Corner method

	D1	D2	D3	D4	D5	Supply
S1	11	3	10	2	14	14
S2	2	7	2	3	10	13
S3	12	9	2	13	4	22
S4	15	9	1	4	6	16
Demand	15	10	15	10	15	

Total cost = $14 \times 5 + 1 \times 1 + 10 \times 8 + 2 \times 3 + 13 \times 4 + 9 \times 2 + 15 \times 9 + 1 \times 4$
 = Rs. 366 as shown in table 2.

5.2 North – West Corner Method

- This method starts with beginning allocation toward the North West corner cell or upper left corner cell.
- The 14 units of supply from S1 are applied to D1.
- The 13 units of supply used to satisfy the needs of D1, D2 and D3 by sharing 1, 10 and 2 units of supply individually.
- S3 supplies its 22 units of supply to fulfilled 13 unit of need at D3 and 9 units at D4.
- The 1 unit of demand at D4 and 15 units of demand at D5 are met by S4.
- The absolute transportation cost is determined as underneath

Total cost = $14 \times 11 + 1 \times 2 + 10 \times 7 + 2 \times 3 + 13 \times 4 + 9 \times 5 + 1 \times 3 + 15 \times 5$
 = Rs. 407 as shown in table 3.

Similar 4 sources 5 destinations problem can be tackled for time based transportation problem with a supposition that the cost esteem at every cell is considered as time esteem.

For instance the cell (S1, D1) with 11 addresses it requires 11 hours to move the 14 items from S1 to D1 as demonstrated in table 3.

Table 3: Solving of the 4 Sources and 5 Destination Problem using North West Corner method

	D1	D2	D3	D4	D5	Supply
S1	14	11	3	10	2	14
S2	1	2	10	7	2	13
S3	12	2	13	4	9	22
S4	9	4	6	1	3	16
Demand	15	10	15	10	15	

The proposed work settled the above kind of transportation problem by a novel method called as North East Corner method. This method takes after its partner North West Corner method, yet the previous contrasts in the method of distributing the war in a transportation grid.

6. CONCLUSION:-We can conclude that the transportation problem is a special class of linear programming problem, which deals with shipping commodities from source to destinations. The objective of the transportation problem is to determine the shipping schedule that minimize that total shipping cost while satisfying supply and demand limit s. The transportation problem deals with the distribution of goods from several points, such as factories often known as sources, to a number of points of demand, such as warehouses, often known as destinations. Each source is able to supply a fixed number of units of products, usually called the capacity or availability, and each destination has a fixed demand, usually known as requirement. So this article is to finding an initial basic feasible solution is the prime requirement to obtain an optimal solution for the transportation problems.

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A NEW ANALYTICAL METHOD DEVELOPMENT AND VALIDATION FOR THE QUANTITATIVE ESTIMATION OF BILASTINE IN BULK FORM AND MARKETING PHARMACEUTICAL DOSAGE FORM BY USING RP-HPLC

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ABSTRACT:- A simple, precise, rapid, and accurate reversed-phase high performance liquid chromatography method has been developed as per the ICH Guidelines for the determination of Bilastine in pure form and marketed pharmaceutical dosage form. Chromatography was carried out on Symmetry Octadecylsilyl column having dimension (4.6mm×250mm) 5µm and using a mixture of Acetonitrile and Phosphate buffer (0.01M, pH-3.2 adjusted with orthophosphoric acid) in the ratio of 30:70v/v as a mobile phase at a flow rate of 1.0 ml/min. Detection was performed at 246nm wavelength at ambient temperature. The retention time was found at about 5.4 minutes. The method was validated for its linearity, precision and accuracy. The correlation coefficient of linearity curve was 0.999. The calibration curve was linear over a concentration range from 6 to 14 µg/ml. Limit of detection (LOD) and limit of quantitation (LOQ) were found 0.49µg/ml and 1.48µg/ml respectively. The proposed method was successfully applied for the determination of Bilastine in pure form and marketed pharmaceutical formulations.

Key Words:- Bilastine, Method Development, RP-HPLC, Validation, Linearity.

INTRODUCTION:- Bilastine, sold under the brand name Ilaxten among others, is a second-generation antihistamine medication which is used in the treatment of allergic rhino conjunctivitis and urticaria (hives). It exerts its effect as a selective histamine H1 receptor antagonist. It was developed in Spain by FAES Farma. Bilastine is approved in the European Union for the symptomatic treatment of allergic rhino conjunctivitis and urticaria, but it is not approved for any use in the United States. Bilastine meets the current European Academy of Allergy and Clinical Immunology (EAACI) and Allergic Rhinitis and its Impact of Asthma (ARIA) criteria for medication used in the treatment of allergic rhinitis. Bilastine has been effective in the treatment of diseases of allergies, including rhinoconjunctivitis. Bilastine is a novel new-generation antihistamine that is highly selective for the H1 histamine receptor, has a rapid onset and prolonged duration of action. The IUPAC Name of Bilastine is 2-[4-[2-[4-[1-(2-ethoxyethyl)benzimidazol-2-yl]piperidin-1-yl]ethyl]phenyl]-2-methylpropanoic acid. The Chemical Structure of Bilastine is as follows

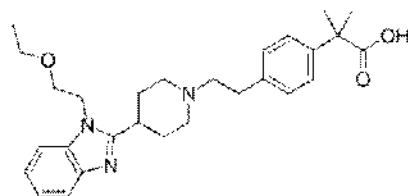


Fig-1: Chemical Structure of Bilastine

Instruments and Equipments:- Analysis performed on The HPLC system of **make WATERS HPLC** with Empower2 Software with Isocratic, UV-Visible Detector and UV

scanning of Bilastine having known concentration of 10 µg/ml carried out on T60-LABINDIA UV-Vis spectrophotometer in the range of 200-400nm.

Material and Reagents:

Below chemical and reagents used:

Potassium dihydrogen orthophosphate (A.R. Grade) S.D. Fine

Acetonitrile made by loba chem

HPLC grade water made by S.D. Fine

HPLC grade Methanol made by loba chem

Standard Preparation for UV-Spectrophotometer Analysis:

The preparation of Standard Solution: 10mg of Bilastine standard was transferred into 10 ml volumetric flask, dissolved & make up to volume with Methanol (**Stock solution**). Further diluted 1ml to 100ml with methanol to get 10 µg/ml concentration. It scanned in the UV spectrum in the range of 200 to 400nm. This has been performed to know the maxima of Bilastine, so that the same wavelength can be utilized in HPLC UV detector for estimating the Bilastine. While scanning the Bilastine solutions we observed the maxima at 246nm. Shown in fig.2.

Selection of Chromatographic Methods: The proper selection depends upon the nature of the sample (ionic or ion stable or neutral molecule), its molecular weight and stability. The drugs selected are polar and ionic Hence reversed phase chromatography was selected.

0.01M Phosphate Buffer pH -3.2: Weigh accurately and transferred 1.36gm Potassium dihydrogen orthophosphate in 1 litre volumetric flask, Added about 500 ml HPLC grade water. Sonicated to dissolve volume upto mark with HPLC grade water. pH was adjusted to 3.2 with orthophosphoric acid.

Preparation of Mobile Phase:

Mobile phase prepared using Acetonitrile and 0.01M Phosphate buffer, pH -3.2 in the proportion of 30:70 v/v. Mixed and degassed, Filtered through 0.45 µ filters under vacuum filter.

Mobile phase used as diluents.

Preparation of standard solution: Accurately weigh and transfer 10 mg of Bilastine, working standard into a 10ml volumetric flask, add about 7ml of diluent and sonicate to dissolve and make volume up to the mark with the diluent. Further diluted 0.1ml of above solution to a 10ml to get known concentration of 10 µg/ml.

Preparation of Sample Solution:

Drug product: Take average weight of Tablet and crush in a mortar -pestle and taken weight equivalent to 10mg Bilastine sample into a 10ml volumetric flask and add about 7ml of Diluent and sonicate to dissolve and make volume up to the mark with the diluents . Further diluted 0.1ml of above solution to a 10ml to get known concentration of 10 µg/ml.

Drug substance: Accurately weigh and transfer 10 mg of Bilastine API into a 10ml volumetric flasks, add about 7ml of diluent and sonicate to dissolve and make volume up to the mark with the diluent. Further diluted 0.1ml of above solution to a 10ml to get known concentration of 10µg/ml.

Optimization of Method development: -Analytical method development trial taken on C18 with different make of column like Inertsil, Zodiac, Develosiletc. Used Also different Organic solvent modifier like Acetonitrile, Methanol and Phosphate buffer with different pH used in Mobile phase. After many trials it was finalized on Symmetry C₁₈, 250 mm x 4.6 mm, 5µm column and Acetonitrile with phosphate buffer as Mobile phase. While scanning of the 10µg/ml Bilastine solutions we observed the maxima at 246nm. Hence Detector wavelength was finalized at 246nm. Optimized Chromatographic condition shown in table 1.

Assay of drug product in %:

$$\frac{A_{\text{spl}}}{A_{\text{std}}} \times \frac{W1}{D1} \times \frac{D2}{W2} \times \frac{\text{Purity}}{100} \times \frac{100}{\text{L.C}} \times Z$$

Assay of drug substance in %:

$$\frac{A_{\text{spl}}}{A_{\text{std}}} \times \frac{W1}{D1} \times \frac{D2}{W2} \times \frac{\text{Purity}}{100} \times 100$$

Whereas,

A spl = Peak area of sample

A std =Avg. peak area of replicated standard

W1 = Weight of standard in mg

W2 = Weight of sample in gm

D1 = Dilution of standard in ml

D2 = Dilution of sample in ml

Z = Average Weight of tablet in gm

L.C.= Label claim

Analytical Method Validation: Analytical Method Validation performed as per ICH Guidelines Q2 (R1) establishing documented evidence which provide a high degree of assurance that specific activity will consistently produce a desired result or product meeting its predetermined specification and quality characteristics.

Specificity:-This study establish the No Interference of Blank (Diluent) against Bilastine standard solution injection shown in **Fig.2,3**. System suitability results are observed within limit of acceptance criteria performed by injecting 3 replicate injections of standard as per optimized method shown in **Table 2**.

Linearity:-The Linearity levels prepared from stock solution having known concentration from 6µg/ml to 14µg/ml. Injected the Three replicate injections of individual concentrations (60%,80%,100%,120%,140%) under the optimized conditions. Recorded the chromatograms and measured the peak responses. Plotted graph of Concentration (x) versus the Average Peak Area (y) data of Bilastine is a straight line. Calculated intercept and correlation coefficient. Which was observed within limit i.e. Correlation Coefficient (r) is 0.999, and the intercept is 76943 Concentration(x) versus response area (y) shown in **Table-3** and plot graph in **Fig-4**

LIMIT OF DETECTION AND LIMIT OF DETECTION FOR BILASTINE :- The detection limit (LOD) is the lowest amount of analyte in a sample which can be detected but not necessarily quantitated was 0.487µg/ml observed. The quantitation limit of an

individual analytical procedure is the lowest amount of analyte in a sample which can be quantitatively determined was 1.477 μ g/ml observed.

Precision:

A)Method precision (Repeatability)

The standard solution was injected for five times and measured the area for all five injections in HPLC. The %RSD for the area and retention time of five replicate injections was 0.41% and 0.60% found to be within the specified limits **Shown in Table-4**

b)Intermediate precision (Reproducibility)

Ruggedness

To evaluate the intermediate precision of the method, Precision was performed on different days by maintaining same chromatographic conditions.

Procedure:

DAY 1: The standard solution was injected for six times and measured the area for all six injections in HPLC. The %RSD for the area and retention time of six injections was 0.26% and 0.63% found to be within the specified limits **Shown in table 5**

DAY 2: The standard solution was injected for six times and measured the area for all six injections in HPLC. The %RSD for the area and retention time of six injections was 0.37% and 0.63% found to be within the specified limits **Shown in table 6**

Robustness: The robustness was performed for the flow rate variations from 0.9 ml/min to 1.1ml/min and mobile phase ratio variation from more organic phase to less organic phase ratio for Bilastine. The method is robust only in less flow condition. The standard of Bilastine was injected by changing the conditions of chromatography. There was no significant change in the parameters like resolution, tailing factor, asymmetry factor, and plate count. **Shown in table-7**

Accuracy: In accuracy three levels 50%, 100%, and 150% was prepared with respect to working level concentration of standard in triplicate preparation injected and the % recovery was calculated. The results are observed within limit as shown in table-

Forced degradation studies: The specificity of the method can be demonstrated by applying stress conditions using acid, alkaline, peroxide, thermal, UV, water degradations. The sample was exposed to these conditions the main peak of the drug was studied for peak purity that indicating the method effectively separated the degradation products from the pure active ingredient. It observed that Bilastine is highly acidic and photo sensitive in nature. Results are shown in Table 3.

RESULTS AND DISCUSSION:

Table 1: Optimized chromatographic condition :

Mobile phase	: Acetonitrile: 0.01M Phosphate buffer pH-3.2 (30:70v/v)
Column	: Symmetry C18 (4.6mm \times 250mm) 5 μ m
Temperature	: 25
Flow rate	: 1ml/min

Wavelength : 246nm

Injection : 20 μ l

Volume

Table-2: System suitability of standard replicates

S.No.	Name	RT	Area	Height	USPTaili	USPPlate
1	Bilastine	5.427	647598	85365	1.09	6895
2	Bilastine	5.430	648759	85847	1.10	6826
3	Bilastine	5.443	649856	85968	1.08	6863
Mean		5.433	648738			
SD		0.009	1129.151			
%		0.16	0.17			

Table-3: Chromatographic Data for Linearity Study of Bilastine

Concentration μ g/ml	Average Peak Area
6	468784
8	615798
10	768759
12	925748
14	1078765

Table-4: Results of Repeatability for Bilastine

S. No.	Peak Name	Retention time	Area (μ V*sec)	Height (μ V)	USP Plate Count	USP Tailing
1	Bilastine	5.419	645784	83685	6825	1.05
2	Bilastine	5.405	642589	84932	6849	1.09
3	Bilastine	5.478	643658	85847	6845	1.08
4	Bilastine	5.466	648759	86295	6839	1.09
5	Bilastine	5.466	647854	87853	6874	1.10
Mean		5.447	645729			5.447
Std. Dev		0.033	2638.569			0.033
%RSD		0.60	0.41			0.60

Intermediate Precision/Ruggedness:

Day- 1:

Table-5: Results of Intermediate precision for Bilastine

S.No.	Peak Name	RT	Area (μ V*sec)	Height (μ V)	USP PlateCount	USP Tailing
1	Bilastine	5.484	636854	84863	6758	1.09
2	Bilastine	5.493	637489	84759	6726	1.08
3	Bilastine	5.406	635762	84685	6749	1.09
4	Bilastine	5.419	636984	84697	6698	1.07
5	Bilastine	5.446	634856	84258	6728	1.08

6	Bilastine	5.452	639689	84753	6699	1.08
Mean		5.450	636939			
Std. Dev.		0.034	1649.149			
% RSD		0.63	0.26			

Day-2:

Table-6: Results of Intermediate precision Day- 2

S.No.	Peak Name	RT	Area ($\mu\text{V} \cdot \text{sec}$)	Height (μV)	USP Plate	USP Tailin
1	Bilastine	5.491	628985	85698	6985	1.09
2	Bilastine	5.482	624879	85479	6899	1.07
3	Bilastine	5.416	625846	85748	6928	1.06
4	Bilastine	5.482	623568	85647	6874	1.09
5	Bilastine	5.495	628985	85246	6984	1.07
6	Bilastine	5.427	628473	85924	6872	1.08
Mean		5.466	626789			
Std.		0.035	2340.636			
% RSD		0.63	0.37			

Table-7: Results for Robustness

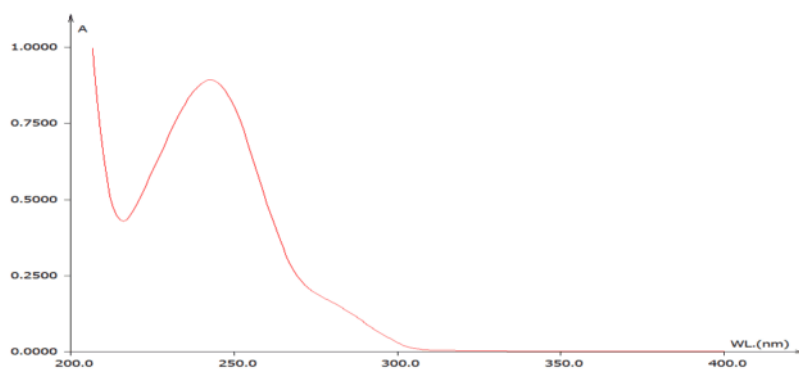
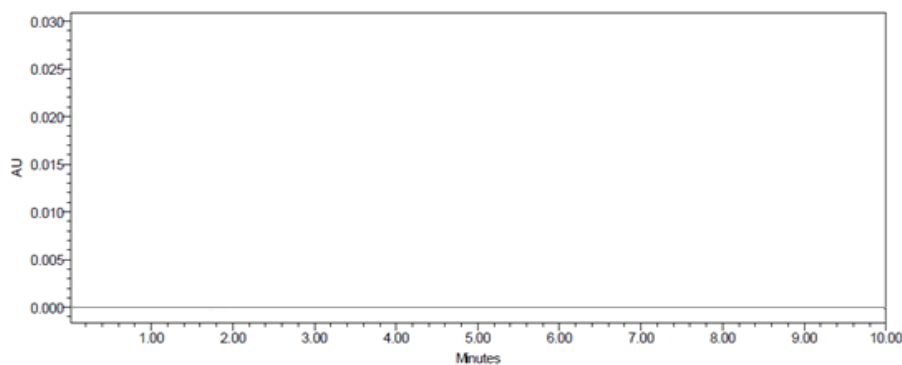
Parameter change in chromatographic condition	Peak Area	Retention Time	Theoretic al plates	Tailing factor
Actual Flow rate of 1.0 mL/min	648759	5.484	6845	1.08
Less Flow rate of 0.9 mL/min	635248	5.599	6786	1.09
More Flow rate of 1.1 mL/min	659865	4.576	6528	1.05
Less organic phase	625986	7.415	6689	1.03
More organic phase	615869	3.827	6354	1.01

Table-8: Results of Forced Degradation Studies for Bilastine

S.No.	Stress Condition	Peak Area	% of Degraded Amount	% of Active Amount	Total % of Amount
1	Standard	648759	0	100%	100%
2	Acidic	539378.232	16.86	83.14	100%
3	Basic	603540.497	6.97	93.03	100%
4	Oxidative	596923.155	7.99	92.01	100%
5	Thermal	616450.801	4.98	95.02	100%
6	Photolytic	533344.773	17.79	82.21	100%
7	Water	625079.296	3.65	96.35	100%

Table-9: The accuracy results for Bilastine

Sample ID	Concentration (µg/ml)		Peak Area	% Recovery	Statistical Analysis	
	Amount Injected	Amount Recovered				
S1 : 50 %	5	4.998	38756	100.28	Mean = 100.01 %	% Mean Recover y = 100.137 %
S2 : 50 %	5	4.996	38524	99.67		
S3 : 50 %	5	5.039	38686	100.09		
S4 : 100 %	10	9.998	76879	99.69	Mean = 99.65 %	
S5 : 100 %	10	9.983	76835	99.63		
S6 : 100 %	10	10.034	76845	99.64		
S7 : 150	15	15.016	11652	100.81	Mean = 100.74 %	
S8 : 150	15	15.043	11635	100.66		
S9 : 150	15	15.033	11647	100.76		

**Fig-2: UV Spectrum of Bilastine (246nm)****Fig-3: Chromatogram Showing Blank (Diluent)**

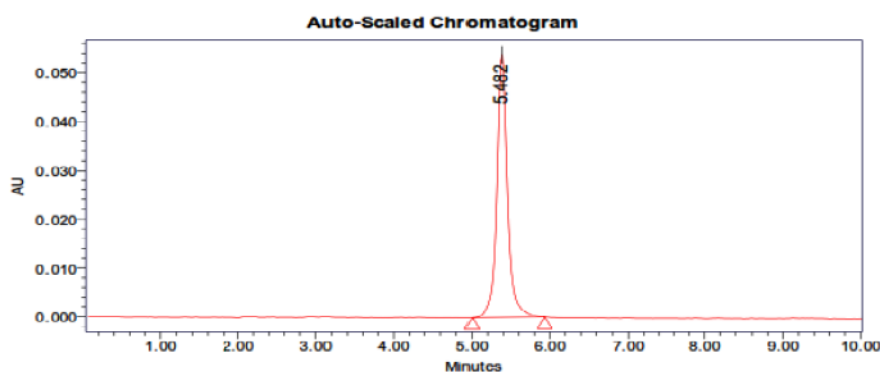


Fig-3: Chromatogram showing standard injection

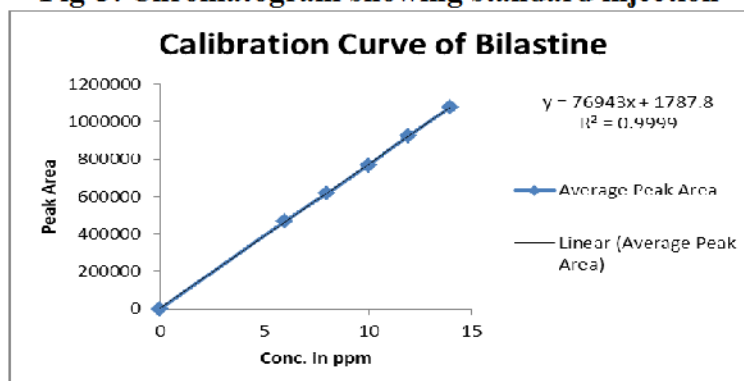


Fig-4: Calibration Curve of Bilastine

SUMMARY AND CONCLUSION

To develop a precise, linear, specific & suitable stability indicating RP-HPLC method for analysis of Bilastine, different chromatographic conditions were applied & the results observed are presented in previous chapters. Isocratic elution is simple, requires only one pump & flat baseline separation for easy and reproducible results. Since peak eluted at about 5 minutes hence Method has short run time. So it is time saving analytical method it was preferred for the current study over gradient elution.

In case of RP-HPLC various columns are available, but here Symmetry C18 (4.6mm×250mm) 5 μ m particle size column was preferred because using this column peak shape, resolution and absorbance were good. Mobile phase & diluent for preparation of various samples were finalized after studying the solubility of API in different diluent like methanol, acetonitrile, water, 0.1N NaOH, 0.1N HCl).

Detection wavelength was selected after scanning the standard solution of drug over 200 to 400nm. From the U.V spectrum of Bilastine it is evident that most of the HPLC work can be accomplished in the wavelength range of 246nm conveniently. Further, a flow rate of 1.0 ml/min & an injection volume of 20 μ l were found to be the best analysis. The result shows the developed method is yet another suitable method for assay which can help in the analysis of Bilastine of drug substance and in different formulations.

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A DESCRIPTIVE STUDY TO ASSESS THE KNOWLEDGE REGARD TO MULTIPLE DRUG RESISTANCE TUBERCULOSIS AMONG TUBERCULOSIS PATIENTS IN SELECTED TUBERCULOSIS CENTRE AT BINA, MADHYAPRADESH

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ABSTRACT:- Tuberculosis death rate in India play a vital role in globally to peaking the mortality and morbidity rate. The India is the leading cause of deaths rate due to tuberculosis infection. Here used descriptive design with quantitative research approach. In this study selected 60 samples from Bina dots center in Madhya Pradesh to assess the knowledge regard to multiple drug resistance tuberculosis among tuberculosis patient. For that I have used convenient sampling techniques. Structured questionnaires and rating scale included for collecting data this help to reveals the knowledge score of the individual regard multiple drug resist. The results shows that 58 %of them have below average knowledge.26%of them have average knowledge, good knowledge only for 10% and 6% of them have very good knowledge. Mean, SD, and mean percentage of tuberculosis patient knowledge regard multiple drug resistant that 30 maximum and obtained mean score was 11.6+-6.8which was35.63%. This confirmed that tuberculosis patient has below average knowledge regarded multiple drug resistant. These scores significantly associated with family type, residence, education, annual income and past knowledge about multiple drug resistant tuberculosis.

KEYWORDS:-MDR Tuberculosis , DOTS Centre,

INTRODUCTION:-The causative organism of Tuberculosis (TB) is the most dangers disease in the modern society. At presently, many of the diseases have been eliminated and some have been eradicated from the world. in spite of achieving many milestones in the health fields, the incidence of tuberculosis remains as peak and it is the one of the leading causes of death globally. 100 years ago, we have discovered the causative organism of tuberculosis Also, highly effective treatment regimen and vaccine were available to agains tuberculosis. Its preventable and curable disease. Though, the present world scenario of tuberculosis shows persistely elevating, therefore, tuberculosis widely causes the major public health problem. Based on above point I think and decided to educate the p ublic, health care profession and tuberculosis client, about the importance of early detection and treatment, along with vaccination. An approximately 4.8 lakh mortality have been reported in India, in which 28% of the annual global deaths of 17 lakhs. Tu berculosis initially involves the lung parenchyma and the root cause for the disease. It is also causing social and economic burden for affecting the group of people. Tuberculosis is one of the leading five causes of death in the 30-60 years age group. The occurrence of drug resistant tuberculosis is a world -wide problem.3 million people resistant to tuberculosis from India out of 0.11 million patients in world. This infected patient to practice to prevent droplet infection from cough and safe disposal of s putum material .so practice covering mouth while coughing and dispose waste properly.Because proper disposal of sputum can reduce the spread of disease. The

tuberculosis control programme of India recommended to create awareness to the public related to tuberculosis.

OBJECTIVES

- To assess the knowledge level regard multiple drug resistance tuberculosis in tuberculosis patients.
- To identify the association between knowledge regard multiple drug resistance with their selected demographic variables.

HYPOTHESIS

H01: There will be no significant association between knowledge score and their selected demographic variables.

H1: There will be significant association between knowledge score with their selected demographic variables.

METHODOLOGY

Research approach: -A quantitative research approach was used to assess the knowledge of tuberculosis patients regard multiple drug resistance tuberculosis in selected DOTS center at Bina.

Research design: -Descriptive design used in this study to assess the knowledge of tuberculosis patients regard Multiple drug tuberculosis.

Research setting- Selected DOTS center of Bina, Madhya Pradesh.

Population: -All tuberculosis affected patients those who are on treatment in selected DOTS center of Bina, Madhya Pradesh.

Sample: -Tuberculosis affected patient who were visiting regularly in selected DOTS center of Bina.

Sample size: - 60

Sample techniques: - Purposive sampling techniques

RESEARCH TOOLS AND TECHNIQUE:

The tool consisted of two sections

Section–A: Demographic data consist of Age, gender, Religion, Area of residence, occupation, Dietary pattern, educational level, Type of family, Monthly income of the family, past knowledge.

Section–B: Structured knowledge questionnaire regarding the tuberculosis and its prevention. 30 structured questionnaire contains, every correct answer was awarded a score of one (1) and every incorrect answer Zero (0). The maximum score on structured knowledge questionnaire was 30. The different level of knowledge is categorized as follows-

Criteria	Percentage of score
Poor	0-25%

Average	26-50%
Good	51-75%
Very good	76-100%

DATA COLLECTION PROCEDURE:-Obtained formal permission from the authority people for conducting study about to assess knowledge regard Multiple drug resistance tuberculosis. Primarily identified sample and assess the knowledge based on questions. Daily taken 6 samples like that continued for 10 days for collecting sample.

RESULTS AND FINDINGS:-Distribution of tuberculosis patients according to percentage that 52%were at age group of 16-30 years, in which 62.22%of them male, 76% of them from Hindu religion, most of them lives in rural areas (66.2%). Majority of them have minimal education that means primary educated peoples are 23.42%. Unemployed are 62.34%,most of them were Non vegetarians and high percentage of people have very less knowledge related to multiple drug resistance tuberculosis (86.32%).

LEVEL OF KNOWLEDGE:-Percentage distribution of tuberculosis patient based own their knowledge regard multiple drug resistance tuberculosis .it shows that most of them have poor knowledge about this condition ie,58%,26% of them have average knowledge,10% have good knowledge and 6%of then have very good knowledge about multiple drug resistance.

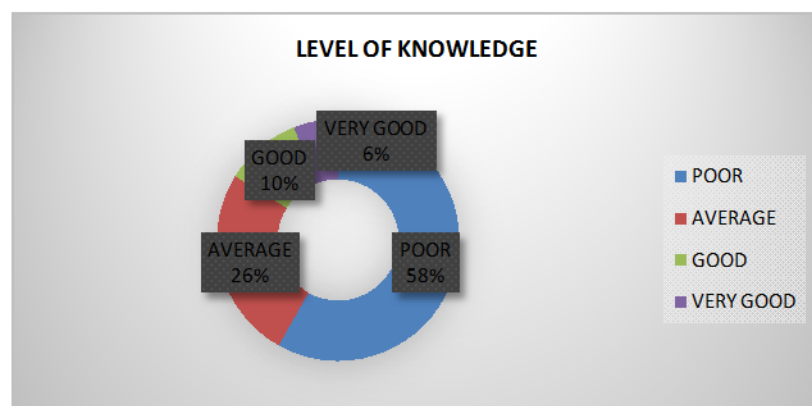


Figure 13. Pie charts shows percentage wise level of knowledge regard multiple drug resistance tuberculosis.

Table.6:question Area wise Mean,SD,and mean percentage of knowledge score of tuberculosis regard multiple drug resistant

(N=60)

Area wise questions knowledge	Maximum score	Mean	SD	Mean percentage
Introduction and Etiology	6	3.08	1.47	42.93
Predisposing factor	2	1.44	.92	48.5
Clinical manifestation	4	1.24	.93	30.78
Diagnosis	5	1.48	1.07	35.88
Management	7	2.36	1.3	31.3

Prevention and complication	6	1.46	1.2	24.44
total	30	11.06	6.8	35.63

Area wise comparison of mean, SD and mean percentage of knowledge score regard multiple drug resistant tuberculosis among these areas reported that highest percentage mean score 48.5%, that SD and Mean are ± 0.92 and 1.44 . that maximum score occurred from pre disposing factor. The lowest Mean score 1.24 ± 0.93 of SD, which was 30.78% from Clinical manifestation. Moreover, the Overall mean score 11.06, SD ± 6.08 . here Total mean percentage 35.63%. Hence it reveals that tuberculosis patient have poor knowledge regard multiple drug resistance tuberculosis.

There was no significant association between knowledge score of patients with there demographic variable like age, gender, religion, dietary pattern and occupation. so the null hypothesis is accepted.

Conclusion:- The total knowledge score 35.63% ie, they have very poor knowledge regard multiple drug resistant tuberculosis. that means 64.36% of them have unaware about this. The research study significantly associated with family size, residence, educational level, income of family and past knowledge gained regard multiple drug resistant tuberculosis.

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To Study the Synthesis Mechanism and Quantitative Analysis of Nickel Doped Iron Oxide Nanomaterials.

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Abstract:- Iron oxide has been the interest of many research activity because of its easily availability and chemically and thermodynamically stability in nature. There were numerous applications of different phases of iron oxide in various fields of nano and micro devices. Nanocomposites of various magnetic elements or metals are further being of great significance because of their various useful properties like the large surface area to volume ratio, porosity, stability and permeability. Because of these useful properties, nanocomposites materials have been the source of discovery of spectacular new invention. In the present research paper, nanoparticles of nickel doped iron oxide were prepared through chemical co-precipitation method and prepared sample and calcined at 600 °C temperature with time variation of 3hrs and 6hrs. X-ray diffraction characterization technique was used to study the structural properties of iron oxide nanostructure materials. Maud software was used to obtain the quantitative analysis report of the prepared sample which was calcined for 3h and 6h to confirm the structural properties. The crystallite size of the sample was estimated with help of Debye Scherrer formula, modified Scherrer equation and Williamson-Hall methodology.

Keywords- Nanocomposites, crystallite size, quantitative analysis, chemical precipitation.

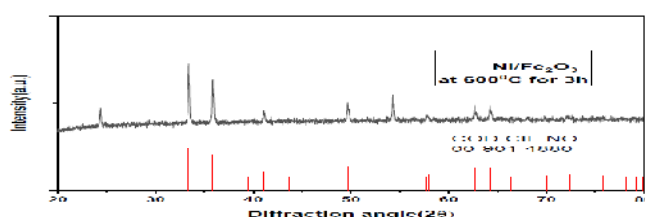
INTRODUCTION:- Iron is most commonly found in nature in the form of oxides like hematite, maghemite, magnetite etc. these oxides with their size in the nano metric range (1-100nm) exhibit unique magnetic properties which are very useful in numerous field from industry to medical sciences. In the present time, there are lot of physical and chemical route to prepare iron and their oxide nanomaterials. When the size of iron oxide in the nano range the magnetic properties can be changed deliberately which results in the many practical application in research area. There are main four polymorph of iron oxide which was named as α -Fe₂O₃, β -Fe₂O₃, γ -Fe₂O₃ and ϵ -Fe₂O₃[1]. But the presence of Intrinsic defect in the lattice site of magnetic nanomaterial of Fe₂O₃ cause the low photocatalytic efficiency. Due to this the value of the conduction band edge is below the reversible potential of the hydrogen atom. In comparison to high penetration depth of other metal oxide iron oxide nanoparticles has low conductivity and very small value of diffusion length. Photocurrent induced in metal oxide (Fe₂O₃) is decreased due to recombination of charge carriers. To remove all these drawbacks of magnetic nanomaterials, incorporation of hetero-atom approach has been used thereof. Due to doping of heteroatom in hematite the rate of recombination of charge carriers is hindered and whereas speed of charge transfer process is increased. Among other technique, doping method is superior method to overcome the problem of low conductivity present in the magnetic nanoparticles [2]. Optical, magnetic and thermal properties of metal oxide nanomaterials are basic cause to use them in several useful applications like optoelectronic devices, energy storage devices, gas sensors etc. But all of these properties have dependency on the structure parameter of the materials like grain size degree of crystallinity and morphology of the sample. Enhanced properties are obtained by using transition metals like nickel, cobalt, copper and chromium as dopant materials in pure

Fe_2O_3 [3-4]. Doped iron oxide nanoparticles are extensively studied due to their application in wide range of technologies like high density magnetic data storage, magnetic fluids, microwave devices, electrical generators, telecommunication equipment, gas sensors, Nano medicines, drugs delivery and in other biomedical applications. In recent years iron based nanocomposites have been prepared because of their size dependent electrical, optical and chemical properties. The Dopant nickel is ferromagnetic in nature and having high magnetic moment. Some theoretical research also supports the prospect of producing ferromagnetism in nickel based ferromagnetic semiconductors. Hence, it is clear that Ni can exhibit considerable effect in the magnetic properties of α - Fe_2O_3 nanoparticles. X-ray diffraction practice is very suitable non-destructive technique to categorize the structure of the resulted nanomaterial. Crystallite or grain size and identification of the phase of the powder sample can easily derived by X-ray diffraction methodology [5-6]. The pattern obtained from the diffractometer for every phase in the sample is as distinctive and known to have fingerprint of doped sample. Even phases with same chemical structure can have drastically change d diffraction pattern. In the present research work, the structural characterization of the sample was done by using XRD diffractometer and further confirmation of various structural parameters was get quantitative refinement of the sample calcined at 600°C for 3hs and 6hrs.

Synthesis mechanism of nanoparticle :-Chemical co-precipitation route was used for preparation of nanomaterial of desired sample nanomaterial. Appropriate weight of $\text{FeCl}_3 \cdot 6\text{H}_2\text{O}$ and $\text{Ni}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ was dissolved in 100ml of de-ionized water. Magnetic stirring applied to mix the ferrous chloride and nickel nitrate in distilled water so that their clear solution obtained. For precipitation reaction take place, ammonia solution titrated in the solution with continuously stirring. The pH of the medium attained the value between 8 to 9. The resulted precipitate was aged by placing it in microwave at 250°C for half an hour. The prepared pattern is grinded via the use of agate motor and pestle and it became further calcined at 600°C in furnace with time variation.

Results and Discussion

Structural characterization :-The prepared sample of nickel doped iron oxide calcined at 600°C for 3h (Sample A) showed that peak of highest intensity peak was situated at position of 33.371° with FWHM of value 0.234. The sample with calcination temperature 600°C for 6h (Sample B) had a peak of 33.287° with highest intensity having FWHM 0.234 value. There is slightly change in highly intensity peak position with change in duration of the calcination process which means there is change in the phase of the sample with change in time duration. The crystal structure of sample A is Trigonal with hexagonal axes and lattice parameter are $a=b=5.0143$, $c=13.6733\text{\AA}$ and $\alpha=\beta=90^\circ$ with $\gamma=120^\circ$ while sample B have Trigonal structure with Rhombohedral axes and structural parameter are $a=5.4200\text{\AA}$ and $\alpha=55.28^\circ$. The crystallite size of both samples is determined using Debye Scherrer formula. The crystallite or grain size of nickel doped iron oxide is determined from Scherrer equation: $D = (k\lambda)/(\beta \cos\theta)$, where D is crystalline size in nanometres, k is Scherrer constant equal to 0.94, λ is wavelength of incident radiation (0.15406nm for CuK_α), β is the whole peak width at half of- maximum in radians and θ is the Bragg diffraction angle in degree.



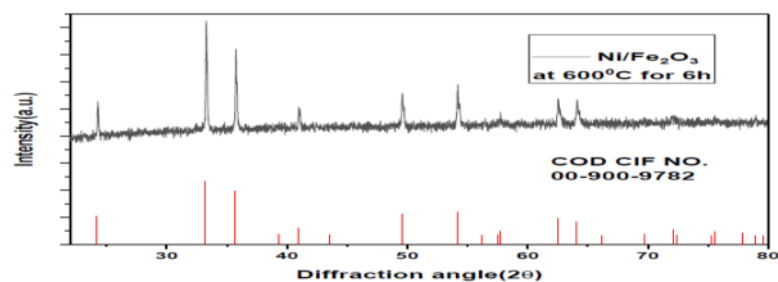


Fig.1 The XRD Spectrum of nickel doped iron oxide at different calcination temperature duration.

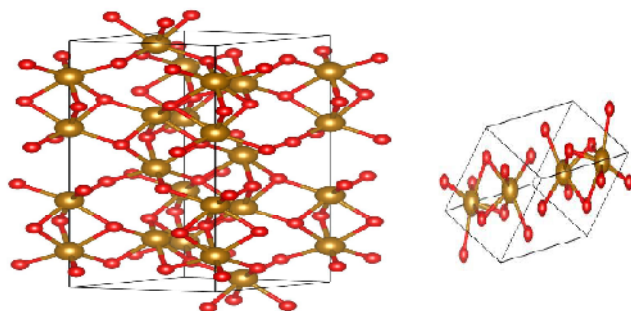


Fig.2 The crystal structure of nickel doped iron oxide at different calcination temperature duration.

Table1. Comparison of 2θ , d-spacing and miller indices of nickel doped iron oxide calcined for 3hrs.

2θ	d-spacing	Miller indices
24.363	3.650	1 0 -2
33.371	2.683	1 0 4
35.844	2.503	2 -1 0
41.075	2.196	2 -1 3
49.664	1.834	2 0 -4
54.277	1.689	2 -1 6
57.786	1.594	3 -1 -2
62.632	1.482	3 -1 4
64.220	1.449	3 0 0

Table1. Comparison of 2θ , d-spacing and miller indices of nickel doped iron oxide calcined for 6hrs.

2θ	d-spacing	Miller indices
24.280	3.663	1 1 0
33.287	2.689	2 1 1

35.760	2.509	1 0 -1
40.991	2.200	2 1 0
49.581	1.837	2 2 0
54.176	1.692	3 2 1
57.752	1.595	3 3 2
62.549	1.484	3 1 0
64.119	1.451	2 -1 -1

Quantitative analysis :- The quantitative analysis of the prepared sample was done with help of MAUD software and it is shown in Fig.2. The report of the sample calcined at 600 °C for 3hrs and 6hrs is given below which confirm the two phases hematite and Nickel ferrite present in sample. The refined structural parameter for sample A of hematite phase $a = 5.0388$ and $c = 13.758197 \text{ \AA}$ and nickel ferrite phase has lattice parameter $a = 8.36502 \text{ \AA}$ and for sample B are $a = 5.430 \text{ \AA}$ of hematite and $a = 8.356 \text{ \AA}$ for nickel ferrite.

SAMPLE A

sig= 1.9881088

Rwp (%) = 4.629764

Rb (%) = 3.650721

Rexp (%) = 2.3287277

Hematite , weight %: 98.55021

NiFe₂O₄ , weight %: 1.4497914

SAMPLE B

sig= 1.4039229

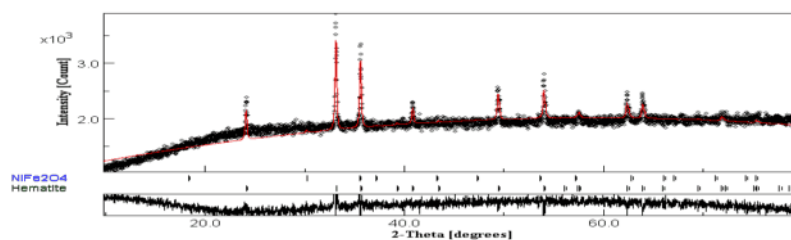
Rwp (%) = 3.2639759

Rb (%) = 2.531819

Rexp (%) = 2.3248966

NiFe₂O₄ , weight %: 0.74462944

Hematite , weight %: 99.25537



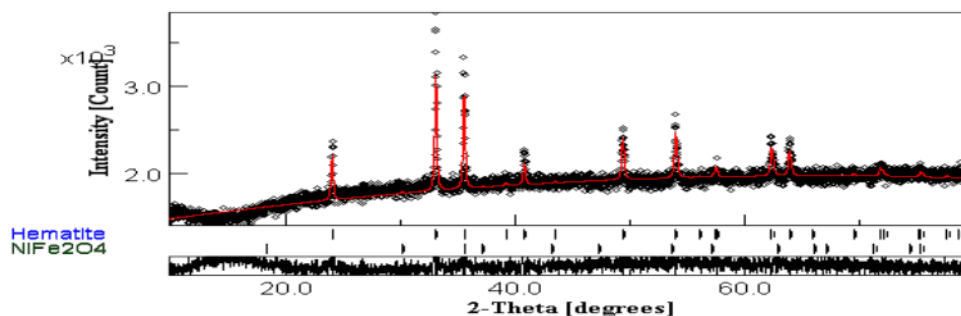


Table3.Crystallite size of iron nanoparticles calcined at 600 °C with varies time duration compared with pure iron oxide.

SAMPLE A	37.017nm
SAMPLE B	37.009nm
PURE IRON OXIDE	43.08nm

Conclusion:-The present research work explore the synthesise of nickel doped hematite nanomaterials by using microwave assisted chemical co-precipitation route for varies calcination duration at fixed temperature of 600°C. the XRD results of powder sample exhibit that particles are crystalline in nature and the grain size of samples estimated by Debye formula. Quantitative analysis confirms the two phases in the prepared doped sample. The analysis of other factors such as miller indices, peak position, refined lattice parameters and interplanar spacing were explored in the present research work. It was investigated that grain size decreases due to doping in pure iron oxide at same calcination temperature. This decending behaviour might be due to the incorporation of nickel ion in the crystallite site of iron oxide by replacing Fe^{3+} by Ni^{2+} with different bond energies. In the doped nanomaterials with change in calcination duration the is very small change in the crystallite size but there is change in the crystal structure from Trigonal with hexagonal axes to Trigonal structure with Rhombohedral axes.

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A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING SUBSTANCE ABUSE AMONG ADOLESCENT AT THE SELECTED NURSING COLLEGE OF MUMBAI

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ABSTRACT

“Drugs take you to hell disguised as heaven”

-DONALD LYNN

“The cause of worldwide consumption of drugs lies not in the taste or in any pleasure, Recreation or mirth, they afford but simply in man’s need to hide from himself the demands of conscience” Substance abuse is a social matter of not about a single person but the entire world. The use of drugs has its Icon lustier and history, which varies from country to country. The problem of a substance abuse is growing at an explosive rate and just little over decade it has spread its malevolent tentacles to almost every part of globe surrounding almost all banners of race caste creed, religion, sex, educational status, economic strata et c. Considering the problem of drug abuse India especially in adolescent and youth. There is significant increase in drug abuse rate and its necessity to have local information about this problem. The Aim of the study is to evaluate the effectiveness of structured teaching program on substance abuse among adolescent is selected nursing college. Adolescents give many reasons for using drug to experiment, to get high, to have fun, to understand more about life adolescent, and may also use drugs to cope with feeling of Worthlessness or loneliness or to avoid uncomfortable feelings

MATERIALS AND METHODS

This is: quantitative approach, one group pretest and posttest design is used for study.

Sample was 30nursing students. Non probability convenient Sampling techniques used. Data analysis is done by using descriptive and inferential analysis.

CONCLUSION

The findings arrived at the conclusion of this study was that the student had varying degree of knowledge on the different aspects of substance abuse. There is a need to provide a more detail information regarding prevention, complication and rehabilitation related to drug abuse.

Key words: Substance abuse, Adolescent, Structured Teaching Program, Knowledge.

INTRODUCTION

“The cause of worldwide consumption of drugs lie s not in the taste or in any pleasure, Recreation or mirth, they afford but simply in man’s need to hide from himself the demands of conscience” Substance abuse is a social matter of not about a single person but the entire world. The use of drugs has its Icon lustierand history, which varies from country to country. Substance abuse is one of the leading problems among adults in Mumbai. Its incidents have been steadily raising and it will consider one of the major factors of social problems causing death and other related problems in the coming decades. Substance abuse should primarily focus on adolescents because they are the next citizens of country. All substance even has experimental use, puts adolescents at risk of short -term problems, such as accidents, fights, unwise or unwanted sexual activity, and overdose, et c. Adolescents are vulnerable to the

effects of substance use and are at increased risk of developing long-term consequences, such as mental health disorder, underachievement's in school, and a substance use disorder. In modern western society, substance use is an easy way for adolescents to satisfy the normal developmental need to take risk and seek thrill. Thus it is important to know about substance abuse prevention and spread its preventive measures among adolescents. Before implementing and teaching measures it is essential to assess the knowledge awareness of the adolescents. The investigator thus decide to conduct a study on knowledge of substance abuse, causes and its prevention and rehabilitation regarding adolescents of selected nursing college of Mumbai. The problem of a substance abuse is growing at an explosive rate and just little over decade it has spread its malevolent tentacles to almost every part of globe surrounding almost all banners of race caste creed, religion, sex, educational status, economic strata etc. Substance abuse and dependence crosses all lines of race culture education and socioeconomic status, leaving no group untouched by its devastating effect. Substance abuse is an enormous public health problem with far ranging effects through society. It is considered an important factor in wide variety of social problem affecting rate of crime, domestic violence, sexual transmitted diseases (including HIV/AIDS), unemployment, homelessness teen pregnancy and failure in school. Substance abuse among adolescents has become a global challenge and also an important public health concern and for the past two decades. There has been a dramatic increase in the demand for interventions to address the substance abuse problem. The demand has level to development of multiple primary, secondary and tertiary substance abuse prevention programmes. Adolescents give many reasons for using drug to experiment, to get high, to have fun, to understand more about life adolescent, and may also use drugs to cope with feeling of Worthlessness or loneliness or to avoid uncomfortable feelings

DRUG ABUSE IN INDIA

June 26 is celebrated as international day against drug abuse & illicit trafficking every year. World statistic on drug scenario is taken into account with a turnover of around \$ 500 billion. It is the 3rd largest business in the world next to petroleum and arms trade. About 270 million people all over the world consume one drug over other. Drug addiction causes immense human distress and the illegal product and distribution of drug have spanker crime and violence worldwide. Today there is no part of world that is free from course of drug trafficking, drug addiction. Millions of drug addicts all over the world are leading measurable life between life & death. Indians are still among the world's lowest consumer of alcohol.

PROBLEM STATEMENT

“A study to assess the effectiveness of structured teaching programme on knowledge regarding substance abuse among adolescent of selected nursing college, Mumbai”

OBJECTIVES

- 1) To assess the prior level of knowledge regarding substance abuse among adolescent in selected nursing college
- 2) To evaluate the effectiveness of structured teaching program on substance abuse among adolescent in selected nursing college
- 3) To find association between knowledge scores of adolescent about substance abuse with their selected demographic variables.

HYPOTHESIS

H0-Null Hypothesis : There will be no significant difference between mean knowledge scores of the participants.

H1 -Alternate hypothesis: - There will be significant difference on the level of knowledge regarding problem of substance abuse among nursing college students before and after structured teaching pattern.

H2 -Alternate hypothesis : There will be no significant association between the knowledge scores regarding substance abuse and with their selected demographic variables.

LIMITATIONS

- 1) The study can be limited to sample size of 30 students of first year basic Bsc Nursing.
- 2) The study is limited to student who will be able to read and understand English language.

REVIEW OF LITERATURE

- 1) Review of literature related to concept and definition of substance abuse.
- 2) Review of literature on harmful impact of substance abuse.
- 3) Review of literature related to problems and issues of substance abuse.
- 4) Review of literature related to addiction reports of various agencies.

RESEARCH METHODOLOGY

1. **Research approach:** quantitative approach.
2. **Research design:** one group pretest and posttest design is used for study.
3. **Setting of the study:** Students of college of nursing in Mumbai.
4. **Population:** 19-22 years adolescent nursing students from selected nursing college.
5. **Sample:** Nursing student from selected nursing college of metropolitan city Mumbai.
6. **Sample size:** 30 nursing students of 1st year basic B.Sc. nursing.
7. **Sample techniques:** Non probability convenient sampling criteria.

RESULTS AND INTERPRETATION

TABLE NO 1

I - COMPARISON OF MEAN SCORE OF PRE INTERVENTION AND POST INTERVENTION OF KNOWLEDGE OF ADOLESCENTS RELATED TO SUBSTANCE ABUSE.

SR NO	KNOWLEDGE SCORES	MEAN SCORE	SD	SEMD	"t" VALUE	LOS
1.	PRE INTERVENTION TEST	11.63	2.31	0.42	13.56	0.001
2.	POST INTERVENTION TEST	19.33	2.20	0.40		

From the mean score it is seen that there is significant differences between the pre-test and post-test scores depicted by paired t-test which depicts that null hypothesis is rejected and alternate hypothesis is accepted. Which also depicts that there is considerable difference between the scores of pretest and post test which suggest that the research study has proven to be highly effective.

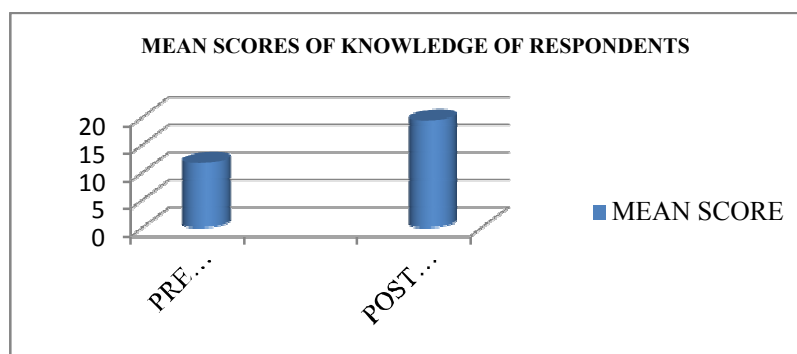


FIGURE NO 19-COMPARISON OF MEAN SCORE OF PRE -INTERVENTION AND POST INTERVENTION OF KNOWLEDGE OF ADOLESCENTS RELATED TO SUBSTANCE ABUSE.

TABLE NO .13. ASSOCIATION OF KNOWLEDGE SCORES WITH SELECTED DEMOGRAPHIC VARIABLES – FAMILY INCOME

B) FAMILY INCOME

FAMILY INCOME	MEAN	N	STD DEVIATION
A	144.6429	2	98.48987
B	68.7500	2	26.51650
C	78.7879	6	26.13801
D	67.6459	20	56.91945
TOTAL	75.0810	30	54.55839

ANOVA RESULTS

F-VALUE = 1.259

P VALUE = 0.309 NS

Thus mean change in the scores at posttest is not dependent on family income. From the above table it is depicted that the increase in knowledge scores is not dependent on family income of the respondents. Hence there is no association between scores of respondents with the selected demographic variables. Thus the scores are not dependent on family income. as pass on to other for early prevention of further complications of substance abuse.

MAJOR FINDINGS OF THE STUDY

SECTION - I

Age: from the above tabulated data it is evident that majority i.e.83.3 percent students (25)were in the age group of 18 -20years,13.3percent(4) in the age group of 21 -22 years,3.4percent(1)in the age group of 23 -24years,0percent (0) in the age group of 25 -26years.

Gender: from the above tabulated data it is evident that majority of samples were malei.e.53.3percent (16), female were 46.7percent (14).

Fathers occupation: from the above tabulated data it is evident that majority of fathers occupation were service i.e.60percent (18), any others 26.66percent (8), self - employed 10percent (3), retired3.4percent (1).

Type of family: from the above tabulated data it is evident that majority belongs to joint i.e. 50percent (15), nuclear 46.66percent (14), single parent 3.4percent (1)

Family income per month: from the above tabulated data it is evident that majority belongs to 20,000and above i.e. 66.66percent (20), 15,000 -20,000 20percent (6), 10,000 -15,000 6.66percent (2), below10, 000 6.66percent (2).

SECTION II

A) KNOWLEDGE OF SUBSTANCE ABUSE AMONG ADULT GROUP

Among the 30 participants (86) percent (26)students are only able to respond the correct answers on substance abuse meaning in pretest .the score increased to (96)percent (27)in posttest.

(66) Percent (20) students are only able to respond correct on previous knowledge on substance abuse in pretest the score increased to (90) percent (27) in posttest.

(36) percent (11) students are only able to respond correct answers on knowledge in pretest .The score changed to (93)percent (28) in posttest.

(3) percent (1) students are only able to respond the correct answers on type of dependence substance abuse in pretest the score raised to (80) percent (24) in posttest assessment.

B-KNOWLEDGE IN RELATION TO PSYCHOLOGICAL AND PHYSIOLOGICAL EFFECTS OF DRUG ABUSE

Among the above 30 samples of students (6) percent (2) students are only able to tell the correct answers on daily reaction on substance abuse in pretest .the score changed to (80)percent(24)post test.

(33.33) percent (10) students are only able to respond to correct answers on substance abuse meaning in pretest .The score raised to (66.66)percent (20)post test.

C-KNOWLEDGE RELATED TO CONSUMPTION OF TYPES OF VARIOUS DRUGS USED FOR SUBSTANCE ABUSE.

From the above 30 samples (90) percent (27) students are only able to tell the correct answers on types of substance abuse in pretest .the score changed to (99)percent (29)post test.

The above table shows that (43) percent (13) students are only able to tell the correct answers on some other substance abuse used by adults in pretest .the score changed to (83)percent (25)post test.

D-KNOWLEDGE RELATED TO CAUSES OF SUBSTANCE ABUSE AMONG ADULTS

Among the 30 samples of students (80) percent (24) students are only able to respond correct answers on causes of substance abuse in pretest .the score increased to (86)percent (26)posttest.

(56) percent (17) students are only able to respond correct answers on psychological responsible factor of substance abuse in pretest .the score raised to (73)percent (22)posttest

.(70) percent (21) students are only able to tell the correct answers on family factors for substance abuse in pretest .the score changed to (80)percent (24)post test.

(16) percent (05) students are only able to tell the correct answers on medical consequence of long term consumption of injectable drugs in pretest .the score changed to (53)percent (16)post test.

E-KNOWLEDGE RELATED TO SIGNS AND SYMPTOMS OF SUBSTANCE ABUSE

Among the 30 samples of students (56) percent (17) students are only able respond correct answers on physiological symptoms of substance abuse in pretest .the score increased to (66)percent (20) posttest.

(23) Percent (7) students are only able to response correct answers on behavioral changes seen in patients during substance abuse in pretest .the score raised to (80)percent (24) posttest.

F-KNOWLEDGE RELATED TO TREATMENT MEASURE OF SUBSTANCE ABUSE ARE

From the above 30 samples (60) percent (18) students are only able to respond correct answers on the way people can assess treatment in pre test .the score raised to (80)percent (24) posttest.

(66) Percent (20) students are only able to respond correct answers on treatment of substance abuse in pretest. The score raised (66) percent (20) posttest.

(36) percent (11) students are only able to respond correct answers on detoxification process of substance abuse in pretest .the score raised to (96) percent (21) posttest.

G-THE KNOWLEDGE IN RELATION TO COMPLICATION OF SUBSTANCE ABUSE AMONG ADULTS

From the above 30 samples of students (50) percent (15) students are only able to respond correct answers on short term complication of substance abuse in pretest .the score raised to (90)percent (27) posttest.(76) percent (23) students are only able respond correct answers on long term complication of substance abuse in pretest. The score raised (90)percent (27)posttest.

H-KNOWLEDGE IN RELATION TO REHABILITATION OF ADULTS REGARDING SUBSTANCE ABUSE

From the above 30 samples of students (56) percent (17) students are only able to respond correct answers on substance abuse rehabilitation is a process in pretest .the score raised to (70)percent (21) posttest.

(6) percent (2) students are only able to tell the correct answers on program which help in substance abuse rehabilitation in pretest .the score increased to (53)percent (16)post-test.

(6) percent (2) students are only able to respond correct answers on de addiction center available in community in pretest .the score raised to (53) percent (16) posttest.

(13) percent (4) students are only able to respond correct answers on various schemes available for prevention of substance abuse in the state of Maharashtra in pretest .the score raised to (66) percent (20) posttest.

(33) percent (10) students are only able to tell the correct answers on primary focus of substance abuse in pretest .the score raised to (76) percent (23) posttest.

(50) percent (15) students are only able to respond correct answers on national research deaddiction center in Mumbai in pretest .the score increased to (96) percent (29) post-test.

CONCLUSION:-In this research the investigator has use the pre experimental research design to assess the effect of structured teaching on the knowledge regarding substance abuse among adolescent of B.Sc. nursing students of a reputed college. Analysis of overall score between pre-test and post-test by descriptive inferential statistics is done. The research will be useful among adolescent to prevent from substance abuse and they can share this knowledge with their friend's neighbors and relatives, hereafter which in turn can prevent a major societal problem affecting the young generation of today's and the future students of tomorrow.

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A study to assess the effect of Buerger Allen Exercise on peripheral vascular circulation among the patients with impaired peripheral circulation admitted in selected hospital of Metropolitan city

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Background information: Peripheral artery disease (PAD) is classically defined as a condition affecting noncardiac, nonintracranial arteries, majorly due to atherosclerosis, that leads to partial obstruction of the peripheral arteries, reducing perfusion to the tissues irrigated by these arteries. PAD is the most common disease affecting lower limb arteries and causes a reduction in arterial supply secondary to stenosis and occlusion. PAD can be asymptomatic or have symptoms such as claudication, pain, local ulcerations, and gangrene. In late stages, it can even necessitate limb amputation. There are various reasons which contribute for the PAD such as diabetes, hypertension, smoking, alcohol and tobacco. Buerger Allen Exercise is one of the intervention to stimulate the development of collateral circulation in the legs. Nurses as care provider should focus on simple aspect such as Buerger Allen Exercise which help the patients to minimize the complications. An awareness of benefits of this strategies will enable nurses to educate patients. This will help to improve disease outcome.

Research objective:

- 1- To assess existing status of peripheral circulation among the patients with impaired peripheral circulation between control and experimental group.
- 2- To assess effect of Buerger Allen exercise on peripheral circulation.
- 3- To compare the improvement in peripheral circulation between control and experimental group.

Hypothesis:-

H_0 – There will be no significant improvement in peripheral circulation after Burger Allen exercise in patients with impaired peripheral circulation admitted in selected hospital of metropolitan city.

H_1 – There will be significant improvement in peripheral circulation after Burger Allen exercise in patients with impaired peripheral circulation admitted in selected hospital of metropolitan city.

Review of Literature-

In this study, the researcher have classified the review of literature under the following headings:

Section I: Studies related to Incidence and prevalence of peripheral vascular disease.

Section II: Studies related to causes of peripheral vascular disease.

Section III: Studies related to effect of Burger Allen Exercise on impaired peripheral circulation.

Section IV: Studies related to ankle brachial index.

Methodology:-A quantitative research approach chosen. Quasi experimental with non-randomize control group design taken. Sample size was 30 experimental and 30 patients with impaired peripheral circulation taken for the study. Samples were taken by non-probability convenient sampling method. Using demographic data tool, ABI index score and modified standardized tool data were collected. Data analyzed using both descriptive and inferential statistics to describe and show the association between the variables. Permission from the hospital authorities was procured, written informed consent was obtained from the subjects and 60 subjects were assessed with the help of ABI Index and modified standardized tool prepared by researcher among them 30 were experimental group who were given Burger Allen exercise and 30 were control group. Effect of Buerger Allen Exercise assessed by using paired 't' test. Unpaired 't' test used to assess the association between post test scores of lower extremity perfusion.

Results:-Pre assessment of both experimental and control group was done. Experimental group and control group was compared to evaluate the effect of Buerger Allen Exercise. The figure shows that in experimental group pretest assessment mean value 39.13 and post-test mean value of is 27.13, after practicing the Buerger Allen Exercise shows the significant reduction in score than that of control group which was in pre assessment mean score 35.73 and post it was 30.56. The mean difference in experimental group is 12.1 and in control group it is less i. e. 5.17. The paired 't' test was done between experimental group to assess the effect of Buerger Allen Exercise by assessing the pre and post score of modified standardized tool. The paired 't' test calculated value is 16.16 is greater than that of the table value (2.05) (df n -1= 29). The unpaired 't' test was done to compare the effect of Buerger Allen Exercise between experimental and control group by assessing post score of modified standardized tool. The Unpaired 't' test calculated value is 12.88. It is greater than that of the table value (2.0017) df = 58. This shows that Buerger Allen Exercise is effective in improving lower extremity perfusion among patients with impaired peripheral circulation of experimental group. Hence the hypothesis H_1 is accepted.

This all above result is plotted in table and graph as follows.

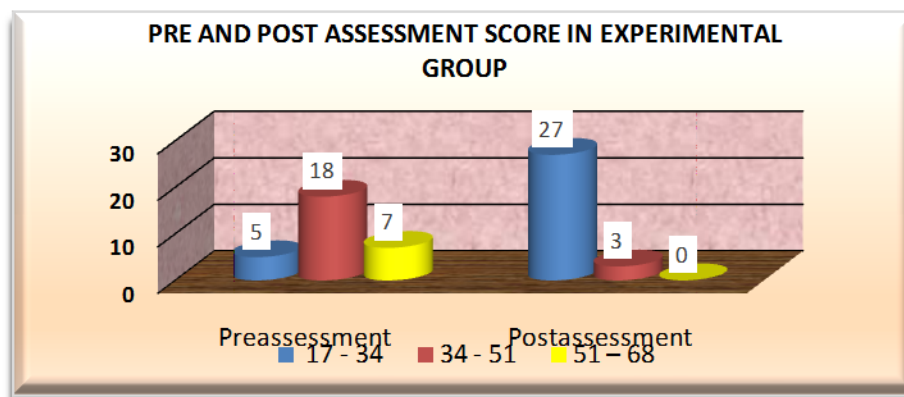
Table :Pre and post assessment score in experimental group with the help of modified standardized tool in terms of frequency and percentage

S. N.	SCORE	PERASSESSMENT n =30		POSTASSESSMENT n =30	
		Frequency	Percentage%	Frequency	Percentage%
1	0 - 17	0	0	0	0
2	17 - 34	5	16.67	27	90.00
3	34 - 51	18	60	3	10.00
4	51 - 68	7	23.33	0	0

✚ 0 - 17 - Normal-Absence of clinical features of PVD

✚ 17 - 34 - Mild clinical features of PVD

- ✚ 34 - 51 - Moderate clinical features of PVD
- ✚ 51 - 68 - Severe clinical features of PVD



The above table and figure describe the pre and post assessment score of experimental group with the help of modified standardized tool. In the above table and figure in pre assessment in moderate category (Score 34-51) samples are 18 (60%), and severe category (Score 51-68) samples are 7 (23.33%). After practicing Burger Allen Exercise post assessment shows, in mild category (Score 17-34) samples are increased i. e. 27 (90%), moderate category samples are reduced to 3 (10%) and there is no any sample in sever category in post score. These figures shows that after practicing Buerger Allen Exercise there is significant reduction in the clinical features among the patients with impaired peripheral circulation.

PART II: - Assessment of peripheral circulation with the help of ABI index.

Table: pre and post assessment score by ABI index in experimental group in terms of frequency and percentage

S. N	ABI value	PERASSESSMENT n =30				POSTASSESSMENT n =30			
		Left foot		Right foot		Left foot		Right foot	
		Frequency	Percentage	Frequency	Percentage	Frequency	Percentage	Frequency	Percentage
1	> 1	0	0	0	0	0	0	0	0
2	1.0-0.8	1	3.33	1	3.33	6	20.00	7	23.33
3	0.8-0.5	28	93.33	27	90	24	80	23	76.67
4	Less than 0.5	1	3.33	2	6.67	0	0.00	0	0

- ✚ 1 - Normal
- ✚ 1.0-0.8 - Some Arterial Disease
- ✚ 0.8-0.5 - Moderate Arterial Disease
- ✚ Less than 0.5 - Severe arterial Disease

Table: Pre and post assessment scores in experimental group with modified standardized tool

S.N.	Assessment	Mean	Standard deviation	Mean difference	Paired 't' test
1	Pre	39.23	6.40	12.1	16.16
2	Post	27.13	6.25		

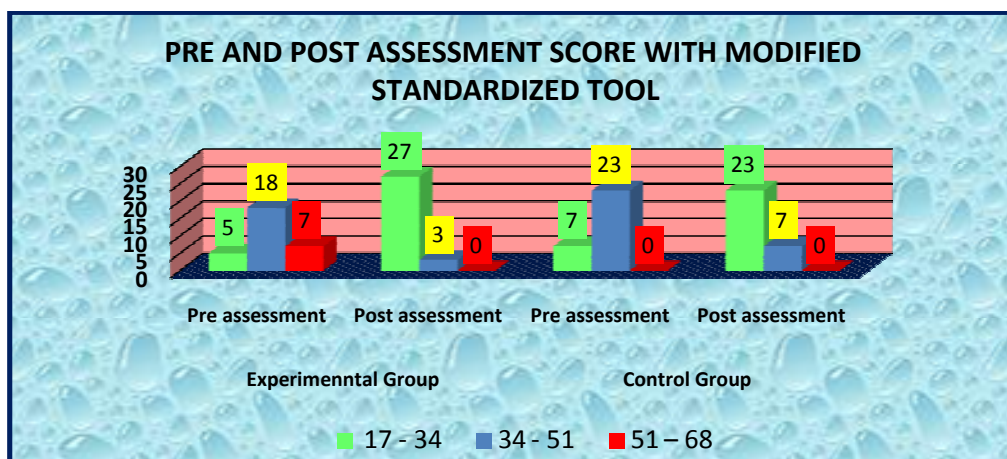
Note *statistically significant ($p < 0.05$)



The above table and figure describe the mean and standard deviation among pre and post assessment in experimental group to evaluate the effect of Buerger Allen Exercise. The figure shows that pre-test mean value is 39.23. After practicing Buerger Allen Exercise the post -test mean value 27.13 is less than pre value, it indicate the significant reduction in the score. The paired 't' test calculated value is 16.16 is greater than that of the table value (2.05) ($df\ n - 1 = 29$). This shows that Buerger Allen Exercise is effective in improving lower extremity perfusion among patients with impaired peripheral circulation. Hence the hypothesis H1 is accepted.

Table: Distribution of samples according to modified standardised tool terms of frequency and percentage

S · N ·	SCORE	EXPERIMENTAL GROUP n =30				CONTROL GROUP n =30			
		Pre Assessment		Post Assessment		Pre Assessment		Post Assessment	
		Frequency	Percentage %	Frequency	Percentage %	Frequency	Percentage %	Frequency	Percentage %
1	0 - 17	0	0	0	0	0	0	0	0
2	17 - 34	5	16.67	27	90.00	7	23.33	23	76.67
3	34 - 51	18	60	3	10.00	23	76.67	7	23.33
4	51 – 68	7	23.33	0	0	0	0	0	0

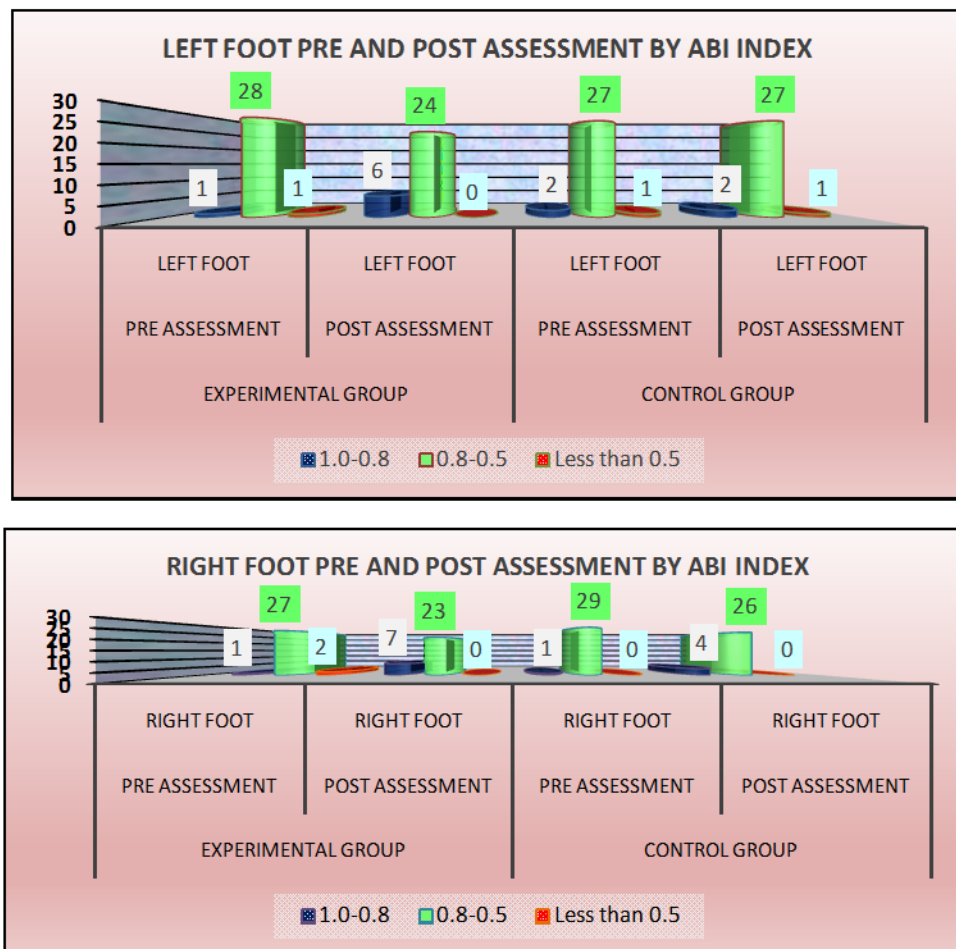


The above table and figure describe the pre and post assessment of experimental and control group with the help of modified standardized tool. In the above table among the experimental group in pre assessment, in mild category (17-34) samples are 5, moderate category (34 -51) samples are 18 and in severe category (51 - 68) samples are 7. After practicing the Berger Allen Exercise as the clinical features are reduced, the score of samples are reduced so in post assessment, the samples in the severe category was moved to moderate category and there is no sample in severe category. The samples in the moderate category are only 3 and in mild category samples are increased that is 27. But in the control group this improvement in peripheral circulation is very less comparing with the experimental group. In the pre assessment in moderate category (34-51) samples are 23 and in mild category (17 -34) samples are 7. In post assessment in mild category samples are 23 and in moderate category samples are 7. These frequency and percentage shows that the Buerger Allen Exercise is significant in the improvement of peripheral circulation.

PART II: - Assessment of peripheral circulation with the help of ABI index.

Table: distribution of patients according to abi index in terms of frequency

S. N.	ABI value	EXPERIMENTAL GROUP n =30				CONTROL GROUP n =30			
		Pre Assessment		Post Assessment		Pre Assessment		Post Assessment	
		Left foot	Right foot	Left foot	Right foot	Left foot	Right foot	Left foot	Right foot
1	> 1	0	0	0	0	0	0	0	0
2	1.0-0.8	1	1	6	7	2	1	2	4
3	0.8-0.5	28	27	24	23	27	29	28	26
4	Less than 0.5	1	2	0	0	1	0	0	0

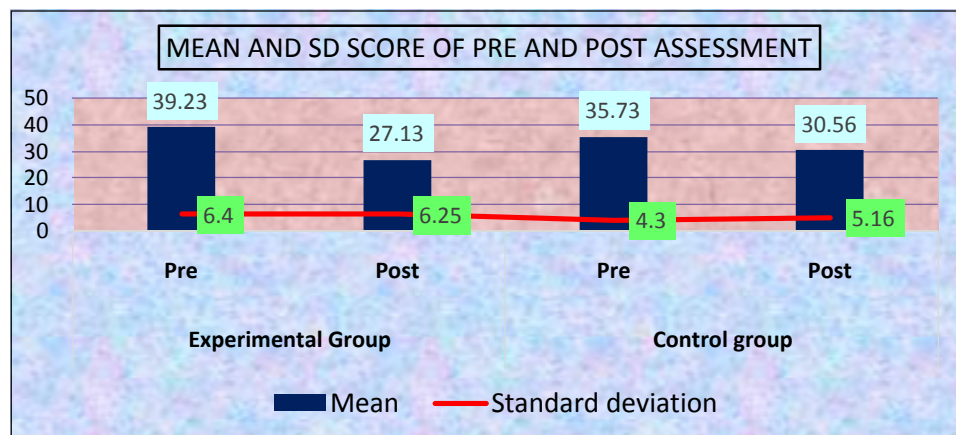


The above table and figures shows the pre and post assessment of peripheral circulation among experimental group pre assessment and control group with help of ABI index. In that among experimental group, pre assessment in moderate category (ABI 0.8-0.5) of left foot samples are 28 and of right foot samples are 27 and in severe category (ABI less than 0.5) left foot sample is 1 and right foot samples are 2. After practicing Buerger Allen Exercise these samples by improvement in peripheral circulation samples in the moderate category are reduced (ABI 0.8-0.5) left foot 24 and right foot 23, these samples are moved to mild category (ABI 1.0-0.8) left foot 6 and right foot 7. There is no sample in severe category. In the comparison, in control group there is less improvement in the peripheral circulation. These frequency shows that after Buerger Allen exercise there is significant improvement in the peripheral circulation among the patients with impaired peripheral circulation in experimental group.

Table: pre and post assessment score between experimental and control group

S.N.	Group	Assessment	Mean	Standard deviation	Mean difference	Un Paired 't' test
1	Experimental Group	Pre	39.23	6.40	12.1	12.88
		Post	27.13	6.25		
2	Control group	Pre	35.73	4.30	5.17	
		Post	30.56	5.16		

Note *statistically significant ($p < 0.05$)



The above table and figure describe the mean and standard deviation among experimental and control group by pre and post assessment to evaluate the effect of Buerger Allen Exercise with the help of modified standardized tool. The figure shows that in experimental group pretest assessment mean value 39.13 and post-test mean value of is 27.13, after practicing the Buerger Allen Exercise shows the significant reduction in score than that of control group which was in pre assessment mean score 35.73 and post it was 30.56. The mean difference in experimental group is 12.1 and in control group it is less i. e. 5.17. The Unpaired 't' test calculated value is 12.88. It is greater than that of the table value (2.0017) $df = 58$. This shows that Buerger Allen Exercise is effective in improving lower extremity perfusion among patients with impaired peripheral circulation of experimental group. Hence the hypothesis H1 is accepted.

Conclusion:- The use of Buerger Allen exercise as a complementary method is recommended as a relatively simple nursing intervention for patients with impaired peripheral circulation. As a nurse we should encourage the patient with PVD to practice the Buerger Allen Exercise. In this research it was found that by practicing Buerger Allen Exercise there is significant reduction in the symptoms associated with PVDs. Statistically significant findings were found on ABI index score and modified standardized tool.

Survey of Clusterd, Trust and Cryptography based approach in VANET security with overview of Cryptography techniques

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Abstract:-Since from last decade, there is significant works presented on Vehicular ad hoc networks (VANETs) with different objectives to optimize the Intelligent Transportation System (ITS). The high dynamics and long geographical distances lead to several QoS related challenges. The open nature of VANET communications vulnerable to different security challenges as well. The achieving security while considering the network dynamics and overhead is key research problem. In this research we are focusing on designing QoS aware security technique for VANETs. There are number of security related challenges produced by VANETs such as data reliability, non-repudiation, availability, privacy protection, access control, network overhead etc. The recent trust based methods for VANETs security shown the promising results; however they failed to achieve the trade-off between VANET QoS performance and network security in large networks. This paper presents the review of recent VANET security methods mainly under three categories such as trust-based, cryptography-based, and clustering-based methods.

Keywords:-Cryptography, Trust based, Cryptography based , Clustering based ,Vehicular Ad Hoc Networks.

Introduction:-With an immense improvement in technological innovations, we find Vehicular Communication (VC) as a solution to many problems of our modern day communication system in roads. VC involves the use of short range radios in each vehicle, which would allow various vehicles to communicate with each other which is also known as (V-V) communication and with road side infrastructure(V-I) communication. These vehicles would then form an instantiation of ad hoc networks in vehicles, popularly known as Vehicular Ad Hoc Networks (VANET) [1].

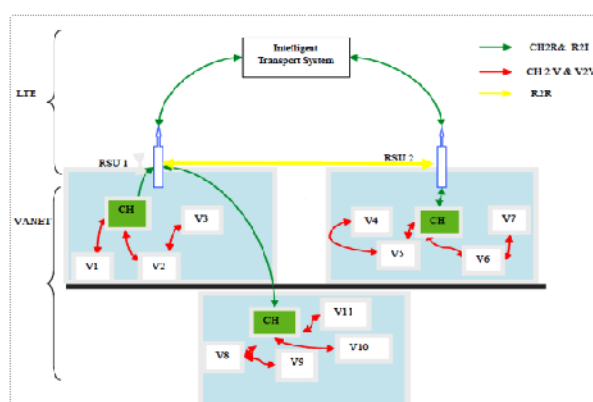


Figure 1: Example of VANET Topology and Communications

As shown in Fig. 1, the major entities of the VANET are vehicles, RSUs and OBUs, where they transmit information by using the V2V, infrastructure-to-infrastructure (I2I), and V2I. These communications are supported by the

dedicated short range communication (DSRC) [2]. This vehicular communication system is accessed by the standard IEEE 802.11p which supports the wireless access in vehicular environments (WAVE) [1]. The IEEE 802.11p defines the link layer that supports internet protocol and the WAVE short message protocol (WSMP). The WAVE standard is used for the purpose of minimizing the critical situations such as prevention or identification of occurrence of accidents. The ITS uses the WAVE protocol to broadcast information such as weather conditions, roadways maintenance and road traffic conditions [3].

Overview of Cryptography techniques :-The technique used to secure information and communication between two entities is called Cryptography. This technique is nothing but an algorithm which is used to convert messages in such a way that only intended user can understand and process it. With the help of cryptography we can achieve security goals like Privacy/Confidentiality, Authentication, Integrity, and Non-repudiation.

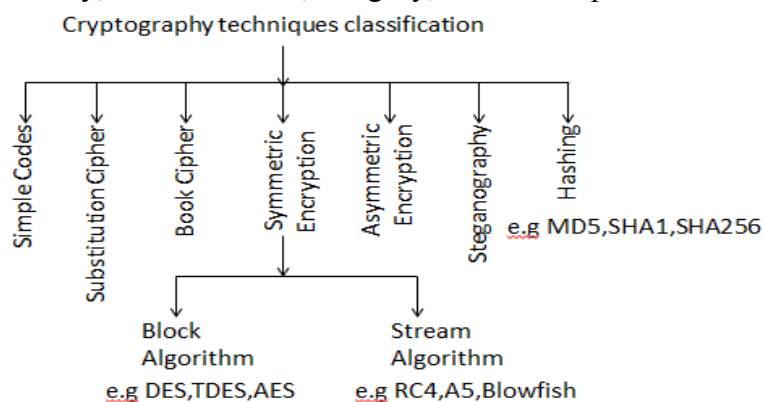


Figure 2: Cryptography techniques classification

1) Simple Codes: -In this technique we can write things in a different alphabet or even language can also be used as a code. For example, in World War II, Navajo language was used as a code that was never cracked.

2) Substitution Cipher: -The code generated by this technique can be easily cracked as we are replacing one alphabet with other. We can make it more difficult to crack by using versions like Caesar, cipher and ROT13. In morse code one letter can be replaced with sequence of long and short beeps.

3) Book Cipher: -In this instead of writing original message, user will write message which indicate page number, line number, and number of characters in the line. This technique assumes both sender and receiver having exact copy of book.

If middle person does not know which book was used, this code can be hard to crack.

4) Symmetric encryption: -With the help of one secret key we can encrypt or decrypt data.

Symmetric encryption is faster than asymmetric encryption and can be applied to big quantities of information like database encryption.

Symmetric encryption algorithms are available in two forms.

i) Block algorithm

ii) Stream algorithm

i) Block algorithm: - With the help of secret key the set of bits is encoded in electronic data blocks. Examples are DES(Data Encryption algorithm), AES

(Advanced encryption standard), Triple DES (3 DES or TDES) in which DES cipher algorithm applies 3 times to each data block.

ii) Stream algorithm:- In this algorithm, characters or numbers are combined with cipher digit stream. If someone gets a symmetric key then encryption code can be cracked. This can be solved by using Diffie-Hellman algorithm. Examples are RC4 (Rivest Cipher 4), A5 (A5/1) is used in GSM cellular telephone standard to maintain privacy in air communication, BLOWFISH is an alternative to DES encryption technique. It is licence-free and available free for all uses.

5) Asymmetric encryption: -Key exchange problem in symmetric key cryptography resolved by Asymmetric key encryption. In this technique data is encrypted by using public key and decrypted by using private key. Only receiver can decode data because he is only having that private key. Examples are AES (Advanced Encryption Standard), RSA (Rivest-Shamir-Adleman) algorithm.

6) Steganography: -It is a method which is used to hide secret data by embedding it in to image, video, audio or text file.

7) Hashing: -This hashing algorithm is used to convert data. This is different from any other encryption method as; in hashing we are not using any keys. Examples of hashing algorithms are MD5 (Message Digest), SHA1 (Secure hash algorithm), SHA256.

Related work using Cryptography based approach

In [4], Kanchan and Chaudhari introduces the Sign-Re Crypting Proxy Re-Signature scheme. Usually to maintain privacy in VANET, communication done through messages which are encrypted as well as duly signed by the sender. In SRCPR protocol, Encryption and signing steps have combined in single step called Sign Cryption. Author done simulation using AVISPA (Automated validation of Internet security protocols and application) a cryptographic protocol verifier.

In [5], Xia, Chen, Liu, Zhang Li, Xiang proposes a CP-ABE (Ciphertext-policy attribute based encryption) delegation scheme, which allows roadside units (RSUs) to perform most of the computation, for the purpose of improving the decryption efficiency of the vehicles. The scheme they proposed is efficient and effective especially to forward multimedia data with privacy preservation in VANET.

In [6], Ranbari, Jabreil Jameli presents a method based on Cryptography to detect Sybil attack in VANET. Algorithm they proposed is working in 4 phase. Most of the operations is done at certification authority so execution time of this algorithm shows low simulation. They used MATLAB tool for simulation purpose.

In [7], Tripathi and Venkaeswari propose an algorithm called MTA (Multi lingual Translation Algorithm) based on private key encryption to make secure communication and maintain privacy among trusted authority provides chip to vehicle owner and proposed algorithm is stored in that chip. Every message first written in English. Each sentence will be divided into three parts as subject+verb+object. Each part converted in English, Arabic and Sanskrit. Using Google translate/Inbuilt dictionary this conversion can be done. This translated sentence then transmitted to vehicle or RSU. At receiver this sentence will be decoded by chip on OBU. Since chip is provided by trusted authority, privacy will be maintained.

Related work using Trust based approach

In paper [8], author presented VANSec as a new security aware routing technique. In paper they have mentioned about the validity of FSAMS (Fundamental Safety alert messages) received at destination node; two techniques for verification have shown. In first technique, after checking status of source node, destination node cross verify the status of validity of FSAMS received at receiver node. In second technique, destination node compares the output collected from sender node and nearby nodes of sender. If both matches the source node considered as a true node. Author claims that the parameters Trust Computation Error (TCE), End-to-end delay, Average Link Duration, Normalized routing Overhead gives optimal performance as compared to techniques which are already existing called Logistic Trust (LT) and Trust. For secure and reliable communication in VANET, trustworthiness of data as well as node is important. In paper [9], author introduced scheme called ART (attack-resistant trust management scheme) to ensure data trust and node trust during communication. To evaluate performance of ART scheme, author takes baseline method called weighted voting method. To evaluate accuracy of ART scheme author consider Precision (P) and recall (R) parameters. When the node density varies as compared to baseline method, ART scheme achieved higher precision score. Author claims that in terms of communication overhead, proposed ART scheme is cost-effective.

Related work using Cluster based approach

In [10], author presents a cluster based routing protocol called ACR. The nodes having low hamming distance are grouped using a light weight clustering algorithm. As per author, each node will have LOCO value. By using node location, road ID and direction, LOCO value is calculated. For this calculation information collected from local RSU and GPS. LOCO value contains road ID, direction of lane and physical location of node. As node moves to other region, lane or other direction, LOCO value will be updated dynamically. As per algorithm proposed by author, every node generates LOCO and broadcast within network to form cluster. Hamming distance technology used to find similarity of LOCO. Nodes having similar LOCO will form cluster. Once cluster form, the node is elected as CH who moves in the front of all nodes among that cluster. Cluster head is responsible to broadcast road safety and traffic status within that cluster. RSU updated only when CH informs, therefore network traffic reduced compared to DSDV. To decrease ETE, ACR used intra cluster proactive routing mechanism.

In [11], author proposed three algorithms. To increase route stability and average throughput in a bidirectional segment, Cluster-Based Life-Time Routing (CBLTR) protocol is proposed. Within each cluster, the vehicle have maximum Life-Time (LT) as compared to all other vehicle is selected as CH. To increase route stability and average throughput, Intersection dynamic VANET routing (IDVR) protocol is proposed. It also reduces end-to-end delay. It is used to select optimal route. To reduce the control overhead messages, Control Overhead reduction algorithm (CORA) is proposed. To evaluate performance of these three protocols, author used SUMA traffic generator simulators and MATLAB.

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Telemedicine and Pediatric Asthma

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Abstract: - Asthma is one of the most common and costly diseases in childhood to adulthood. The program to engaging the medical health worker to ensure children are getting their medications daily basis, as well as increasing the overall awareness of asthma management. Tele health usage is on the rise day by day. Since 6 to 7 years, private insurance claim lines for services rendered via telehealth as a percentage of all medical claim lines also increased up to 35%, more than any other venue of care, Tele health programs may not be a complete solution when it comes to closing gaps in care, but it can be helpful when it comes to managing chronic conditions like asthma.

“The reasons for the benefit to children with asthma from this telehealth program may be multidimensional. A combination of the tele health services connectivity of pediatric providers to children with asthma, better medication adherence, and involvement and education of school nurses may all contribute to the success of this program.”

Keywords:- Telemedicine, asthma, management.

Asthma is one among the four most common and dear diseases in childhood. The authors attribute the success of the program to engaging the varsity nurse to make sure children are becoming their medications daily, also as increasing the general awareness of asthma management. Telemedicine also mentioned as telehealth or e -medicine is that the remote delivery of healthcare services, including exams and consultations, over the telecommunication infrastructure, Pediatric asthma maybe a major public health concern, considering its chronic nature and negative effects on quality of lifetime of affected children.

Tremendous disparities exist in pediatric asthma outcomes within the us, with children from minority, low income, and families having greater rates of poorly controlled asthma. These children often encounter significant barriers to healthcare and have risk factors that contribute to poor asthma Medicaid insured children in central urban, economically disadvantaged neighborhoods demonstrate 15 times greater healthcare utilization rates than children from more prosperous neighborhoods. Control which traditional models of healthcare haven't been ready to adequately address.

Thus, there's a requirement for effective interventions to be implemented and disseminated broadly in these communities. One solution to be at healthcare access barriers for pediatric asthma is to use technology enhanced medical aid like video based telehealth and electronic monitoring devices to deliver optimal asthma care on to the patient's school. Previous studies have demonstrated improved asthma control and self management using video based telehealth, electronic monitoring devices, and behavioral interventions separately, but no studies have combined these interventions during a Asthma is one of the fore most common and dear diseases in childhood. The authors attribute the success of the program to engaging the varsity nurse to form sure children are getting their medications daily, also as increasing the overall awareness of asthma management. Telemedicine, also mentioned as telehealth or medicine, is that there mote delivery of healthcare services, including exams and consultations, over the telecommunications infrastructure. Pediatric asthma could also be a serious public health concern, considering its chronic nature and negative effects on quality of lifetime of affected children.

Telemedicine allows healthcare providers to diagnose and treat patients without the

necessity for an in person visit. Patients can communicate with physicians from their homes by using their own personal technology or by visiting a fanatical telehealth kiosk. This programs might not be an entire solution when it involves closing gaps in care, but it is often helpful when it involves managing chronic conditions like asthma. Many children with asthma from disadvantaged areas still have uncontrolled asthma thanks to poor self management. The fore most important components of effective management include adhering to prescribed medications and attending medical appointments, both of which are significant challenges for kids with asthma. Especially, adolescents are at higher risk for non adherence and poor health outcomes as key lifelong patterns of health behaviors and self management skills are established during this developmental period. Therefore, interventions like the one tested during this study may improve long-term asthma control.

1.Interactive telemedicine/telehealth- allows physicians and patients to speak in realtime. Such sessions are often conducted within the patient's home or at a delegated medical kiosk.

2.Remote patient monitoring- also referred to as telemonitoring, allows patients to be monitored in their homes using mobile devices that collect data about temperature, blood glucose levels, vital sign or other vital signs.

3.Store-and-forward-also referred to as a synchronous telemedicine lets one healthcare provider share patient information, like lab results, with another healthcare provider. As various parties seek more efficient ways to supply care at less cost to the patient, telemedicine's role has grown. it's often a time-saving way for a consumer to ascertain and speak to a clinician for minor and non-urgent medical needs rather than getting to a medical care physician's office or emergency department. In recent years many nations passed laws that make telemedicine easier to practice and federal health regulators are also exploring ways to further grant Medicare reimbursements for telemedicine services.

Advantages of telemedicine-Some of the advantages of telemedicine for patients include:

Convenience:- Patients don't need to take time far away from work for a meeting. There's also no time period or associated expenses, like paying for gas or childcare.

Increased access: Patients in rural areas can obtain specialty services, such a psychological state treatment or post surgery follow-up, that they otherwise won't get without travelling an out sized distance for an in person visit. Similarly, patients who sleep in federally designated, underserved areas have increased access to primary, dental and mental healthcare.

Encourage healthy lifestyle choices: Telemedicine allows providers to encourage their patients' healthy lifestyle choices, like smoking cessation.

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Disadvantages of telemedicine

Some of the challenges of telemedicine include:

Cyber security: like all technology that involves electronically transmitting patient data, telemedicine systems are susceptible to hackers and breaches. Healthcare organizations remain one of the fore most important targets for online criminals and terrorists.

The startup cost of implementing telemedicine could even be especially prohibitive to rural facilities.

Licensing issues: Certain states may require providers who practice telemedicine a cross state lines have a legitimate license within the state where the patient is found

Currently, the Centers for Medicare & Medical Services are reviewing its proposal to expand telemedicine access and reimbursement within the federal Physician Fee Schedule, including by:

1. Paying clinicians for virtual checking conducted through communications technology;
2. Paying clinicians for evaluation of patient submitted photos and
3. Expanding Medicare covered telehealth services to include prolonged preventive services. Reducing emergency department visits maybe a method to lower the overall cost of care, and telehealth can help during this regard even for kids, supported the results of our placement school- based program. Tremendous disparities exist in pediatric asthma outcomes within the us, with children from minority, low-income families having greater rates of poorly controlled asthma. Medicaid-insured children in central urban, economically disadvantages neighborhoods demonstrate 15times greater healthcare utilization rates than children from more prosperous neighborhoods. These children often encounter significant

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The Study of Consistency for Distribution of Five Dimensional cosmological model in Lyra Geometry

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Abstract: In this paper, we study on 5-dimensional Kaluza-Klein cosmological model (KKCM) with negative constant deceleration parameter in a scalar tensor theory which is introduced by Sen in 1957 and it is totally based on Lyra Geometry in presence of perfect fluid. By launching structure less manifold from gauge function Lyra, proposed a modified geometry of Riemannian. Which is nothing but significant similarity to Weyl's Geometry. In Lyra geometry, we must have to use a special law of variation which is firstly introduced by Bermann in 1983 of Hubble parameter for finding the solution of the field equations for cosmological model with higher dimensions. The resultant model of the universe is an accelerating model. We have discussed the physical and kinematical properties of models corresponding to Radiation dominated universe, Zel'dovich fluid and Vacuum universe separately. Also we study its consistency for considering scale factor discuss about its Consistency, with respect to the observational quantities. Such as red shift, look-back time, proper distance, Luminosity distance, Angular diameter. In this model, we noted that $\alpha(t)$ the displacement vector behaves like cosmological constant. In the recent observations data of type Ia supernovae it is proved that, it is consistent. It is also clear that, entropy ($dS > 0$) affected by the displacement vector which leads to $\alpha < 0$. For an understanding of the evolution of the universe easily in five dimensional space time within the framework of Lyra Geometry in perfect fluid the resultant model of this work is of considerable interest and very useful.

Keywords:- Consistency, Kaluza-Klein cosmological model, Lyra Geometry.

[7.1] Introduction:- The analysis of higher dimensional theories has been received appreciable interest in the solution of Einstein equations in the context of Physics of the early universe. To unify not only Maxwell's theory of Electromagnetic but also Einstein's gravitational theory, 'Kaluza' introduced first time, the (KKT) Kaluza-Klein theory by adding fifth dimension. Besides, the idea of additional dimensions give a chance for study of higher dimensional theories, it also consist string theory. In recent years (KKT) Kaluza-Klein theory was in discussion mainly in modern physics, such as super gravity and super string theories. Many eminent researchers studied $G+1$ dimensional problem in big bang model.

Lyra, proposed a modified geometry of Riemannian by launching structure less manifold from gauge function. This shows remarkable similarity to Weyl's Geometry. From further investigation it comes out that, in 1957 Sen and in 1971 Dunn, formulated a new theory of gravitation i.e., scalar tensor theory and construct an technology of the Einstein's field equations which is depends on Lyra Geometry which may be as follows;

$$R_{mn} - \frac{1}{2} g_{mn} R + \frac{3}{2} \phi_m \phi_n - \frac{3}{4} g_{mn} \phi_l \phi^l = -8\pi T_{mn}$$

Here ϕ_m is vector of displacement,

R_{mn} is Ricci tensor with 'R' Ricci scalar

and T_{mn} is energy momentum tensor.

In this chapter, we study five dimensional (KKCM) Kaluza -Klein Cosmological Model with perfect fluid distribution in Lyra geometry. This chapter is divided in 6 sections which are as arrange.

In section [7.2], we have extracted the field equations for five dimensional model in cosmological with perfect fluid in Lyra Geometry. In section [7.3] energy conservation and entropy of the model is discussed. In section [7.4] the field equations are solved. In section [7.5] Radiating, Zeldovich and Vacuum models are studied and physical properties are also discussed and in section [7.6] we discuss its consistency by calculating various distances while section [7.7] contains conclusion.

[7.2]Solution of Field Equations :

We take, five dimensional space-time whose geometry is recount by the metric in the below form as;

$$ds^2 = R^2(dx^2 + dy^2 + dz^2) + A^2 d\phi^2 - dt^2 \quad [7.2.1]$$

Where 'A' and 'R' are functions of time (t) alone. The V co-ordinate is considered to be time like.

Einstein's field equations in general gauge for Lyra Geometry as already discussed by Sen (1957) are;

$$R_m^n - \frac{1}{2} R g_m^n + \frac{3}{2} \phi_m \phi^n - \frac{3}{2} \phi_t \phi^t g_m^n = -k T_m^n \quad [7.2.2]$$

Where ϕ_m is displacement field with the usual meaning of other symbols as in Riemannian geometry. The displacement field ϕ_m can be written as;

$$\phi_m = (0, 0, 0, 0, \alpha), \alpha \text{ is function of gauge consider value of } 8\pi G = k = 1$$

For perfect fluid distribution, Energy momentum tensor is given by;

$$T_m^n = (\rho + p)u_m u^n + p g_m^n \quad [7.2.3]$$

$$\text{together with } u_m u^m = -1. \quad [7.2.4]$$

Here, ' p ' is isotropic pressure and ' ρ ' is the energy density of the fluid and u^m is defined by $u^m = \delta_5^m$ with $m=1, 2, 3, 4, 5$. We consider the co-moving coordinate so that $u^m = (0, 0, 0, 0, -1)$.

For the universe, field equations with perfect fluid, from equation [7.2.3] we can find,

$$T_1^1 = T_2^2 = T_3^3 = T_4^4 = p, T_5^5 = -\rho$$

$$\text{And } T = 4p - \rho \quad [7.2.5]$$

Using co-moving coordinates, the Einstein field equation [7.2.2] for metric [7.2.1] with the help of equations [7.2.3] and [7.2.5] can be written as,

$$2 \frac{R_{44}}{R} + \frac{R_4^2}{R^2} + 2 \frac{R_4}{R} \frac{A_4}{A} + \frac{A_{44}}{A} + \frac{3}{4} \alpha^2 = -p \quad [7.2.6]$$

$$3 \frac{R_{44}}{R} + 3 \frac{R_4^2}{R^2} + \frac{3}{4} \alpha^2 = -p \quad [7.2.7]$$

$$3 \frac{R_4^2}{R^2} + 3 \frac{R_4 A_4}{R A} - \frac{3}{4} \alpha^2 = \rho \quad [7.2.8]$$

[7.3]The Energy Conservation Equation and Entropy:

For solving the standard model's entropy problem, it is very essential to have positive dS , for just a part of evolution of universe in the Riemannian geometry without a cosmological constant (Λ).

We know that,

$$T dS = d(\rho S^4) + p(dS^4) = 0 \quad [7.3.1]$$

Here 'S' is the entropy scale factor whose value is given by $S^4 = R^3 A$.

For general relativity, the energy conservation equation is $T_{;n}^{mn} = 0$ for metric [7.2.1] takes the form;

$$\rho_4 + (\rho + p) \left[3 \frac{R_4}{R} + \frac{A_4}{A} \right] + \frac{3}{2} \alpha \alpha_4 + \frac{3}{2} \alpha^2 \left[3 \frac{R_4}{R} + \frac{A_4}{A} \right] = 0 \quad [7.3.2]$$

$$\text{Since } T dS = \rho_4 + (\rho + p) \left[3 \frac{R_4}{R} + \frac{A_4}{A} \right] > 0, \quad [7.3.3]$$

for entropy problem.

Therefore the equations [7.3.2] and [7.3.3] lead to;

$$\frac{3}{2} \alpha \alpha_4 + \frac{3}{2} \alpha^2 \left[3 \frac{R_4}{R} + \frac{A_4}{A} \right] < 0 \text{ which implies } \alpha < 0.$$

Thus the vector of displacement $\alpha(t)$ surely effectson entropy, since for any entropy $dS > 0$ which implies $\alpha(t) < 0$. This is similar to the result concluded by Raj Bali *et al.*, (2008) .

[7.4]Solution of the Einstein Field Equations :

Theory allow us freedom for making some assumptions as we have so many unknowns R, A, p, ρ and α with few number of field equations [7.2.6] – [7.2.8] to determine them. So for finding proper solution one has to take a suitable physical and mathematical condition. With the help of special -law of variation of Hubble Parameter which is introduced by Bermann (1983), We solve the above set of field equations having condition that they yields a constant non -positive deceleration parameter model of the universe.

Now, we must have to consider deceleration parameter only with(-)tive constant cosmological model which is defined by;

$$q = - \frac{S_4 S_{44}}{S_4^2} = C \quad [7.4.1]$$

Where, 'C' is any negative constant value, so that this model is accelerating model of the universe.

$$\text{Where } S(t) = (R^3 A)^{1/4} \text{ is the throughout considered as scale factor.} \quad [7.4.2]$$

The solution of our field equation [7.4.1] yields

$$S(t) = (ct + d)^{1/(1+q)} \quad [7.4.3]$$

Where 'c' (non-zero) and 'd' are constants of integration.

The condition of expansion from this equation obtain as $1+q > 0$.

From above equations [7.2.6] and [7.2.7], we get;

$$\frac{R_{44}}{R} + 2 \frac{R_4^2}{R^2} - 2 \frac{R_4 A_4}{R A} - \frac{A_{44}}{A} = 0$$

On integrating it gives,

$$R^2 R_4 A - R^3 A_4 = D, \quad [7.4.4]$$

Where 'D' is constant of integration .

From equations [7.4.3] and [7.4.4], we obtain

$$\frac{R_4}{R} - \frac{A_4}{A} = D(ct + d)^{-4/(1+q)} \quad [7.4.5]$$

From equations [7.4.2] and [7.4.3], we get

$$3 \frac{R_4}{R} + \frac{A_4}{A} = 4 \frac{S_4}{S} = \frac{4c}{(1+q)(ct+d)} \quad [7.4.6]$$

Using equations [7.4.5] and [7.4.6], we deduce

$$4 \frac{R_4}{R} = D(ct + d)^{-4/(1+q)} + \frac{4c}{(1+q)(1+q)}$$

Integrating

$$4 \log R = D \frac{(1+q)}{c(q-3)} (ct + d)^{(q-3)/(1+q)} + \frac{4}{(1+q)} \log(ct + d) + \log C_1$$

$$R = d_1 (ct + d)^{\frac{1}{1+q}} e^{\frac{D(1+q)}{4(q-3)c} (ct + d)^{\frac{q-3}{1+q}}}$$

$$R = d_1 (ct + d)^\alpha \exp [\delta (ct + d)^\mu] \quad [7.4.7]$$

Where,

$$\alpha = \frac{1}{1+q}, \mu = \frac{q-3}{1+q} \text{ and } \delta = \frac{D(q+1)}{4\alpha(q-3)}$$

Using equations [7.4.5] and [7.4.7], we have

$$\frac{A_4}{A} = \frac{R_4}{R} - D(ct + d)^{-4\alpha}$$

$$\frac{A_4}{A} = \delta \mu c (ct + d)^{\mu-1} + \alpha c (ct + d)^{-1} + Dc (ct + d)^{-4\alpha}$$

Integrating, we have

$$\log A = \frac{\delta \mu c (ct + d)^\mu}{c\mu} + \alpha c \frac{\log(ct + d)}{c} - \frac{D(ct + d)^{1-4\alpha}}{c(1-4\alpha)}$$

$$\log A = \delta (ct + d)^\mu + \alpha \log(ct + d) - 4\delta (ct + d)^\mu$$

$$\log A = -3\delta (ct + d)^\mu + \log(ct + d)^\alpha + \log C_2$$

$$A = d_2 (ct + d)^\alpha \exp [-3\delta (ct + d)^\mu] \quad [7.4.8]$$

Where d_1 and d_2 are integrating constants, such that; $d_1^3 d_2 = 1$ and $q \neq 0$ and $\mu \neq 0$.

are integrating constants, such that; $d_1^3 d_2 = 1$ and $q \neq 0$ and $\mu \neq 0$.

Hence in Lyra manifold the geometry for the metric of the universe [7.2.1] is given by

$$ds^2 = d_1^2 (ct + d)^{2\alpha} \exp[2\delta(ct + d)^\mu] [dx^2 + dy^2 + dz^2] + d_2^2 (ct + d)^{2\alpha} \exp[-6\delta(ct + d)^\mu] d\phi^2 - dt^2 \quad [7.4.9]$$

The model within the framework of Lyra geometry with negative constant deceleration parameters [7.4.9] represents an anisotropic five dimensional Kaluza-Klein cosmological model in presence of perfect fluid of the universe. At initial position model was free from singularity. To find the explicit value of displacement field $\alpha(t)$, we consider that the fluid must holds an equation of state of the form;

$$p = \gamma\rho; \quad 0 \leq \gamma \leq 1 \quad [7.4.10]$$

Eliminating $\rho(t)$ from equations [7.2.6], [7.2.9], [7.2.8] and [7.4.10], we get

$$\frac{R_{44}}{R} + (3\gamma - 1) \frac{R_4^2}{R^2} + (3\gamma + 4) \frac{R_4 A_4}{R A} + 2 \frac{A_{44}}{A} + (1 - \gamma) \frac{3}{4} \alpha^2 = 0 \quad [7.4.11]$$

Using equations (6.4.7), (6.4.8) and (6.4.11), we obtain

$$\alpha^2(t) = \frac{N}{(ct+d)^2} - \frac{D^2}{2} \frac{1}{(ct+d)^{8\alpha}} \quad [7.4.12]$$

$$\text{Where, } N = 4c^2 \frac{(1-q+2\gamma)}{(\gamma-1)(1+q)^2}$$

From equation [7.4.12], it is observed that the displacement vector $\alpha^2(t)$ tends to infinity as time t tends towards the ratio $(-\frac{d}{c})$.

Equation [7.4.12] shows that $\alpha^2 < 0$ for all times as $\gamma - 1$ is negative and is a decreasing function of cosmic time t , in Einstein's gravitational theory it is characteristically similar to cosmological constant (Λ). Hence $\alpha(t)$ acts as cosmological constant without any loss of generality of character as Λ term. This result is consistent with observations data discussed by [Granavich et al., 1998a, 1998b, Perl mutter et al., 1997, Riess et al., 1998, Schmidt et al., 1998].

[7.5] Various Physical Models in the Universe:

Here we have to be discussing three interesting and different physical models in the universe.

Case I) Radiation Dominated Universe:

In this model, we consider $p = \rho/3$ as the equation of state. This model shows not only the matter distribution due to disordered radiation but also represents the universe having most of the energy density in the form of radiation, so that, it called radiation dominated universe. Substituting $p = \rho/3$, the relation between pressure ' p ' and energy density ' ρ ' in the universe are as follows'

From equation [7.2.8], we have;

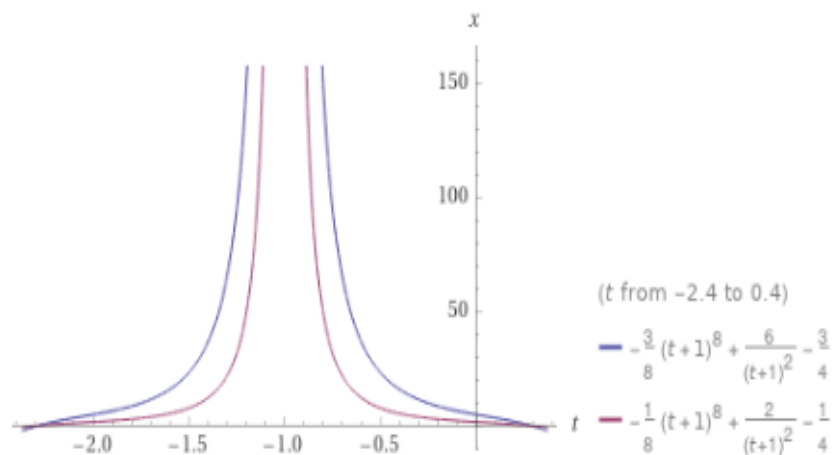
$$\rho = 3 \frac{R_4^2}{R^2} + 3 \frac{R_4 A_4}{R A} - \frac{3}{4} \alpha^2$$

$$\begin{aligned}
&= \{3\delta^2\mu^2c^2(ct+d)^{2\mu-2} + 6\delta\mu\beta c^2(ct+d)^{\mu-2} \\
&\quad + 3\beta^2c^2(ct+d)^{-2}\} \left\{ -9\delta^2\mu^2c^2(ct+d)^{2\mu-2} - 6\delta\mu\beta c^2(ct+d)^{\mu-2} \right. \\
&\quad \left. + 3\beta^2c^2(ct+d)^{-2} - \frac{3}{4}\alpha^2 \right\} \\
&= -6\delta^2\mu^2c^2(ct+d)^{2\mu-2} + 6\beta^2c^2(ct+d)^{-2} - \frac{3}{4}\alpha^2 \\
&= -6\frac{D^2(1+q)^2}{16c^2(q-3)^2} \frac{(q-3)^2}{(1+q)^2} c^2(ct+d)^{\frac{2(q-3)}{q+1}-2} + 6\beta^2c^2(ct+d)^{-2} - \frac{3}{4}\alpha^2 \\
\rho &= 6\beta^2c^2(ct+d)^{-2} - \frac{3D^2}{8}(ct+d)^{\frac{-8}{q+1}} - \frac{3}{4}\alpha^2 \quad [7.5.1]
\end{aligned}$$

But, as $p = \rho/3$

$$p = 2\beta^2c^2(ct+d)^{-2} - \frac{D^2}{8}(ct+d)^{\frac{-8}{q+1}} - \frac{1}{4}\alpha^2$$

Where α^2 is given by equation [7.4.12].



Graph [7.5.1]: plot of energy density and cosmic pressure versus time (t) for Radiation Dominated Universe.

The scale factor $S(t)$ from equation [7.4.3] is

$$S = (ct + d)^\beta$$

The Expansion Velocity S_4 is given by;

$$\begin{aligned}
S_4 &= c\beta(ct+d)^{\beta-1} \\
&= c\beta(ct+d)^{\frac{1}{1+q}-1} \\
&= c\beta(ct+d)^{-q\beta}
\end{aligned}$$

The physical quantities for the model [7.4.9] which are important in radiating cosmological model properly are as; volume V , Hubble parameter H , expansion scalar θ and shear scalar σ which are given as follows

Volume of the universe:

$$V = S^4$$

$$= (ct + d)^{4\alpha}$$

Hubble Parameter:

$$H = \frac{S_4}{S} = \frac{c\beta}{ct + d}$$

The expansion scalar (θ) and shear scalar (σ)(Ray Chaudhari 1955)

$$\begin{aligned}\theta &= U^m_{;m} \\ &= \frac{3R_4}{R} + \frac{A_4}{A} = 4 \frac{S_4}{S} \\ &= 4 \frac{c\beta}{ct + d}\end{aligned}$$

Whereas,

$$\begin{aligned}\sigma^2 &= \frac{2}{3} \left[\frac{R_4}{R} - \frac{A_4}{A} \right]^2 \\ &= \frac{2}{3} D^2 [ct + d]^{-8\alpha}\end{aligned}$$

As $t \rightarrow -d/c$, the expansion velocity (S_4) diverges. Hence, the universe expanded infinitely as time moves towards its critical point. Here it is conclude that, for model[7.4.9] the fluid has nonzero expansion scalar ($\theta \neq 0$). The (physical) quantities like Hubble parameter (H), expansion scalar (θ), and the shear scalar (σ) all diverges as $t \rightarrow -d/c$. With an infinite rate of expansion universe started to expand with measuring anisotropy. Which resembles to Big Bang Model of the universe. As time increases and tends to infinity, Simultaneously expansion and volume also increases and become large.

So, as time increases the rate of expansion of the universe decreases whereas, the pressure (p) and energy density (ρ) remain unchanged. All these physical quantities and its significances are remain finite in the finite region. Also it is noted that the scalar tends to zero faster than the expansion.

Since,

$$\begin{aligned}\int_{t_0}^t \frac{dt}{S(t)} &= \int_{t_0}^t \frac{dt}{(ct + d)^{\frac{1}{1+q}}} \\ &= \left(\frac{1+q}{cq} (ct + d)^{\frac{q}{1+q}} \right)_{t_0}^t \\ &= \frac{1+q}{cq} ((ct + d)^{q\beta})_{t_0}^t\end{aligned}$$

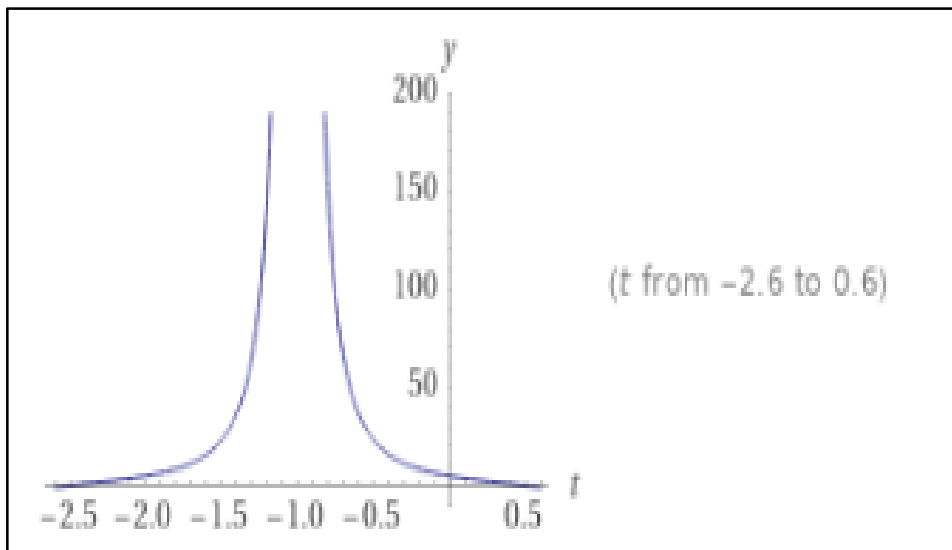
Which is convergent integral, so the particle horizon exists for model [7.4.9].

Case II) Zel'dovich fluid model or stiff fluid model:

The model, in which the equation of state $p = \rho$ having $\gamma = 1$, represents Zel'dovich fluid distribution. This kind of equation of state is usually used in (GR) general relativity for solving stellar with cosmological models for (UDM) ultra dense matter (Zel'dovich 1962). Whereas, the pressure (p) and energy density (ρ) of the fluid in Lyra geometry is given by,

$$\rho = p = 6c^2\beta^2(ct + d)^{-2} - \frac{3}{8}D^2(ct + d)^{-8\beta} - \frac{3}{4}\alpha^2(t)$$

Where $\alpha^2(t)$ is given by equation [7.4.12]



Graph [7.5.2]: plot of energy density and cosmic pressure versus time (t) for Zel'dovich fluid model or stiff fluid model.

The scale factor $S(t)$ and expansion velocity $S_4(t)$ of the model are given by;

$$S = (ct + d)^\beta$$

$$\text{And } S_4 = c\beta(ct + d)^{-\beta}$$

We can observe that the expansion velocity S_4 diverges as cosmic time $t \rightarrow \frac{-d}{c}$. Therefore, as we approach initially at $\left(\frac{-d}{c}\right)$, then the expansion of the universe is infinite.

The Hubble parameter (H) is given by;

$$H = \frac{S_4}{S} = \frac{a\beta}{ct + d}$$

It is observed that, for large value of t the parametric quantity (H) vanishes.

The other physical parameters can be expressed, such as spatial volume expansion scalar and shear scalar are as follows;

$$V = (ct + d)^{4\beta}$$

$$\theta = \frac{4\beta}{(ct + d)}$$

$$\sigma = \frac{\sqrt{2}D}{\sqrt{3}D(ct + d)^{-4\beta}}$$

From the above physical quantities for model [7.4.9], it is very clear that we get zero spatial volume for this model whereas, the expansion scalar tends to infinity as

$t \rightarrow \frac{-d}{c}$. This indicates that, the rate of expansion is infinite in the evolution of the universe at starting position with zero volume at cosmic time $t \rightarrow \frac{-d}{c}$. So we can say that, with increasing in time (t) the spatial volume increases, still the rate of expansion scalar decreases. At largest time (t = infinity), the spatial volume (V) also tends infinitely large value, while shear scalar becomes zero by stopping its expansion. The shear scalar σ tends to infinity when time tends to infinity. Since the $\lim_{t \rightarrow \infty} \frac{\sigma}{\theta}$ approaches zero value with condition $(1 - 4\beta) < 0$. This means that, for large value of t, the model approaches isotropy.

Case iii) The Vacuum model ($p = \rho = 0$):

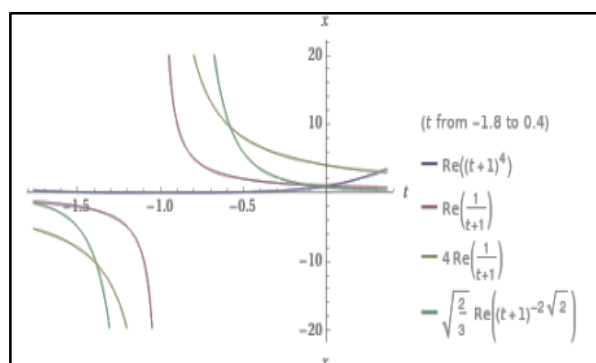
We have vacuum solutions with ($p = \rho = 0$) this condition. In this model the expansion velocity (V) and the other physical parametric quantities takes the explicit form :

$$S_4 = \frac{c\beta}{(ct + d)^{4\beta}}$$

$$V = (ct + d)^{4\beta}$$

$$\theta = \frac{4c\beta}{ct + d}$$

$$\sigma = \frac{\sqrt{2}D}{\sqrt{3}(ct + d)^{4\beta}}$$



Graph [7.5.3]: plot of energy density and cosmic pressure versus time (t) for the Vacuum model.

It is found expansion velocity S_4 diverges as $t \rightarrow \frac{-d}{c}$. Therefore, as we approaches the initial at $\left(\frac{-d}{c}\right)$, the expansion that the of the universe spatial volume (V) is zero and expansion scalar (θ) occurs with singularity at $t \rightarrow \frac{-d}{c}$. With zero volume and highest rate of expansion, the universe starts expanding at $t \rightarrow \frac{-d}{c}$. The spatial volume (V) tends to infinitely large value and the cosmological parameter like (σ) and (θ) becomes zero at infinitely large time (t). Also since the quantity $\lim_{t \rightarrow \infty} \frac{\sigma}{\theta}$ tends to zero, the model approaches the isotropy at highest cosmic time (t).

[7.6] discussion about its Consistency:

Here, we investigates its consistency with respect to the observational quantities. Such as red shift, look-back time, proper distance, Luminosity distance, Angular diameter.

I] Look-Back time:

It is define as advance time between age of universe (present t_0) and time 't', of emitting of the light from cosmic source in a specific red shift (z). It is denoted by t_L . For our model it must be;

$$t_L = t_0 - t = \int_s^{s_0} \frac{ds}{s}$$

Here s_0 is the scale factor of present day of the universe.

$$\frac{s_0}{s} = 1 + z$$

For the model [7.4.3], we have;

$$\begin{aligned} \frac{s_0}{s} = 1 + z &= \frac{1 + t_0}{1 + t} \\ z + 1 &= \frac{(t_0 + 1)}{(1 + t)} \end{aligned}$$

Age of the universe;

$$\begin{aligned} t_0 &= \beta H_0^{-1} \\ t &= \frac{(t_0 - z)}{(1 + z)} \end{aligned}$$

Hence,

$$t_0 - t = \beta H_0^{-1} - \frac{(t_0 - z)}{(1 + z)}$$

Proper Distanced(z):

The proper distance $d(z)$, is the distance between any time $t = t_1$ for position at $r = r_1$ to a cosmic time of emitting light from source with red shift. Where the light is received by observer at origin $r = 0$ and $t = t_0$.

$$d(z) = r_1 s_0$$

Here,

$$r_1 = \int_t^{t_0} \frac{dt}{s} = (s_0 H_0)^{-1} z$$

$$d(z) = H_0^{-1} z$$

$$d(z) = \frac{t_0(t_0 - t)}{(1 + t)}$$

Luminosity Distance:

It is denoted and define as;

$$d_L = \left[\frac{L}{4\pi l^*} \right]^{\frac{1}{2}} r_1 s_0 (1 + z)$$

Where, L is Luminosity (absolute) and l^* is apparent luminosity source.

$$d_L = d(z)(1 + z)$$

$$d_L = H_0^{-1} z (1 + z)$$

$$d_L = \frac{t_0(t_0 - t)}{(1 + t)} \frac{(t_0 + t_0)}{(1 + t)}$$

Angular Diameter:

D is the angular diameter of the light source at $r = r_1$ and $t = t_1$ where observer is at $r = 0$ and $t = t_0$.

$$\delta = \frac{D}{r_1 s t_1} = \frac{D(1 + z)^2}{d_L}$$

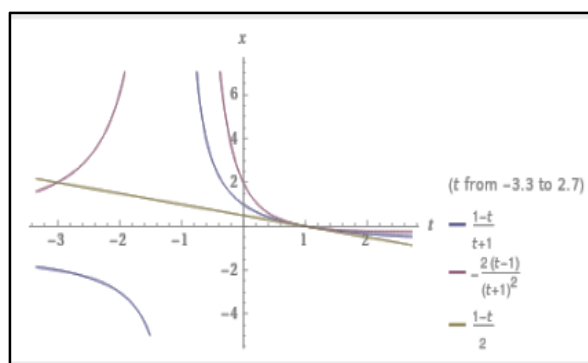
The angular distance d_A is define as the ratio of source and angular diameter.

$$d_A = \frac{D}{\delta} = \frac{d_L}{(1 + z)^2}$$

Hence for our model,

$$d_A = \frac{H_0^{-1} z}{(1 + z)}$$

$$d_A = \frac{t_0(t_0 - t)}{(1 + t)} / \frac{(t_0 + t_0)}{(1 + t)}$$



Graph [7.5.5]: plot of consistency of Various Physical Models in the Universe.

[7.7]Conclusion:-In the present work, we study on five dimensional (KKCM) Kaluza-Klein cosmological model with non-positive constant deceleration parameter in a scalar tensor theory which is introduced by Sen in 1957 and it is totally based on Lyra Geometry in presence of perfect fluid. In Lyra geometry, we must have to use a special law of variation which is firstly introduced by Bermann in 1983 of Hubble parameter for finding the solution of the field equations for cosmological model with higher dimensions. The resultant model of the universe is an accelerating model. We have discussed the physical and kinematical properties of models corresponding to i) Radiation dominated universe, ii) Zel'dovich fluid and iii) Vacuum universe separately. Also we study its consistency for considering scale factor.

In this model, we noted that $\alpha(t)$ the displacement vector behaves like cosmological constant (Λ). In the recent observations data of type Ia supernovae it is proved that, it is consistent. It is also clear that, entropy ($dS > 0$) affected by the displacement vector $\alpha(t)$ which leads to $\alpha < 0$. For an understanding of the evolution of the universe easily in 5-dimensional space time within the framework of Lyra Geometry in perfect fluid the resultant model of this work is of considerable interest and very useful.

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Study about Benefits of E Library over Traditional Library with special reference to Jalgaon District

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Abstract:- Now, in the 21st century, with the emergence of ICT & Web 2.0 technologies, libraries have a new, more dynamic role in knowledge society and as the individual is affected by ICT, in the same way, the individual can also influence the technology. Libraries began to recognize the presence of the web experience and utilize such services in order to create a new environment for libraries' users where interaction plays a basic role.

“Interaction means that technology interacts with social world with values and beliefs”. These services have also reformed academic libraries which face greater demand for access to resources; they should store all kind of material forms; the librarians have to task crucial duties and roles in disseminating and sharing of knowledge and users need to transfer information inside and outside of the walls of a library. Hence, university libraries would be upgraded and becoming digital.

Keywords:- E library, Traditional library

Introduction :- Digital libraries, Institutional repositories and Open Archives are the new trend in the present era, satisfying users' needs for precise information since they have become more information conscious for accessing electronic information compared to different purposes such as academic or research needs. According to Fabunmi, Paris, and Febunmi (2006), Library Digitization has become part of the work of librarians, and most libraries are involved in digitization projects. The upsurge and unprecedented advancement in Information Communication Technology (ICT) is gradually changing the mode of operations in all other professions for the positive. This is germane to the cashless operations in the finance sector, implanting of microchips as a replacement to Patient cards and other means of identification that is paper based in the health domain as it is presently operational in the United States of America and the E Library or Digital library taking the place of the traditional library in the library proceedings and so on.

Rapid advances information technologies have revolutionized the role of libraries. As a result, libraries face new challenges, competitors, demands, and expectations. Libraries are redesigning services and information products to add value to their services and to satisfy the changing information needs of the user community. Traditional libraries are still handling largely printed materials that are expensive and bulky. Information seekers are no longer satisfied with only printed materials. They want to supplement the printed information with more dynamic electronic resources. Demands for digital information are increasing.

Digital libraries will start gaining ground in Nigeria in the present century. We are heading toward an environment in which digital information may substitute for much print-based information. A library's existence does not depend on the physical form of documents. Its mission is to link the past and the present, and help shape the future by preserving the records of human culture, as well as integrating emerging information technologies. This mission is unlikely to change in the near future. Digital libraries come in many forms. They attempt to provide instant access to digitized information and consist of a variety of information, including multimedia.

The shift from traditional libraries to the digital is not merely a technological evolution, but

requires a change in the paradigm by which people access and interact with information. Gore opined that “A new wave of technological innovation is allowing us to capture, store, process and display an unprecedented amount of information about our planet and a wide variety of environmental and cultural phenomena. Further, we need a 'Digital Earth.' A multi-resolution, three-dimensional representation of the planet, into which we can embed vast quantities of geo-referenced data” (Gore 1998). The total number of different books produced since printing began does not exceed one billion. (The number of books now published annually is less than one million.) If an average book occupies 500 pages at 2,000 characters per page, then even without compression it can be stored comfortably in one megabyte. Therefore, one billion megabytes are sufficient to store all books. This is 10¹⁵ bytes, or one petabyte. At commercial prices of \$20 per gigabyte, this amount of disk storage capacity could be purchased for \$20 million. So it is certainly feasible to consider storing all books digitally.

Objectives of the Study:

1. To study the benefits of E library over Traditional Library
2. To understand indispensability of E library over Traditional Libraries

Hypotheses of the Study:

H₀- The percentage of respondents having positive perception towards benefits of E library over Traditional Libraries is 50%

H₁- The percentage of respondents having positive perception towards benefits of E library over Traditional Libraries is more than 50%

Scope of the Study:

This study is based on the benefits of E library over Traditional Libraries as per the perception from faculty members and research scholars of Jalgaon District. The scope of the study is limited to the use of digital as well as traditional resources and to fulfill the teaching and research purpose of the faculties. It covers the availability of digital resources and services in Jalgaon District.

In the fast changing world; academic institutions are now responding to these global changes by adopting institutional digital repositories in their various institutions.

Research Methodology of the Study:

The study is based on critical evaluation and analysis of basically Primary Data. The primary sources include faculty members and research scholars of Jalgaon District. A study is undertaken in the, sampled regions to see its impact for which a detailed questionnaire is prepared to collect relevant information from the primary source for the guidance of the researchers. With the help of the questionnaire, detailed discussions were made with the certain sources of primary data to understand their views, thinking and attitude which would help to give the researchers useful recommendations, if any. The questionnaire is processed with the help of statistical tools like tabulations, grouping, percentages, averages, testing of hypothesis etc.

As far as benefits of E library over Traditional Libraries are concerned, following factors are taken into consideration viz, Effectiveness, Efficiency, Usability, Accessibility, Quality, User's satisfaction etc

Research Area

Researchers selected faculty members and research scholars from colleges from Jalgaon District. Sample sizes of 100 faculty members and research scholars from Jalgaon District. Researcher collects data through Primary and Secondary sources. Researcher distributed 100 questionnaires among the respondents.

Review of literature

Comparative analysis and benefits of digital library over traditional library by B. J. Bamgbade in World Scientific News 24 (2015) 1 -7: The paper reviews the relevance of Information Communication Technology (ICT) as related to other professions especially, the Library professions. The importance, advantages and limitations of digital library over the traditional library were emphasized. The comparative analyses of the two types of libraries were also discussed. Governments in all tiers of the Nation and Legislators were advised to make policies and legislate bills respectively that can advance the present state of the National grid and improve on the Internet technology infrastructures which are major factors that can drive digitization.

The impact of digital technologies on academic libraries: challenges and opportunities by P. Anuradha in IP Indian Journal of Library Science and Information Technology, July-December, 2017;2(2):46-50: Libraries have long been endless sources of information for students - for centuries this involved row after row of books. However, the face of libraries is changing as content is moving toward a digital platform and Internet access is becoming more of a human necessity than a privilege. This article presents an evaluation of the impact of digital technologies in the transformation of academic library services. It begins with a brief overview of the historical development of academic libraries followed by a discussion of current challenges and opportunities for academic libraries. It also discusses innovative technological developments for learning, data management and the impact of these on the academic library sector, including the need for library staff to develop new skills

Applications of Nanomaterials in Solar Energy

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Abstract:-In this century the advancement of solar energy technologies is one out of the biggest technological challenges because of serious problems related with the generation and use of energy. A brand new promising area of research is growing rapidly which is termed as Nanotechnology. Nanotechnologies are considered one out of the ultimate recommended choices to resolve these problems. Nanotechnology is drawing a large amount of attention currently and building great expectations not only into the academic community but also among investors, governments, and industries. Its capability to fabricate new structures at atomic size has produced novel materials and devices with great potential applications into the energy sector that will allow us to keep up our increasing appetite for energy, which increases both with the quantity of persons that join the developed economies and with our demand per person.

This review paper collects recent advances of nanotechnology to solar renewable energy production, storage and use. Here literature is reviewed and summarized carefully to present a panoramic overview about theoretical and experimental works related with the applications of nanotechnology in the field of solar energy.

Keywords:- Solar, Nanotechnology, Nanomaterials, Energy, Renewable

Introduction:-Solar energy is defined as a form of renewable energy which is present into the sun. It is radiant light and heat by the sun. Energy generation from fossil fuels has been identified as main reason of environmental pollution. The advantage of solar energy is that fuel is not required, which eliminates the emission of CO₂. It had been reported that the current petroleum consumption is 10⁵ times faster than the nature can create and at this huge rate of consumption, the world's fossil fuel reserves will be diminished by 2050 (Satyanarayana, Mariano, & Vargas, 2011) (Demirbas, 2009). Also, it is interesting to say that the global demand for energy is predicted to be approximately 30 and 46 TW by 2050 and 2100, respectively (Norton & Sahaym, 2008). Fossil fuels are petroleum oil, coal and natural gases. They are non renewable energy sources; once they burnt they're gone forever. These sources supply over 90% of our energy demand, but carry a steep environmental cost. As an example, the concentrations of CO₂ into the environment have increased from 280 to 370 ppm over the past 150 years. It is expected to pass 550 ppm at the end of this century (Lund, 2007). However, because of the larger demand of energy and lesser availability of fossil fuels there's a shift toward renewable energy sources. These sources of energy include solar energy, wind energy, biomass, hydrogen energy and geothermal energy. These clean sources will be used instead of conventional fossil fuels and atomic or nuclear energy. At present, there is large interest in this subject since it is expected to supply 50% of the world's primary energy by 2040. Moreover, renewable energy will be playing an important role to reduce gas emissions to the environment by about 70% during 2050. If a distributed solar grid meets 1% of the world's electricity demands, approximately 40 million tons of CO₂ gas emissions will be reduced per year (Gardner, 2008). From the another side, a brand new science field "Nanotechnology" grown quickly which has much and considerable attention in

the recent years because of many engineering and technological applications. As an example, the nanomaterials (i.e., particles with diameters $<100\text{nm}$) will be used to reduce the size of data processing parts of most usable devices such like mobile phones and laptop computers. The dimensional range of 1 to 100 nm is called nano scale, and materials at this scale are called nanocrystals or nanomaterials. Therefore, this reduction in size reduces their required energy. Also, there are many benefits which may be observed from the design of nanotechnology based products for solar energy which are (Siril):

- Increased efficiency of lighting and heating.
- An increase in electrical storage capacity.
- A decrease in the amount of environment pollution by the energy using.

I believe that this paper will be considered as a very important bridge between nanotechnology and solar energy. From another side, further researches are required to find out the effect of nanotechnology to boost the solar power industry since the available papers in these fields are very limited.

Applications of Nanotechnology in Solar Energy: -Today's conventional photovoltaic (PV)solar cells aren't much efficient and are very expensive for manufacturing at large scale electricity generation. They have many critical disadvantages like; they begin to lose their efficiency after they heat up and lose at least 50% of the solar energy striking them. Recently, nanoscience and nanotechnology techniques will be used to produce an inexpensive and high efficient solar cell. Nanoparticles provide us the many advantages in the solar power plants such as(Taylor, et al., 2011):

- Very small size of the particles allows them to pass through pumps and plumbing without adverse effects.
- Nano fluids will absorb energy directly which exceeding intermediate heat transfer steps.
- Nano fluids will be optically selective because they have high absorption in the solar range and low emission in the infrared range.
- A more uniform receiver temperature will be achieved inside the solar collector that reducing material constraints.
- Enhanced heat transfer by higher convection and thermal conductivity will be improving receiver's performance.
- Absorption efficiency is also enhanced by tuning size and shape of the nanoparticles to the required applications.

Solar cell's next generation is thin film solar cells which are flexible sheets of solar panels that are easier to produce and install, use less material and are cheaper to manufacture. As an example, these sheets will be incorporated into a briefcase that charges laptop computers, cell phones or can covered buildings windows to collect solar energy from the whole building rather than only its roof. So, it can be used to supply power to high-rise buildings (Nano and society FAQ). Experimental researches have already shown that quantum dots which are tiny nanoparticles only a few nanometers in size, are three times more efficient for solar power conversion than the most effective material currently used for solar cells (Shrair, 2009). Otanicar and Golden performed a comparative environmental and economical analysis of conventional and nanofluid based solar hot water systems. They investigated that the nanofluid solar collectors have a slightly longer payback period, but at the end of their useful life had an equivalent economic savings as conventional solar collectors. Also, the results

showed that the nanofluid solar collectors have a lower embodied energy about 9% and approximately 3% higher levels of pollution offsets than conventional collectors.

Natarajan and Sathish concluded experimentally the role of nanofluids in solar water heaters. They measured thermal conductivities by the transient hot wire method. Conclusively, thermal conductivity enhancement depended on the suspended particle's volume fraction and on the thermal conductivities of both particles and base fluids. The results proved that the nanofluids were more effective than the conventional fluids and if they were used as a heat transport medium, it increased the efficiency of the conventional solar water heater. The thermal conductivities of the nanofluids were calculated from the slope of the rise in the temperature of wire against logarithmic time interval and thermal conductivity is given by the following equation (Natarajan & Sathish, 2009):

$$k = \frac{VI}{4\pi l(T_f - T_i)} \left[\ln \left(\frac{t_2}{t_1} \right) \right] \quad \text{Equation 1}$$

Where I is current (A), k is thermal conductivity of the nanofluid (W/m K), l is length (m), T_i is temperature of the wire at initial condition ($^{\circ}\text{C}$), T_f is temperature of the wire at final condition ($^{\circ}\text{C}$), t_1 is initial time (s), t_2 is final time (s) and V is voltage (V).

Yu and Chen reviewed the use of 1-D nanomaterials, including nanotubes, nanowires and nanorods to enhance solar cell efficiencies. They mentioned that the nanotechnology offered significant opportunities to boost efficiencies of solar cells by facilitating photon absorption, electron transport and electron collection. They explained some advantages of 1-D nanomaterials as follows (Yu & Chen, 2009):

- Direct path for charge transport. Large surface areas for light harvest offered by the geometry of nanomaterials.
- The mobility of electrons in 1-D nanomaterials is typically several orders of magnitude higher than that in semiconductor films.

Otanicar et al. reported an experimental results on nanofluids based solar collectors made from a variety of nanoparticles like carbon nanotubes, graphite and silver. They got an efficiency improvement about 5% in solar thermal collectors by utilizing nanofluids as an absorption mechanism. And, the data of experiments were compared with a numerical model of a solar collector which was based on direct absorption nanofluids. Both numerical and experimental results demonstrated an initial rapid increase in the efficiency with volume fraction, followed by a leveling off in efficiency as volume fraction continues to increase (Otanicar, Phelan, Prasher, Rosengarten, & Taylor, 2010).

Figure I explains that the addition of small amounts of nanoparticles caused a rapid enhancement in the efficiency of solar collector from the pure fluid case until a volume fraction of approximately 0.5%.

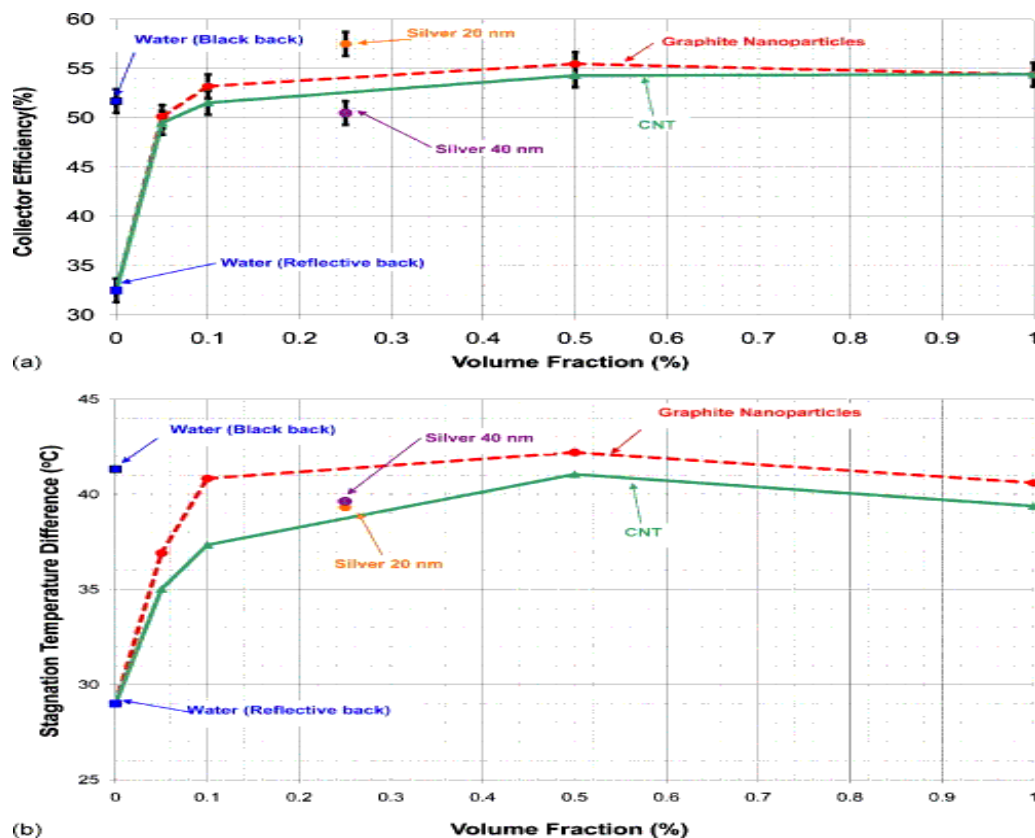


Figure I Experimental microsolar thermal collector efficiency as function of nanoparticle volume fraction (Otanicar, Phelan, Prasher, Rosengarten, & Taylor, 2010).

By using natural pomegranate juice for nanocrystalline TiO_2 sensitization Bazargan employed dye sensitized solar cells (DSSCs) fabrication procedure. By using pulse current electron deposition and soot staining method, platinum and graphite coated electrodes were prepared for use as counter electrodes. The overall conversion efficiencies of fabricated dye sensitized solar cells (DSSCs) were found to be about 1.5% for cell operated with platinum electrode deposited and about 0.9% for carbon coated counter electrodes (Bazargan, 2010). Baraton represented an overview of nanosized TiO_2 for applications in photocatalytic water splitting and specifically in dye-sensitized solar cells (DSSCs) (Baraton, 2011). It was shown that size and shape of particles, crystallinity, surface morphology and chemical properties of the TiO_2 material were considered as a key factor to be controlled to boost the performance of the dye-sensitized solar cells (DSSCs). Bedja reviewed that DSSCs (Dye Sensitized Solar Cells) and Quantum-Dots based solar cells became validated competitors to silicon conventional solar cells, having very high power efficiency of about 12.3% for DSSCs (Bedja, 2013).

Verma and Kundan investigated experimentally the effect of Al_2O_3 - H_2O based nanofluids on the direct absorption flat plate solar collectors (DASCs). The volume fractions of Al_2O_3 nanoparticles used were 0.005% and 0.05% respectively. Efficiency of the collector was calculated for various mass flow rates 60, 80 and 100 ml/h of nanofluids based on Al_2O_3 - H_2O . It had been found that the collector efficiency increased about to 3–4% if Al_2O_3 - H_2O nanofluids were used as compared to simple water. They calculated the collector efficiency with the help of the following equation (Verma & Kundan, 2013):

$$\eta = \frac{mC_{eff}[T_2 - T_1]}{G_T A} \quad \text{Equation 2}$$

Where A is area of the absorber plate (m^2), C_{eff} is effective specific heat of the nanofluids ($kJ/kg\ ^\circ C$), G_T is global solar irradiation, m is mass flow rate of the working fluid (ml/h), T_1 is inlet temperature of the working fluid ($^\circ C$), T_2 is outlet temperature of the working fluid ($^\circ C$) and η is instantaneous collector efficiency.

Recently Kumar et al. prepared TiO_2 paste successfully without using binder molecules at room temperature. The doctor blade method is used in the preparation of TiO_2 films on flexible polymer PEN substrates. The devices prepared with these films exhibited excellent photovoltaic (PV) parameters. It was concluded that longer stirring hours do not improve the efficiencies of photo conversion (Kumar, Hsu, Lvaturi, Chen, Bennett, & Upadhyaya, 2019).

Conclusions:- The present work provides an overview and understanding of nanotechnology applications in the field of solar energy. As an example, nanotechnology makes a large revolution in the size and design of solar power devices utilized for energy conversion and storage, environmental monitoring, also as green engineering of environmental friendly materials. It's shown that, nanomaterials play a major role on the human life, by providing an inexpensive and eco-friendly energy which is now become a worldwide industry. Some important conclusions are summarized below:

- The use of nanomaterials can play an important role in increasing the efficiency of solar cells. Nanotechnology can improve the developed countries ability to reduce the environmental impact of burning fossil fuels to provide energy.
- Nanotechnology makes a big reduction in the cost of components, such as solar cells.
- Nanotechnology may be considered as a key enabler of the increasing solar energy utilization.
- Solar power industries greatly improved by utilizing nanoparticles.
- Further researches are needed to find out the effect of nanotechnology in solar energy since the quantity of published papers in this field is very limited.

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Biotechnology industry in India: Opportunities or challenges

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Abstract:-Biotechnology have touched every corner of the world laying major stress on applications to the environment, drugs, vaccines including a range of biopharmaceuticals, diagnostics, transgenic crops, improved tools for upgrading animal reproduction and quality, useful microbes and food ingredients. The term 'Biotechnology' is coined as amalgamation of biology with technology that includes disciplines like molecular modeling, genomic, bio – informatics, bio – simulation, clinical information and many more. Biotechnology (BT) – derived products worldwide include a range of pharmaceuticals and diagnostics, transgenic food and field crops with desired field and quality characteristics, improved tools for upgrading animal reproduction and quality, useful microbes and food ingredients.

Contributing 2% of global biotech industry, Indian BT employs 20,000 resource persons. Though India has improved its potential to contribute more to this industry, but in spite of infrastructure, funds, manpower, it need to put more efforts on up-grading system by building funding options, venture capitalists, bio-networking, IP development. Government initiatives are harnessing its valuable potential to derive values from technology – led exports and export of technologies. This has enhanced intensively the networking of capabilities and facilities within the country. Biotechnology is in hands of developed countries with superior technology, intellectual scientists and good financials, etc that support the industry but in the current scenario India is becoming an attraction for foreign players – ranking 3rd after Japan and Korea in the Asia, considering foreign direct investments (FDIs) for biotechnology. Significant opportunities exist for the growth of biotechnology in the region, particularly in the agriculture and healthcare sectors due to the large existing and growing markets for food products and pharmaceuticals for the growing population.

Key Words:- Biotechnology, industry, opportunities, challenges, India.

I. INTRODUCTION:Biotech stocks have outperformed virtually every other index in the first quarter of 2010 and the NASDAQ Biotech Index has climbed back to a point even higher than it was when the market peaked in 2007. The markets are coming back and biotech has come back faster and stronger, said BIO President and CEO Mr. James Greenwood at BIO 2010 in Chicago. Biotech Technology, a technology driven science with small product life cycle is moving with a good pace and is expected to replace the position of Information Technology in the upcoming decades Alok (2011). India, the largest democracy and also known as an emerging economy in the world, has now shifted its focus to this promising industry of future, which is seen as a potential industry. It is one of the hotspot containing diverse species of flora and fauna and this bio-diversity offers an added advantage for the biotech.

II. OBJECTIVE:

1. Bioprocess Technology

2. Gene Manipulation of microorganism/animal cells

3. Extraction and isolation of plant/animal products

4. Recombinant DNA Technology

5. Traditional and Molecular Marker assisted breeding

6. Infrastructure in fabricating bio-reactors and processing equipment's Besides above Indian human capital is believed to be the strongest asset for this knowledge-based industry having a large English speaking skill base with 3 million graduates, 700,000 postgraduates and 1,500 PhDs qualified in biosciences and engineering. It is estimated that 10% of researchers and 15% of scientists in Pharma / Biotech R&D in USA are of Indian origin.

Opportunities:-Besides above Indian human capital is believed to be the strongest asset for this knowledge-based industry having a large English speaking skill base with 3 million graduates, 700,000 postgraduates and 1,500 PhDs qualified in biosciences and engineering. It is estimated that 10% of researchers and 15% of scientists in Pharma/ Biotech R&D in USA are of Indian origin. According to the latest data collected (Figure 1) under given is the scene of Indian biotech industry: 1. The top 20 companies of India contributed almost 20% towards the total biotech earned revenue. 2. The bio – pharma sector accounted for around 62% of the market share, with revenues touching US\$ Rs. 8,829 crores growing 12% over 2008 – 2010. 3. The bio-industrial sector achieved revenues worth Rs. 564 crores growing 16% in 2009 – 2010 (Table 1). 4. The bio -services, comprising of clinical research, contract research and contract manufacturing accounted for 31% with Rs. 2,639 crores. 5. The agriculture biotech sector climbed 37% thus accounting for 1,936 crores. The number of companies involved in selling Bt cotton seeds have increased to 30 in which Nuziveed Seeds has highest contribution followed by Rasi Seeds, Mahyco and Monsanto. However, it is a matter of pride that despite of tremendous challenges in developing novel products from indigenous research and technology, the Indian biotechnology industry has reached US\$ 3bn in 2010. Activities of more than 500 firms is contributing towards nurturing this nascent Indian biotechnology industry, moving ahead in a fast pace to achieve its goal of US\$ 10 billion by 2010. (Report – India Brand Equity Foundation, September 2009, www.ibef.org), Table 2 - 5. Activities of biotech research and business activities are mainly concentrated around large domestic or multinational pharmaceuticals or agricultural companies. Handful of entrepreneurial biotech – firms have spun off from universities, established by academic researchers or funded by venture capitalists. Many Indian firms are moving towards collaborations with overseas firms to carryout research and product development, contract services, product testing, manufacturing and co marketing. Plant genetic engineering and agricultural biotechnology, with special reference to food, nutritional supplements and nutraceuticals had played significant role in the Indian agriculture scenario.

Pressures and problems Biotechnology is considered a horizontal discipline and includes bioinformatics, molecular modelling, bio-simulation, clinical information and many more. The ultimate goal of this new and emerging field is to enable the discovery of new biological insights, and create a global perspective by unifying principles in biology that can be distinguished. Extending the reach, biotechnology contributes to the design and production of drugs, vaccines and has greatly led to advancements in agriculture, space technology, industrial, animal health, marine biotechnology, crime detection, anthropology, and bio-warfare. With the fusion of high-powered computing and biology, the field is so much in demand that it has created a huge scope for employment, more with establishment of R&D labs. Computer Science, Information Technology (IT) and Biology are merging into a single discipline, the dependency on IT in case of biological research areas like genetics, proteomics

and molecular biology is fueled by the great need for computational analysis.

III. CONCLUSION

After leading the IT bandwagon India has shifted its efforts to biotechnology. The alignment of a vast pool of scientific talent, a world class information-technology industry, and a vibrant generic pharmaceutical sector position India to emerge as a significant spot on the global biotech map. Even though in the global biotech market, Indian share is presently just about 2%, the future seems very bright for the country. Biotechnology is a fast -emerging sector in India. The consumption of biotech products in India was \$1789 mn during 1999, which is expected to grow up to the tune of \$ 4270 mn by the end of year 2010. Biotech industry in India at present is at the threshold of tremendous growth. For example, in the human and animal products segment of the industry alone, the vaccines market alone is valued at US\$ 230 million and is growing at 20%. The success of firms like Shanta Biotech and Bharat Biotech emphasized the fact. India's first genetically engineered vaccine, Shanta Biotech's Shanvac against Hepatitis B, costs \$4, less than half the price of similar vaccines marketed by multinational companies

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Study of Increasing Trend in Forest Fires and Environmental Impact

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Abstract: - In the past few years, it is evident that the frequency of the forest fires has increased globally. Many instances of devastating forest fires are reported in the recent past in NSW & many parts of Australia, California and other parts of Western USA, Africa, etc. Number of fires in Indian forests is also on the rise. Some of them were of severe category engulfing large forest area that required long time to contain and extinguish the fire. Uttarakhand forest fire in 2016 in India was one of the worst fires. Similarly, Maharashtra too witnessed fires in various forests. Sanjay Gandhi National Park, Aarey colony in Goregaon & Yogi hill in Mulund (both suburban area of Mumbai), Yeoor forest in Thane and nearby area were not different from the increasing trend of forest fires. These forest fires have damaged plants, bushes, produce of the forest, many houses and also caused loss of animal, bird and human lives too. Forest fires are not only affecting adversely on the biodiversity, ecology, economy but also burnt huge area of forest and wild lands. Due to these fires the CO₂ emission is going up and on the other hand the Carbon sink in the form of green area is depleting fast which is the cause of concern in view of the alarming rise in global warming and environmental pollution. These fires will destroy lungs of the world i.e., forest covers and resultant pollutants will damage the lungs of people.

Keywords:- Devastating Forest Fires, CO₂ Emission, Carbon Sink, Global warming, Environmental Pollution

Introduction:- Forest fires are quite frequent nowadays and reported in news every year in India and across the world. A few decades ago, Forest fire was quite uncommon in India. Most of the fires took place in the grass land and wild lands in the rural areas. Now in the last five years, number of forest fires have alarmingly gone up in various states of India. Looking at the current trend, it is quite evident that the fires in the forests are on the rise in terms of frequency as well as its magnitude. Every now and then major fire incidents are occurring in various forests globally. Australia, America, New Zealand, Russia and Africa are the worst affected countries with regards to serious forest fires. Forest fires are becoming really a challenge and needs special attention and efforts to deal with them otherwise we should be ready to face the serious consequences arising out of it. Creating awareness among the people and clearing the fuel load will help in preventing forest fire. Early detection of fire, training to fight forest fire along with proper management policy is the key towards reducing the losses.

The ecological and economic losses by way of valuable green area, forest assets, nearby properties have also swelled up. Many human and wild lives are also lost due to these increasing forest fires. The pollution has as well gone up due in evolution of particulate matter, carbon dioxide and other gases due to forest fires. The emission of greenhouse gases like CO₂ has increased many folds thereby exposing to the Global warming. Global warming, rise in atmospheric temperature, melting ice berg and snow, rising water level in the sea and hence poses serious threat of disasters such as Avalanche, Tsunami, Floods etc. The particulate matter released during burning of forest form a thick layer in the atmosphere with poor visibility. These floating pollutants in the air remain air-borne for a very long time and can be the cause of different breathing problems and lung illness. Bronchitis, Asthma and other related disease will be on the rise and people fall sicker. The smoke generated during

the fires along with the particulate matter travel a long distance and may even cross continents. Its high time to address the burning issue or it will burn down the lungs of the World in near future if the forest fires continue to rage like this.

Review of Literature

In (Filkov et al., 2020) Authors conducted a preliminary analysis of the 2019/20 bushfire season in New South Wales (NSW), Victoria, and South Australia, and compared it with other fire seasons to study the effects of these changing climate conditions. The Black Summer fires in Australia in 2019/20 happened amid a period when there was high temperatures and abnormally poor rainfall. The information gathered from the Forest and fire management revealed that there was increase in number of forest fires and burnt area as well as alarming rise in loss of life and property in Australia. Bushfire smoke might pose a serious threat to the global society in the future as it spreads very long even up to other countries. According to early statistics, restoring the economy and infrastructure in affected areas along with the recovery of animal and plant biodiversity, may require several years. This (Goss et al., 2020) study delves into recent deadly wildfires that hit California. These wildfires have occurred during periods of severe fire weather, including strong offshore winds, extremely dry vegetation, and late initiation of precipitation in autumn due to unusually warm temperatures. Continuing climate change, according to the climate model assessments, would increase the number of days with intense fire weather by the end of the century, even if a path consistent with the UN Paris pledges is followed. Given the devastating social effects of severe wildfires in the United States, these findings are crucial for ongoing efforts to minimize wildfire hazards during recent years in California.

In the research work (Martin et al., 2016) authors discuss about various effects of the fires to the environment. Apart from the economic and social impact of the fire, there are other adverse effects on the environment which are not immediately noticeable. But these impacts due to discharge of toxic products from the burning material are bad for water, soil and air which also has health hazard associated with them. These unwanted changes in the environment may take several years to come back to normalcy and pose exposed risk of various diseases for the human being and living organism. Innovative and effective fire prevention and protection measures are required to reduce the environmental impact arising due to pollution caused by fire.

Increasing forest fires: cause of concern

News of Forest fires in print and electronic media is becoming quite frequent now a days. These fires are not only frequent but big in magnitude too. World is facing a major threat to the forest and in turn high risk to the human being and other lives in the forest. Fires in the forest are on rampage due to the changing climatic conditions like dry weather, increase in atmospheric temperature, late monsoon season, loss of moisture content in the foliage, etc. All these factors are responsible for the extended fire season in various parts of the globe. Lots of acres of forest cover is lost in the recent past.

Since last couple of years there is rise in the number of fires in the forest in Mumbai and its surrounding area. Several fires were reported in and around Mumbai, Maharashtra, India and also in different countries during past few years destroying large area of wildland and damaging environment. Some of the forest fires witnessed were of serious nature but of surface fire types engulfing vast areas of wildland and grassland.

- The frequencies of the forest and wildfires have also gone up in Maharashtra state. 16% of the forest fires in India are occurring in Maharashtra. Forest fires in the Tungareshwar National Park, along Murbad Kalyan Highway in Shahpur Taluka, Jivdani hills of Palghar district and Yeoor hills of Thane district were also reported this year. As per data from FSI, highest count of fires reported in various forests of Thane district. Tadoba National Forest in Chandrapur and Navegaon Nagzira forest in Gondia. Three laborers died and two injured while extinguishing the fire in Navegaon Nagzira on April 21. Two major fires have occurred in the Sanjay Gandhi National Park in March and December 2018. Large area was involved in the fire and once it was reported in different parts of the forest. Fire Brigade personnel along with Forest Officials and volunteers were instrumental in extinguishing the fire after long battle and thus the nearby villagers, native people and their property were saved. There after several wild land fires are taking place in SGNP and its adjoining area every year.
- Many states in India have also witnessed severe fires in the forest in the recent past. Maharashtra, Uttar Pradesh, Madhya Pradesh, Uttarakhand, Andhra Pradesh, Odisha, Northern and North East Indian states are most prone to the forest fires. Uttarakhand fire in the year 2016 was a real catastrophe. It started in April 26 and lasted for more than a month. 4433 hectares of wild land was perished in about 2074 fire incidents. 6 people lost their lives while 4 persons received serious burn injuries. Cloud seeding method was used to suppress the fire spread in vast area followed by two helicopters to fight the fire. 12,000 forest personnel fought this forest fire across the state. ISFR 2019 statistics show that the accumulation of dry leaves and foliage is more in the recent years as compared to the past years. Already more than 1000 cases of fires were reported in the current year starting from October to April. This year forest fires also resulted 4 fatalities including 2 forest staff. According to report of Forest Survey of India Madhya Pradesh topped among all states in terms of number of active fire instances with 93 cases as against 71 cases in Uttarakhand as on 5th April 2021.
- Many countries in the USA, Australia, Russia and Africa are facing blazing forest fires in the past few years. The surface and crown fires there have caused loss of forest land, loss of property and assets, loss of lives in forest and even human lives.

Conclusion:- The study shows clear picture of the increasing trend of forest fires all over the world. Even, there are incidents of many major and disastrous fires in the forests of various countries. More the fires, more will be the losses with reference to the forest area, various produces of forest, life and property. The life of nearby villagers, wild animals and birds are also at high risk. Statistics prove that a greater number of fatalities are happening in the forest fires. The environment is also affected adversely due to the release of smoke, harmful gases and particulate matter during forest fires. The pollution thus caused to the environment is further responsible for the different types of rising natural disasters in the world. A consequence of increasing pollution is also noticed in the health of people. The study has its own limitations that it is mostly based on the various data and information gathered from the electronic and print media. These Forest fires which are on the rise continuously has to be taken seriously and measures to prevent, contain and fight them is the need of the hour. However, it is very true that we will surely be on the verge of a major disaster, if this serious issue of forest fire is not handled properly and in time. So, better late than never. We should do combined efforts to save the valuable forests that are natural oxygen producers and step towards the better future for our next generation.

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Public Library System in India: A Positive Approach to Make it more Useful and productive

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Abstract: Public Libraries have great importance in our life. As they educate the society and make them knowledgeable and informative. In any academic institute like school, colleges, universities etc. individuals are enrolling for some particular time and getting knowledge about the particular subject only. Public Libraries facilities this thing by taking its membership you can approach for any area of knowledge. Anyone gets any information or facts from it. It is very useful for the people who are in research fields studies. Many Public libraries contain rare books, manuscripts etc. by which people can know about the different civilization of ancient time, their culture, tradition, customs, literature etc.

The condition of our Public libraries is very worst. Many Public libraries even in big cities have very old building with very less resources so how we can think about to improve the condition villages and remote areas. Somewhere the staff and management of these libraries are responsible for their worst condition because from years they are working in worst condition with very less or no resources. If they want, then from time to time they can compel higher authorities to take immediate and required action. But no higher authorities take interest neither staff thinks it's their responsibility and if today you visit Public libraries, many have poor condition that we should we feel ashamed that where we are even after 73 years of independence.

Keywords:-ICT, Digital Library, OSS, Public Library, Library Cess, RRRLF

(1)Public Libraries and Technology: - In this modern time like many other fields existence of Public libraries also depends on its technology and digitization. This is the most desirable thing at present time for proper and smooth functioning of Public Libraries.

(a) ICT (Information and Communication Technology): - In today's modern world, we can't separate information from communication technology. To retrieve and disseminate the information and knowledge we need ICT and its various applications. Public libraries should contain online resources like e-books, reference books, journals etc. and design of good software according to the need of Public Libraries is also required. Another important factor is like - implementation of networking of Public Libraries, telecommunication systems, good internet services. Implement and adopting of ICT is not an easy task as it needs good amount of budget and finance.

(b) Automation in Public Libraries: -Public library automation refers to the system when many task and services of libraries is carried out mechanically when library and its various services are handled by one or more computer system. Various Public Library services are

like cataloguing, serial control, acquisition, circulation and many more other activities. These all services need automation which not only save the time of the user as well as save the time of library's staff also which decrease their work load and unnecessarily hard work.

Automation makes our Public libraries to provide new form of services, it makes access to library resources easy and in no time or very less time. It automatically saves the time of the user which also fulfills one of the laws of library and information science.

(c) Digital Technology in Public Libraries: -In last two decades means of communication and technology rapidly change and get advanced by each passing year. In simple words digital Library is when we access the information or do other functions and services of library through electronic devices is called digital library. We can easily see the positive effect of technology on our Public libraries also. It connects all Public libraries with each other, which makes many services of Public libraries useful and important. In today's world technology makes resource sharing service very easy and in very less time. Now, on request from the concerned library user can retrieve and share needed resource without going anywhere. It saves the time of the user and resources are used by the needed persons. The main motive of digital library is universal access. Implementation of digital technology needs trained staff who can easily work on computer and with its various applications and technology. Time to time their (staff) training should be organized so that staff can easily perform various tasks on computer without any hesitation and with great confidence. It helps to change the worst condition of our Public Libraries. Digital libraries need good internet connection with other networking facilities like LAN & WAN.

(d) Open Source Software: Open source software is software which is usually free of charge and it includes source code. Public Libraries have many benefits of it. Open source software has its own benefits like usually its free of cost so it can be widely used by common people and main motive of Public Libraries is only to give benefits more to common people who are already deprived from knowledge and information due to various reasons common. KOHA is the best example of open source software. Open source has a great advantage to our Indian Public libraries, the main reason is that its availability at free of cost. Our public Libraries already have budget constraint, in this scenario it's one of the best option. The OSS(open source software) is D -Space, Greenstone, E -print etc. Adopting of OSS does not require additional licenses. The OSS helps to change traditional method of working in Public Libraries up to a great extent. The OSS reduces the cost of various digital services of Public libraries.

(3) Human Resource Management -The development of information and communication technology has great impact on our Public libraries also. Now, Public libraries not act as storage of books. Public libraries perform many functions like acquisition, dissemination, circulation, etc. of books and various forms of knowledge and information. These functions need man power and top of that proper management of manpower for smooth and productive output of the Public libraries. In human resource management we focus on many areas like requirement of staff, training of staff, especially to update them with new information and communication technology, make them learn other skills also so that they can work efficiently, use the talent of the staff for the development of public libraries, update the working style of Public libraries so that maximum users can come and take its benefits. We need human resource management in Public libraries due to various reasons like if we look at the current situation of Public libraries then we can have realized that lot of things, in fact whole system needs to be changed. It is very sad that many Public libraries of who have glorious past and history are now in worst condition.

When we talk about management or human resource in context with Public library system then many planning's or strategies are involved like training of the staff with new technology and equipment, make the staff to understand that library's role is not to provide information only to the users but also have ethical duty towards the common people of the country.

Main Agendas of Human Resource Management:

- (1) Ensure the information and knowledge need of the people is fulfilling.
- (2) To create healthy working atmosphere in the organization.
- (3) To provide information of all areas and sectors like legal matters, technology, psychology, agriculture, industry, women rights, literature etc.
- (4) Fulfill the social, cultural, economic needs of the people.
- (5) Develop the team spirit in the organization.
- (6) Provide skill based training to staff and other people for library management system.
- (7) Job description or Job specification is also main part of human resource management.
- (8) Increase the knowledge and skill of library staff.
- (9) In-house training and outside training both.
- (10) Motivation & job-evaluation is also important.

(4) Library Legislation: When we talk about development and progress of Public libraries then Library legislation is most necessary thing to talk about. We have many schemes and policies for development of Library field, but to implement it properly we need some rules and regulations. Only 18 states and one union territory out of 30 states and 6 Union Territories have enacted Public Library Act. It is very sad that 10 states out of 19 made the progress only and Karnataka is one of them. Karnataka state made lot progress and development in this field.

Tamil Nadu is the first state who adopted the Library Legislation Act and then it is followed by Andhra Pradesh and Karnataka states and if talk about library cess only six states (Tamil Nadu, Andhra Pradesh, Karnataka, Kerala, Haryana and Goa) has been made for the collection of library cess. Other states do not collect library cess and this is main reason or we can say hurdle in development and progress of Public libraries. In absence of library cess Public library has to depend on Government for grants and budget.

The library legislation helps in proper development of Public libraries; in absence of library Act it is very difficult to keep an eye on each and every activity of Public libraries India is already 2nd most populated country. Library legislation Act gives guidelines for its proper functioning. It takes care of all finance and budget.

Following states has passed Public Library act in their state:

Serial No.	Name of the State	Year
1.	Andhra Pradesh	1960
2.	Arunachal Pradesh	2009
3.	Bihar	2008

4.	Chhattisgarh	2007
5.	Goa	1993
6.	Gujarat	2001
7.	Haryana	1989
8.	Karnataka	1965
9.	Kerala	1989
10.	Maharashtra	1967
11.	Manipur	1988
12.	Mizoram	1993
13.	Orissa	2001
14.	Pondicherry	2007
15.	Rajasthan	2006
16.	Tamil Nadu	1948
17.	Uttar Pradesh	2005
18.	Uttarakhand	2005
19.	West Bengal	1979

(5) Importance of Central Government in Progress and Development of Public

Libraries: Indian central Government took many initiatives and steps for the betterment of Public libraries. When India got its independence then there was huge poverty, illiteracy, unemployment, mal nutrition many more problems like these prevails everywhere. In this situation we can imagine the condition of our Public libraries also. At that time even meal for two times was a fight for more than half of the population so consideration about Public library was a secondary thing.

But soon just after independence while considering many factors related to education and literacy, Public libraries were also considered and it attract attention. The Public libraries rose from ancient period to medieval period in India and medieval period to post independence period but its real development occurred only after independence only. In pre-independence period especially in medieval period only rich families and aristocrat access the Public libraries. So, many things need to be changed at time of Independence.

The condition of Public libraries depends up to great extent on central as well as state Government also. Public libraries alone cannot do its development and progress due to budget and finance constraint. To raise funds and associate private and public sectors with them, it's necessary to work with central government and include it in its various schemes and policies for the better future of Public libraries.

Public libraries as its shows in its name also that it is People's library. Everybody has right to access to Public libraries without any discrimination of caste, class, religion, creed etc. When we are talking about development of Public libraries after independence then 'Delhi Public Library' should be mentioned. This library is significant as it was pilot project of UNESCO with joint efforts of UNESCO and Government of India. It is also one of the national depository centers. This library not work as only place for lending the books but it also provides some special services as well as reference services. It contains Books, Gramophone Records, Newspaper, Paintings, periodicals, Digital Media, Braille Books. It has around 214 staff members and it has 37 branches in Delhi and nearby. Somewhere it leads a path and started a new dimension for Public libraries. It was kind of model for all Public libraries of not only in India but also all over Asia. So, today also we should be positive and enthusiastic towards our Public libraries. Our Public libraries are not in very good condition but if we have positive approach towards it only then we can take some important steps but for this

positive approach we should know the importance and value of Public libraries then only we can do something valuable for it and able to convince others also.

It is sad but very true that many people still don't understand its value, especially those people who are holding prestigious position in this field and if these people won't come forward for its betterment then how we will expect from others.

(6)(a) Raja Ram Mohan Roy Library Foundation: -When we are talking about development and progress of Public library after 'Delhi Public library' Raja Ram Mohan Roy Library Foundation has significant role in library field. The RRRLF was established in May, 1972. The main objective of RRRLF was the library movement and development of Public libraries to big cities to small towns and villages especially in remote areas. The State Government and various other agencies which are working for library development also help RRRLF for library development and movement.

The RRRLF has many objectives and aims some are as follows-

- (1) Its main objective is Library movement in India.
- (2) To make various policies for libraries and try take consent to implement it from central and state Governments.
- (3) Support the adoption of library legislation in India.
- (4) To publish literature which main motive is to spread information more and more regarding library development, its importance and its usage.
- (5) Work as a mediator for coordinating, monitoring Public library services in the country.
- (6) Suggest government also in matters of library development in the country.
- (7) It encourages research related to Public libraries and its issues, etc.

(b)National Knowledge Commission: The chairman of this commission was Mr. Sam Pitroda including 5 other members who were extremely experienced and famous persons of their field. It is high level advisory body to the Prime Minister of India. This body is unique in its own as no other body in this world like this. So if these bodies get serious and come forward then many positive steps can be taken in the field of education, can help to improve the literacy rate, condition of Public libraries can have improved. As we have seen this is high authority and have many powers with it, if these kinds of bodies will not do anything then from whom we will expect. The main areas in which this commission focuses are-

- (1) Libraries (2) Translation (3) Language (4) Literacy (5) Access.

(8) Service Quality Measurement in Public Libraries: -The measurement of service quality in Public libraries is very important, in fact every institution or organization needs these kind of measurement from time to time. In Public libraries user's satisfaction is very important and user's satisfaction depends upon the kind of services they are getting. The result of these measurements tells us where we are lacking behind or which area and services should be more focused to improve for best services.

It is very sad that so far not much study has been done in this regard. There is one tool for assessment of service quality of Public libraries that is SERVQUAL; it gives reliable result up to some extent. Most of the time a questionnaire design to know the user satisfaction towards the Public library services. We can measure the service quality on following aspects, like:

- (a) Reliability (b) Responsiveness (c) Assurance (d) Access (e) communications, etc.

So, this can be very good and positive approach to make Public libraries more productive and useful. When we know exactly that where we have to work then Public library will be able to give maximum users satisfaction and users satisfaction is the main purpose of all Public libraries. One thing is sure here that this service quality management process will be successful only when librarians and whole involved staff and management is ready for this experiment and really wants to see the Public libraries in more developed and progressive form.

Suggestions & Recommendations

Following are the few suggestions for betterment of public Libraries-

- (1) Adoption of information and communication technology is the foremost requirement of present times in Public libraries.
- (2) We urgently need good source of finance and budget source.
- (3) There should be time to time seminars and training sessions for library staff and management because library staff is the backbone of every library. So, it is very necessary they get updated with new technology and system so they would work effectively.
- (4) Library staff should have positive attitude towards public libraries and its service. They should possess a humble nature, soft spoken and always ready to help users.
- (5) Adopting ICT save the time of the users.
- (6) The role of central Government is very important in progress and development of Public libraries as it is main authority to pass various rules and regulations and for its improvement.
- (7) Various committees and organizations like Advisory committee, National Knowledge, RRRLF etc. should come forward together and take all necessary steps for improvement of Public libraries.
- (8) Library Legislation Act should be strict and make it sure that it is implemented properly in all states of India.
- (9) Public libraries facing various challenges like uneven development, library act not implementing properly, lack of proper financial resources, low literacy rate etc. should be considered properly then make a proper plan to overcome from all these problems.
- (10) Authorities should take required steps and make it sure that maximum no. of libraries should be automated.
- (11) Organizations like RRRLF put pressure on state government time to time to enact library legislation in every state.
- (12) Public libraries have many services like lending services, reference services, audio-video service, reprographic, good building, useful collection etc. should be more useful and effective if we implement them properly and get updated new services and system with time to time.
- (13) Most importantly Public libraries should make special arrangement for differently abled persons; old age persons etc. so that everyone can take advantage of Public libraries.

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Benefits and use of traditional spices during COVID-19 pandemic to boost immunity

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Abstract:- The coronavirus disease 2019 (COVID -19) has created anxieties, turbulence, and fears throughout the world. A number of research findings are also pouring in from all sides to improve the immunity from the attack of this virus. The demand is to protect ourselves from this deadly disease. In the absence of known medicines for this condition, the whole world is looking for preventive strategies and additional remedies from different traditional systems of medicines. Indian traditional foods are based on the different indigenous systems of medicine which is the natural way of achieving physical and mental wellness. Though, the whole world realized that food plays a major role in disease prevention only in the 20th century, ancient India seems to have realized the importance of food in health and wellness much ahead of time. We have some traditional spices for boosting our immunity by which we can prepare our self to fight against COVID-19 pandemic.

Keywords:- Immunity, traditional food, spices, pandemic, health

Introduction:- The coronavirus disease 2019 (COVID -19) pandemic has created anxieties, turbulence, and fears throughout the world (Hamele et al., 2018); it is the sixth global health crisis since the flu pandemic of 1918. COVID -19 will not be the last pandemic in our extremely interconnected world or even the worst, that is, if we pay no observance to the warning bells now, and hardly it won't be the worst.

In a long succession throughout history, pandemic outbreaks have decimated societies, determined outcomes of wars, wiped out entire populations, but also, paradoxically, cleared the way for innovations and advances in sciences (including medicine and public health), economy, and political systems. Pandemic outbreaks, or plagues, as they are often referred to, have been closely examined through the lens of humanities in the realm of history, including the history of medicine (Huremović, 2019).

COVID-19 started from one city of China in December 2019, but in a short span of time, it covered almost all over the world (WHO, 2020b). Nearly 216 countries of the whole world are struggling for their civilization and livelihood against the coronavirus pandemic. On 11 January 2020, China declared first death of their 61 years old citizen due to COVID -19, who was exposed to the seafood market (WHO, 2020b). WHO announced this coronavirus disease as COVID -19 (WHO, 2020a) and pandemic on 11 March 2020, after reaching the virus infection to 114 countries across the world. Fast forward to 2023, the COVID-19 pandemic is largely behind us. Most of the world has been vaccinated, though we have to reduce the rise and people should still wear masks. Although we mourn the millions who died, we have entered a post -pandemic world in which most things are more or less as they were before COVID-19. Travel and trade are unrestricted; everything from dinner parties and big weddings to stadium concerts and mega church services are being held again; and economies are booming to keep pace with pent-up demand.

Then, just as suddenly as COVID-19 emerged, disease detectives discover a fresh cluster of a new, pneumonia-like illness. Testing quickly confirms that it is not a variant of COVID -19 but a new influenza virus that jumped —somehow, somewhere—from birds to humans. The new virus is as infectious as the one that caused COVID -19 but four times as deadly. And unlike COVID -19, but like the devastating 1918 influenza pandemic, the new virus is particularly deadly to young adults—and, in this case, also to children.

With the remarkable progress in medicine and related technologies, many infectious diseases can now be prevented and treated. This is the result of a public health revolution that began in the 1940s with the discovery of antibiotics for bacterial diseases, and expanded with improvements in their safety, efficacy, and acceptability. Similarly, the development of vaccines, particularly for infants and young children, has given global protection against a number of childhood killers (WHO, 2018).

The healthcare system around the world has been posed with an unusual challenge by the pandemic Covid 19 (Li et al., 2020). A number of research findings are also pouring in from all sides to improve the immunity from the attack of this virus. The demand is to protect ourselves from this deadly disease. The lack of awareness and negligence in common public can be a chokepoint and it is important to educate people to understand about the control mechanism (Jones et al., 2008). Appropriate planning for preparing the individuals for pandemics has to be incorporated in our system, so that any future crisis can be dealt in an easier way. Schools, colleges, and other educational institutes should execute immunization and hygiene and health practices in advance to promote prevention (Saxena and Saxena, 2020). This study will elaborate the various traditional spices to boost the immunity system during this pandemic time.

Methodology:-In this study, all the data were collected which we were using in ancient times, the traditional ways by which we were curing infections and diseases. We performed a literature search for articles available in the electronic database, such as Pub Med, Cochrane Reviews, Google Scholar, the US Centers for Disease Control and Prevention, WHO publication websites, etc.

The curative effect of food is an established belief for many generations in India. Indian culture has strongly suggested the role of diet in both preventive and therapeutic medicines. India is the land of traditions and religious beliefs that stand proudly next to the global technology (Shubhashree et al., 2020).

The Indian traditional foods are based on the different indigenous systems of medicine which is the natural way of achieving physical and mental wellness. Rasam, a soup of spices, is a traditional South Indian food. It is traditionally prepared using tamarind juice as a base, with the addition of Indian sesame oil, turmeric, tomato, chili pepper, black pepper, garlic, cumin, curry leaves, mustard seeds, coriander, asafoetida, sea salt, and water. Rasam is a classic example of traditional functional food with all its ingredients medicinally claimed for various ailments. The systematic consumption of such traditional functional food provides an excellent preventive measure to ward off many diseases. Tribal families of some parts of India, consume rasam for the treatment of fever, common cold, and diarrhoea (Sharma, 2016). We have many traditional methods for boosting our immunity by which we can prepare our self to fight against any future pandemics.

Traditional Spices

1. Ginger

Ginger is a rhizome or root of the flowering plant called as *Zingiber officinale* and belongs to the Zingiberaceae family. Because of its rich nutritional and medicinal properties, it has been used as an active ingredient in many Ayurvedic medicines. The presence of Gingerol, which is an active component of ginger, makes it a perfect immunity booster. Ginger has a warming effect on the body and is loaded with anti-inflammatory gingerols and shogaols that help relieve a sore throat and drain the congestion and are also said to kill rhinoviruses which cause cold and flu. Consuming a teaspoon of fresh ginger juice and honey daily during the winters can help prevent seasonal infections.

2. Tulsi

During the COVID-19 time, Tulsi (*Ocimum tenuiflorum*) has been used in every kitchen for treating cold and cough. Holy basil or Tulsi is known to be one of the best herbs that boost the immunity. It consists of phytochemicals, bioflavonoids, and anti-oxidants compounds, like rosmarinic acid, which is the best anti-microbial agent for treating respiratory infections. Tulsi has the great potential to improve immunity and relieving symptoms of asthma and arthritis and has been a part of several ayurvedic combinations in treating a number of other ailments like diarrhoea, fever, dysentery, arthritis, dyspepsia, vomiting, acidity, cardiac disorders, back pain, skin diseases, etc.

3. Black pepper

Black pepper or *Piper nigrum* L. offers a large number of health benefits along with its flavor-enhancing properties. It contains piperine that is an active ingredient, which holds rich phytochemistry and includes volatile oil, oleoresins, and alkaloids. A strong immune system is important to avoid illness, and black pepper with its antioxidant, antimicrobial potential and gastro-protective modules can help us as well. Active compounds of black pepper play an important role in boosting white blood cells that our body uses to fight off invading bacteria and viruses. Black pepper is loaded with antibacterial and antibiotic properties as it is a rich source of immunity-boosting Vitamin C. We can have it by making tea by adding one cup of water, pinch of crushed black pepper, and some tulsi leaves. Sipping the tea 3–4 times in a day will be very helpful against cold and cough (Sharma, 2016).

4. Cinnamon

Although the world is fighting with the novel coronavirus, everyone is moving to natural and healthy options which can prevent them from virus. This is indeed a time when all of us need to take extra measures to stay safe this season. Cinnamon (*Cinnamomum zeylanicum*) is known to have anti-inflammatory, antioxidant, and antimicrobial properties, so apart from boosting the immune system, it also helps to fight various kinds of infection. Antioxidants are substances that help to prevent or slow damage to cells which is caused by free radicals, and are unstable molecules produced by the body in response to environmental and other factors. So, despite the “foreign invader” threatening the health of the individuals, cinnamon can be of most important as a spice in food recipes or in the form of supplement.

5. Turmeric

Curcuma longa or turmeric consists of a compound called curcumin, which is known to have most of the potent health benefits of this yellow spice. It has anti-inflammatory properties that help to boost immunity and to fight any kind of infection in the body and relieve the symptoms of cough and cold. Turmeric has immunomodulatory properties, so it has been broadly used in India for drug preparation. A few research studies have demonstrated that curcumin can adjust the capacity of human and murine lymphocytes including T and B cells (Singh et al., 2010). The rhizomes and oils of turmeric have extraordinary significance. Sipping a glass of warm water with turmeric every day in the morning keeps your body free from toxins and elements. Make it your first drink. It is not just good for your liver and is said to flush out toxins from the body, but it is also believed to accelerate mucus production, which naturally flushes out microbes from the respiratory tract.

6. Fennel seeds

Fennel (*Foeniculum vulgare*) is known to have antimicrobial and antiviral agent. Drinking fennel tea can help to fight against the pathogens that attack the immune system. The main

compound of fennel seeds is trans -anethole, which is found to be quite effective against herpes viruses. The small seeds also boost the immunity and decrease inflammation in the body. The selenium, found in fennel, seems to stimulate production of killer T cells, which suggest that it may improve immune response to infections.

7. Oregano

Oregano (*Origanum vulgare*) is another important herb of the mint family with powerful antiviral properties. The plant contains compounds called carvacrol that has proven to be effective on viruses. Oregano also contains antibacterial and antifungal properties. People around the Mediterranean region have been using oregano for centuries to treat many ailments, such as asthma, colds, skin sores, relieve inflammation, in herbal medicines.

8. Cumin

Cumin (*Cuminum cyminum*) is an important spice, containing antimicrobial activity of the essential oil, used in Indian cooking. Cumin is a widely used spice in cuisine as well it has many medical uses. In indigenous prescription, cumin seeds have for quite some time been viewed as a hunger stimulant and carminative; they are stomachic, astringent, and valuable in the runs; they improve craving and taste (Kumar, 2020). Black cumin has been used for decades for medicinal purposes. The components of this plant are known for its intense immune-regulatory, anti-inflammatory, and antioxidant benefits in obstructive respiratory disorders. A molecular docking study also gave evidences that Black cumin slow down COVID-19 and may give the same or better results than the FDA approved drugs. Many research studies have confirmed pharmacological capabilities of the compounds present in the black cumin in regulating inflammatory cytokines during obstructive respiratory disorders, for example, Thymoquinone suppresses mRNA expression that down regulates interferon genes and other inflammatory responses (Kulyar, 2021).

Discussion and Conclusions

In India, several spices used for daily consumption are said to possess antiviral properties. Hence, there is a realistic possibility to reach a therapeutic dose by daily dietary consumption. There are many drugs mentioned in Ayurveda which are used in the kitchen as food for daily consumption like Turmeric, asafoetida, and garlic which have antimicrobial activities. In the wake of the Covid-19 outbreak, entire mankind across the globe is suffering. Enhancing the body's natural defence system (immunity) plays an important role in maintaining optimum health. We all know that prevention is better than cure. Although there is no medicine for COVID-19 as of now, it will be good to take preventive measures which boost our immunity in these times.

As this study will be based on the literature study, there would not be accurate details and information by which we can provide hundred percent assurance to get healthy lifestyle and livings, and free from all diseases. Excess consumption of immuno-boosting spices or any herbal concoctions can lead to many side-effects, such as excessive bleeding, digestive issues, acidity, problems in urinating, boils in the mouth, bleeding from the nose. So we should take them in appropriate amount only. Our study will give suggestions, by adopting them, one can definitely prevent them from any major harm and can survive longer and healthy.

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Dynamics of Non-static Plane Symmetric Isotropic Universe with Special Form of Deceleration Parameter

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Abstract:-In this context we have study the dynamics of non -static plane symmetric cosmological model with special form of deceleration parameter by utilizing Saez -Ballester Theory of Gravitation (SBTG). Also we have discussed some kinematical and geometrical parameters of the models.

Keywords: - Dynamics of Fluid, Non -Static Plane Symmetric Universe, Special Form of Deceleration Parameter, SBTG

INTRODUCTION: - Quite possibly the most difficult issues of present day cosmology is to portray the positive late time acceleration (Perlmutter & et al., 1997) (Riess & et al., 1998) (Copeland & et al., 2006) [1-3] through a solitary self -predictable hypothetical plan. To be sure, the actual physical origin of the deliberate enormous accelerate isn't very much accounted on hypothetical grounds, without summoning the presence of an extra liquid which drives the universe elements, ultimately ruling over different species. According to the concordance world perspective on cosmology, the universe experienced an early time decelerated stage, sought after by the progression of radiation and matter directed periods, prior to going to the current, sped up stage. The sped up stage can't be adequately depicted through broad relativity standard model of molecule material science since extra degree(s) of opportunity have all the earmarks of being on a very basic level required. From one hand we may trademark these extra levels of opportunity to new, colorful types of issue, on the whole named as Dark energy (DE)[4 -5] (Spergel & et al., First -Year Wilkinson Microwave Anisotropy Probe (WMAP)* Observations: Determination of Cosmological Parameters, 2003) (Spergel & et al., Wilkinson Microwave Anisotropy Probe (WMAP) Three Year Results: Implications for Cosmology, 2007) . The most un -complex comprehension for this DE is the introduction of a cosmological consistent identifying with state of state limit $\omega = -1$. Furthermore, in the assembled works dissipated from the cosmological reliable there are various candidates of DE which is identified with the energy thickness of a dynamical scalar field, for instance, substance ($\omega > -1$) [6, 7] (Ratra & Peebles, 1988) (Wetterich, 1998). Spirit field ($\omega < -1$) [8, 9] (Caldwell, 2002) (Wei & Tian, 2004) and Quinton (that can inverse apparition locale to center district) [10, 11] (Elizalde & et al., 2004) (Nojiri & et al., 2005) Chaplygin gas [12] (Kamenshchik & et al., 2001) ,k-essence [13-16] (Chiba & et al., 2000) (Armendariz-Picon & et al., 2000) (Scherrer, 2004) (Capozziello & et al., 2010) , Tachyon field, Holographic and Age realistic DE.

Demianski et al. (1987) (Demianski et al., 1987) examined the elements of a 11 -dimensional homogeneous cosmological model. They accepted that the $t=\text{const.}$ hyper surfaces are results of a 3 -dimensional Bianchi type -IX space and a 7 -dimensional torus. Coley (2005) (Coley, 2005) studied dynamics of cosmological model in Bran -World scenario. Ananda and Bruni (2005) (Ananda & Bruni, 2006) investigated Cosmo -elements and dull energy with non -straight condition of express: a quadratic model. Li (2017) (Li, 2017) inspected the elements of

two-scalar-field cosmological models. Not at all like in the circumstance of remarkable potential, they found that there are late-time attractors in which one scalar field rules the energy thickness of universe and the other one not. They had additionally talked about the chance of various attractors model which is valuable to acknowledge the evolution of the universe from a scaling period to late speed increase time. Bhoyar and Chirde (2018) (Bhoyar & Chirde, 2018) examined Bianchi type-III and Kantowski Sachs cosmological model containing attractive field with variable cosmological steady in everyday hypothesis of relativity. The overall arrangements of the Einstein's field conditions for the cosmological models they had acquired under the suspicion of against solid liquid.

Tandon(2018)investigated, a model in the presence of general relativity for the setting of Bianchi structure I cosmological models. For finding a deterministic model of the universe and to get the specific arrangements of the field conditions of Einstein, they guessed Hubble boundary which gives the fixed worth of deceleration boundary that gains the necessary aftereffects of the field conditions of Einstein. Pawar and Shahare (Pawar & Shahare, 2019) (2019) researched elements of shifted Bianchi type-III cosmological model in gravity hypothesis. (Pavluchenko, 2019) studied Dynamics of the cosmological models with perfect fluid in Einstein–Gauss–Bonnet gravity: low-dimensional case. Reddy et al. (2019) (Reddy, Aditya, Naidu (2018) researched a dull energy model within the sight of mass less scalar field in the edge work of locally rotationally symmetric (LRS) Bianchi type-II space-time. To track down a deterministic model of the universe they had utilized the half and half development law to settle Einstein's field conditions. They had additionally, utilize a connection between metric potential for this reason. Singh and Sonia (2020) (Singh & Sonia, 2020) studied dynamical System Perspective of Cosmological Models Minimally Combined with Scalar Field. Zhuravlev and Chervon(2020) (Zhuravlev & Chervon, 2020) introduced a subjective examination of chiral cosmological model (CCM) elements with two scalar fields in the spatially level Friedman–Robertson–Walker Universe. The asymptotic conduct of chiral models they explored dependent on the qualities of the basic places of the self-collaboration potential and zeros of the metric segments of the chiral space. The grouping of basic marks of CCMs they proposed. The part of zeros of the metric segments of the chiral space in the asymptotic elements they dissected. They had shown that such zeros lead to new basic marks of the relating dynamical frameworks. Borgade et al. (Borgade et al., 2021) (2021) committed to oneself impelling examination of elements of mass gooey string in LRS Bianchi type-I cosmological model inside the condition of elective hypothesis of gravity with Langrangian be the indiscreet perform of gravity hypothesis. Vinutha and Kavya (Vinutha & Sri Kavya, 2021) (2021) examined dynamics of cosmological model.

Several authors (Mohanty, G, Sahoo, 2002), (B. Mishra, 2003) and (Rao & Davuluri, 2013) studied the non-static plane symmetric cosmological models. With respect to these models number of Researchers (Adhav et al., 2010) (Katore & Rane, 2006) (Pawar & Solanke, 2016) (R. K. Mishra & Chand, 2020) used the Saez–Ballester theory of gravity (Sáez & Ballester, 1986) to study the cosmological Models.

Hence with this discussion we have studied dynamics of fluid in non-static plane symmetric universe in the framework of Saez–Ballester theory of gravitation utilizing special form deceleration parameter. The whole discussion for this context is mentioned in the following manner.

MODEL AND THE FIELD EQUATIONS

Let us consider a non-static plane symmetric space-time of the form

$$ds^2 = e^{2h} (dt^2 - dr^2 - r^2 d\theta^2 - s^2 dz^2), \quad (1)$$

Where, h and s are the functions of cosmic time t and r, θ, z are the general cylindrical coordinates.

The field equation in SBTG is

$$G_{ij} - \tilde{\omega} \phi^n \left(\phi_{,i} \phi_{,j} - \frac{1}{2} g_{ij} \phi_{,a} \phi^{,a} \right) = -T_{ij} \quad (2)$$

Where the scalar field satisfying the equation

$$2\phi^m \phi_{,j}^j + m\phi^{m-1} \phi_{,b} \phi^{,b} = 0; \quad (3)$$

where ϕ is the Scalar field and m is constant.

The dynamics of fluid energy momentum tensor of the form is mentioned as,

$$T_i^j = (p + \rho) u_i u_j - p g_{ij} \quad (4)$$

$$T_i^j = \text{diag}[-p, -p, -p, \rho], \quad (5)$$

where p is the pressure and ρ is the energy density of the fluid respectively.

By considering the SBTG field equations from (2) & (3) with respect to energy momentum tensor (4) by utilizing model (1) we have the following set of field equations as:

$$\frac{1}{e^{2h}} \left[2\ddot{h} + \dot{h}^2 + \frac{2\dot{h}\dot{s}}{s} + \frac{\ddot{s}}{s} \right] - \frac{\tilde{\omega}}{2} \phi^n \dot{\phi}^2 = -p \quad (6)$$

$$e^{-2h} \left[2\ddot{h} + \dot{h}^2 \right] - \frac{\tilde{\omega}}{2} \phi^n \dot{\phi}^2 = -p \quad (7)$$

$$e^{-2h} \left[\frac{2\dot{h}\dot{s}}{s} + 3\dot{h}^2 \right] + \frac{\tilde{\omega}}{2} \phi^n \dot{\phi}^2 = \rho \quad (8)$$

SOLUTION OF THE FIELD EQUATIONS

The arrangement of Equation (6) to (8) is having with three directly autonomous conditions with five unknowns h, s, ϕ, p & ρ . In order to obtain its solution, we consider special form of deceleration parameter which has a significant importance in cosmology since it elegantly illustrates different cosmic evolutionary phases given by the following equations.

The scale factor with respect to the special form of deceleration parameter is:

$$a = (e^{akt} - 1)^{\frac{1}{\alpha}} \quad (9)$$

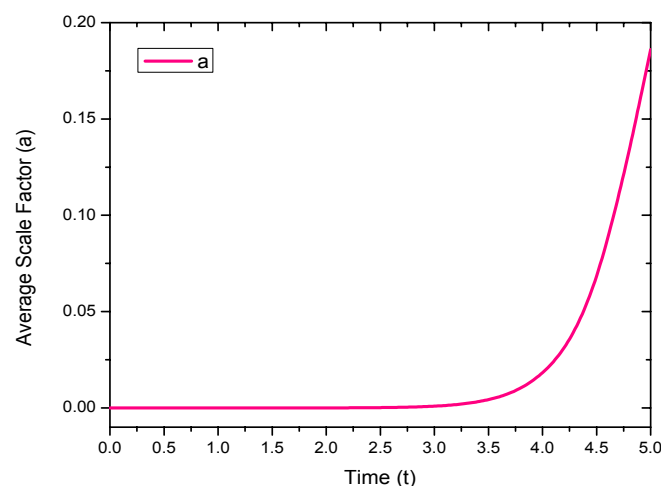


Figure 1 Plot of Scale Factor Vs Time with suitable choice of constants $k = 1.1$ & $\alpha = 0.11$.

The average scale factor of the model with respect to special form of deceleration parameter increases exponentially as shown in the above **Figure 1** and at $t=0$ the average scale factor vanishes hence $t=0$ is the singular point of the scale factor.

For getting the values of metric potentials; we assume that the relation between the metric potentials as:

$$e^h = s^n; n > 1 \quad (10)$$

Hence with this the metric potentials are found out to be,

$$s = \left(\frac{1}{\alpha} \right)^{\frac{1}{4n+1}} (e^{\alpha kt} - 1)^{\frac{3}{\alpha(4n+1)}} \quad (11)$$

$$e^h = \left(\frac{1}{\alpha} \right)^{\frac{n}{4n+1}} (e^{\alpha kt} - 1)^{\frac{3n}{\alpha(4n+1)}} \quad (12)$$

Both the metric potentials as mentioned above are vanishes at $t=0$ hence it is the singular point of the metric potentials.

Utilizing the metric potentials (11) and (12) the resulting pressure of the Universe is found out to be,

$$p = \frac{\alpha_1}{\alpha} e^{\alpha kt} (e^{\alpha kt} - 1)^{\frac{-6n}{\alpha(4n+1)}} \left[6n\alpha - \frac{9n^2}{(4n+1)(1 - e^{-\alpha kt})} \right] + \frac{c_2}{\alpha(1 - e^{-\alpha kt})} (e^{\alpha kt} - 1)^{\frac{6n(n+1)}{\alpha(4n+1)}} \quad (13)$$

The above expression is the expression of pressure of the universe filled with dynamics of fluid and it is vanishes at $t=0$ and is the singular point of the equation of pressure. As the nature of scale factor the equation of pressure is having with exponential nature.

Utilizing the metric potentials (11) and (12) the resulting energy density of the Universe is found out to be,

$$\rho = \frac{9\alpha_1 n(3n+2)}{\alpha} \left[\frac{1}{(1 - e^{-\alpha kt})} \right]^2 (e^{\alpha kt} - 1)^{\frac{-6n}{\alpha(4n+1)}} + \frac{c_2}{\alpha(1 - e^{-\alpha kt})} (e^{\alpha kt} - 1)^{\frac{6n(n+1)}{\alpha(4n+1)}} \text{ for } \alpha_1 = \left(\frac{1}{\alpha} \right)^{\frac{-2n}{4n+1}} \frac{k^2}{4n+1} \quad (14)$$

The energy density of dynamics of fluid is as shown in the above equation and while observing it we can conclude that the energy density of the universe is increases exponentially with respect to cosmic time and in the similar manner at $t=0$ the energy density reaches at 0 hence it is the singular point of the energy density of the model of the universe.

Utilizing the metric potentials (11) and (12) the resulting Saez - Ballester scalar potential of the Universe is found out to be,

$$\phi = C_1'' (e^{\alpha kt} - 1)^{\frac{6n}{\alpha(4n+1)}} \quad (15)$$

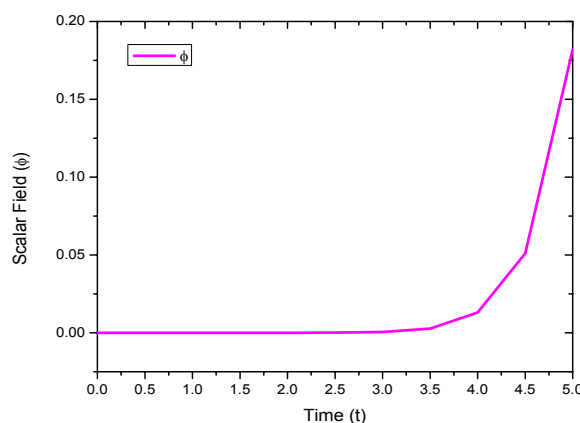


Figure 2 Plot of Scale Factor Vs Time with suitable choice of constants $n = 0.52, k = 1.1$ & $\alpha = 0.11$.

The graphical behavior of the scalar field of the model is as shown in the **Figure 2**; the scalar field of the resulting universe is varying exponentially with respect to time variable and is null at $t=0$.

Utilizing the metric potentials (11) and (12) in the model (1) the resulting Cosmological model of the Universe is found out to be,

$$ds^2 = \left[\left(\frac{1}{\alpha} \right)^{\frac{2n}{4n+1}} (e^{\alpha kt} - 1)^{\frac{6n}{\alpha(4n+1)}} \right] \left[dt^2 - dr^2 - r^2 d\theta^2 - \left[\left(\frac{1}{\alpha} \right)^{\frac{2}{4n+1}} (e^{\alpha kt} - 1)^{\frac{6}{\alpha(4n+1)}} \right] dz^2 \right], \quad (16)$$

The above model (16) of the universe is the special form of deceleration parameter cosmological model and we got the potential functions of this model in terms of special form. At $t = 0$ the model shows singularity and model turn into constant. In the similar manner the potential functions (14 & 15) are also vanishes for $t = 0$.

KINEMATICAL PARAMETERS OF THE MODEL

The kinematical parameters of the universe and its graphical behavior are discussed in this section.

The spatial volume with respect to the average scale factor which is nothing but the special form of deceleration parameter is found out to be,

$$V = (e^{\alpha kt} - 1)^{\frac{3}{\alpha}} \quad (17)$$

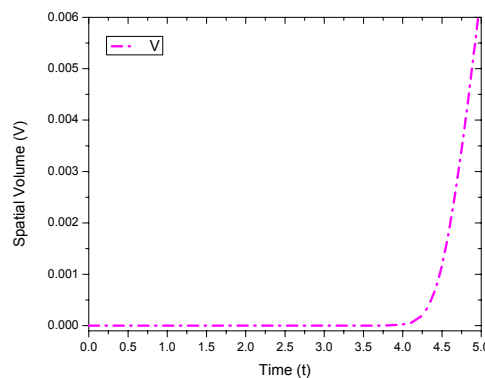


Figure 3 Plot of Spatial Volume Vs Time with suitable choice of constants $k = 1.1$ & $\alpha = 0.11$.

The Hubble parameter for model (1) is found out to be,

$$H = \frac{\dot{a}}{a} = \frac{ke^{\alpha kt}}{(e^{\alpha kt} - 1)} \quad (18)$$

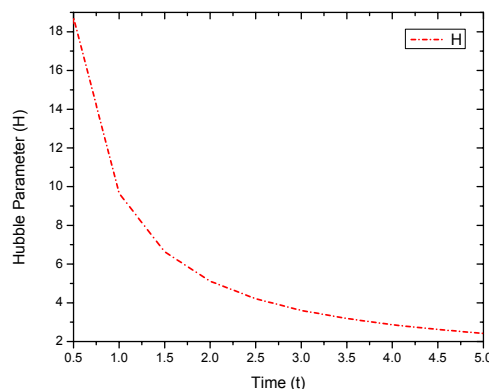
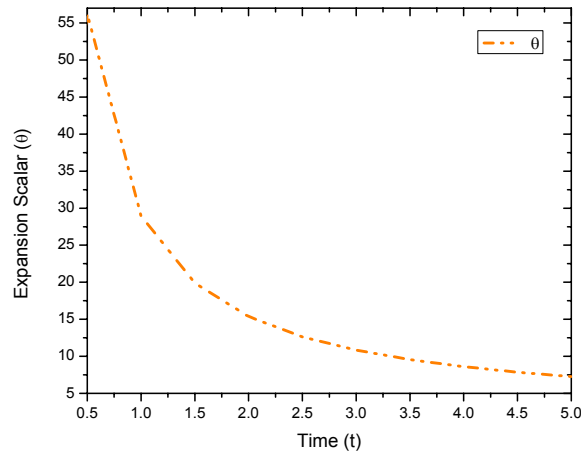


Figure 4 Plot of Hubble Parameter Vs Time with suitable choice of constants

$k = 1.1$ & $\alpha = 0.11$.

The obtained expansion scalar θ is,

$$\theta = 3H = \frac{3ke^{\alpha kt}}{(e^{\alpha kt} - 1)} \quad (19)$$

**Figure 5** Plot of Expansion Scalar Vs Time with suitable choice of constants

$k = 1.1$ & $\alpha = 0.11$.

The mean anisotropy parameter for the given expansion of the model (1) is found out to be,

$$A_m = \frac{(e^{\alpha kt} - 1)}{ke^{\alpha kt}} \quad (20)$$

The resulting shear scalar of the given model is

$$\sigma^2 = \frac{3k}{2} \frac{e^{\alpha kt}}{(e^{\alpha kt} - 1)} \quad (21)$$

The deceleration parameter is found out to be,

$$q = \frac{\alpha}{e^{\alpha kt}} - 1 \quad (22)$$

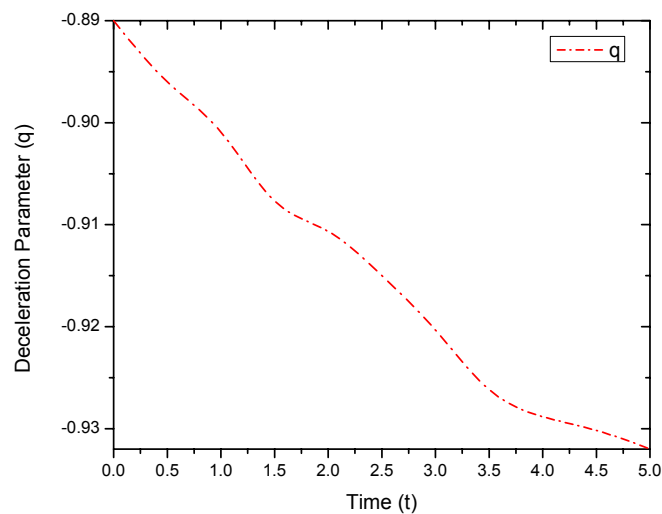


Figure 6 Plot of Deceleration Parameter Vs Time with suitable choice of constants $k = 1.1$ & $\alpha = 0.11$.

The nature of deceleration parameter of the model is as shown in the above graphical representation. While observing above **Figure 6** it can be concluded that the values of deceleration parameter are lies in between $-0.89 \leq q \leq -0.93$ and by the recent observation we can say that the universe shows the decelerated expansion of the universe.

CONCLUSIONS

In this present article, we have explored the dynamics of non-static plane symmetric cosmological models in the frame work of SBTG. For finding the solutions of field equations we have consider the special form of deceleration parameter. The metric potentials found for this model are the exponential function of cosmic time t . The resulting cosmological model having a singularity at, $t = 0$ and also the model is in exponent form. The parameters p, ρ & ψ is having the singular point at $t=0$. The deceleration parameter is lies in between $-0.89 \leq q \leq -0.93$ and by the recent observation we can conclude that the universe shows the decelerated expansion of the universe. Hence these all findings show that our current universe is experiencing an accelerated expansion. Some physical and kinematical parameters of the models have been graphically described.

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Evaluation of Hepatoprotective and Antioxidant potential of seed and fruit extracts of *Lagenaria siceraria* and *Luffa Acutangula* against antitubercular drugs induced hepatotoxicity in experimental rats

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Abstract:- The present investigation deals with the evaluation of hepatoprotective and antioxidant potential of seed and fruit extract of both *Lagenaria siceraria* and *Luffa acutangula*. Liver toxicity was induced by antitubercular drug Rifampicin. The plant extract were administered orally once daily for 28 days. The hepatoprotective activity was assessed using various biochemical parameters SGOT, SGPT, ALP, bilirubin, total protein, albumin and LDH. Meanwhile, in vivo antioxidant activities as SOD, CAT, GSH and, LPO were measured in liver homogenate also histological examinations were carried out to assess hepatoprotective activity. Statistical analysis used: The values were subjected to one way analysis of variance (ANOVA) followed by Tukey multiple compare test. Results were considered statistically significant when $P < 0.05$. Obtained results demonstrated that the treatment with ethanolic extract of *Lagenaria siceraria* and *Luffa acutangula* significantly prevented drug induced increase in serum levels of hepatic enzymes. Furthermore, extract significantly reduced the lipid peroxidation ($P < 0.01$ to $P < 0.001$) in the liver tissue and restored activities of defense antioxidant enzymes. Histopathology of liver tissue showed that extract attenuated the hepatocellular necrosis, regeneration and repair of cells toward normal.

Key word:- *Lagenaria siceraria*, *Luffa acutangula*, Rifampicin, Histopathology

Introduction

Lagenaria siceraria (Family: Cucurbitaceae) is an annual herbaceous climbing plant with a long history of traditional medicinal uses in many countries, especially in tropical and subtropical regions. Since ancient times the climber has been known for its curative properties, and has been utilized for treatment of various ailments, including jaundice, diabetes, ulcer, piles, colitis, insanity, hypertension, congestive cardiac failure (CCF), and skin diseases. A wide range of chemical compounds including sterols, terpenoids, flavonoids, and saponins have been isolated from the species. Its extracts have been found to possess various pharmacological activities.[1]

Luffa acutangula (Family: Cucurbitaceae), a perennial plant grows mainly in India, Southeast Asia, China and other parts of Africa. The plant has been used in jaundice, diabetes, hemorrhoids, dysentery, headache, ringworm infection, and leprosy. More than 50 chemical compounds have been isolated from a plant which mainly comprises flavonoids, anthraquinones, proteins, fatty acids, saponin triterpene, volatile components, and other phyto constituents. Crude extract of plant and its isolated compounds possess broad pharmacological activities such as antidiabetic, hepatoprotective, antioxidant, immune modulatory, CNS depressant, analgesic, and anti-inflammatory.[2]

Liver is the most important organ, which plays a pivotal role in regulating various physiological processes in the body. It is involved in several vital functions, such as metabolism, secretion and storage. [3] It has great capacity to detoxicate toxic substances and synthesize useful principles. Therefore, damage to the liver inflicted by hepatotoxic agents is of grave consequences. Liver diseases are mainly caused by toxic chemicals, excess consumption of alcohol, infections and autoimmune disorders. [4] Most of the hepatotoxic

chemicals damage liver cells mainly by inducing lipid peroxidation and other oxidative damages.[5] In spite of tremendous advances in modern medicine, there are no effective drugs available that stimulate liver function, offer protection to the liver from damage or help to regenerate hepatic cells. In absence of reliable liver -protective drugs in modern medicine, there are a number of medicinal preparations in Ayurveda recommended for the treatment of liver disorders and their usage is in vogue since centuries. To the best of our acquaintance there were no scientific reports available in support of traditional claim of hepatoprotective and anti -oxidant potential of fruit extracts of *Lagenaria siceraria* and *Luffa Acutangula*. Therefore, present study was designed to validate the hepatoprotective effects of seed and fruit extracts of *Lagenaria siceraria* and *Luffa Acutangula* against rifampicin induced liver damage in Wistar rats. Rifampicin, being the first line drug used as anti -tuberculous chemotherapy, is known to be associated with hepatotoxicity.[7]

Materials and methods

Chemicals and drugs:- Rifampicin and Silymarin used were of analytical grade and were procured from Sigma Chemical Co., St. Louis, MO, USA, and Qualigens Fine Chemicals, Mumbai, India.

Preparation of fruit extract :-The fruits and seeds of both *Lagenaria siceraria* and *Luffa acutangula* were collected, shaded and dried in air, dried fruits and seeds of *Lagenaria siceraria* and *Luffa Acutangula* are subjected to maceration process, the method was repeated for several times pulverize and extract *Lagenaria siceraria* with aqueous ethanol for 72 hours to ensure maximum removal of the substance from the fruit.[8]

Animals:-Male Wistar rats (150 to 200 g) were procured from National Institute of Nutrition, Hyderabad, India. The animals were housed separately in polypropylene cage at temperature of $22 \pm 2^{\circ}\text{C}$ and 50 -60% relative humidity, with a 12 h light: dark cycle respectively, for one week before and during the commencement of experiment.[9] Animals were allowed to access standard rodent pellet diet (Dayal animal feed, India) and drinking water. Food was withdrawn 18 -24 h before the experiment, though water was allowed ad libitum and allocated to different experimental groups. The study protocols were approved by Institutional Animal Ethics Committee (IAEC) of Jeeva Life Sciences Hyderabad.

Toxicity studies :-Acute toxicity study was performed for the chloroform, ethanol and aqueous extract of The fruits and seeds of both *Lagenaria siceraria* and *Luffa acutangula* according to the Organization for Economic Co -operation and Development guidelines (OECD)-No. 423 (2001) for acute toxic classic method [10]. Three female Swiss albino mice were used for each step in this study. The animals were kept fasting for overnight only on water, after which the extracts were administered intragastrical at the different doses of 1200 and 1600 mg/kg. Food or water was withheld for a further 1 -2 h after drug administration. Mice were closely observed for the initial 4 h after the administrations, and then once daily for 14 days to observe the mortality. If mortality occurred in two out of three animals at any dose, then this dose was assigned as toxic dose. If the mortality occurred in one animal, then this same dose was repeated to confirm the toxic dose. If mortality did not occur, the procedure was repeated for further higher dose, i.e., 2000 mg/kg

Anti-tubercular drugs induced hepatotoxicity

Male Wistar rats (150 to 200 g) were divided into 7 groups comprising six animals (n = 6) in each group. **Group I (NC)** received 1% carboxy methyl cellulose (CMC) and served as healthy control. **Group II** Positive control received rifampicin as toxicant (1 gm / kg P.O) every 72 h, while **Group III** Received Silymarin as standard (25mg / kg P.O) for 10 days

Simultaneously Rifampicin (1 gm / kg P.O) every 72 h. **Group IV** Received ethanolic extract of *Lagenaria Siceraria* (250 gm / kg P.O) Simultaneously rifampicin (1 gm / kg P.O) every 72 h. **Group V**

Received ethanolic extract of *Luffa Acutangula* (250 gm / kg P.O) Simultaneously rifampicin (1 gm / kg P.O) every 72 h. **Group VI** Received aqueous extract of *Lagenaria Siceraria* (250 gm / kg P.O) Simultaneously rifampicin (1 gm / kg P.O) every 72 h. **Group VII** Received aqueous extract of *Luffa Acutangula* (250 gm / kg P.O) Simultaneously rifampicin (1 gm / kg P.O) every 72 h.

The experiment was completed at the end of 28 days of experimental period, the body weight of each rat was taken before sacrifice. The overnight fasted animals were anaesthetized and sacrificed 24 h after the last dose of the drug. Blood was collected by retro-orbital plexus followed by heart puncture and allowed to clot before centrifugation at 2500 g for 15 min at 4 °C to separate serum. The liver tissue was washed twice with ice cold saline, blotted, dried, and weighed. The relative liver weight was calculated as the percentage ratio of liver weight to the body weight. A small portion of the tissue was fixed in formalin for histological examination. The remaining tissues were stored at 20 °C for not more than 12 h before analysis [11].

Assessment of antioxidant parameters

Hepatic tissues of rats were homogenized (10%) in phosphate buffer (pH 7.4) with a Potter - Elvehjem glass homogenizer. The homogenate was centrifuged at 12,000 rpm for 20 min at 4 °C to obtain post mitochondrial supernatant (PMS) and it was used for the estimation of lipid peroxidation [12]. The activity of catalase (CAT), superoxide dismutase (SOD), and reduced glutathione (GSH) in the PMS of liver was measured by the methods described by Aebi [13].

Assessment of hepatoprotective activity

The serum was used for estimating the biochemical parameters viz., glutamic oxaloacetic transaminase (SGOT), glutamate pyruvate transaminase (SGPT), alkaline phosphatase (ALP), bilirubin (BL), lactate dehydrogenase (LDH), albumin, total protein (TP) and total bilirubin by using standard assay kit method [14]

Histopathological studies

For histopathological studies, the slices of liver from each group were preserved in 10% buffered neutral formalin (pH 7.4). The tissues were mounted in the laboratory by embedding paraffin sections of 5 -10 m size. These sections were then stained with haematoxyline and eosin dye. The degree of liver damage was examined by a pathologist of CCMB Hyderabad. The degree of necrosis was expressed as the mean of 10 high power fields (HPFs), chosen at random and classified on a scale of 0 -5 (no hepatocyte necrosis, 0; necrosis in few hepatocytes, 1; necrosis in more than 10% but less than 24% of hepatocytes, 2; necrosis in more than 25% but less than 39% of hepatocytes, 3; necrosis in more than 40% but less than 49% of hepatocytes, 4; and necrosis in more than 50% of hepatocytes, 5 as per Silva et al.[15].

Statistical analysis

A result of biochemical estimation has been expressed as mean \pm Standard Error of Mean (SEM). The values were subjected to One Way Analysis of Variance (ANOVA) using Graph Prism version 3.0. The variance in a set of data has been estimated by Tukey multiple compare test. The values of $P < 0.05$ were considered statistically significant.

Results

Acute Toxicity studies

Acute toxicity studies on ethanol and aqueous extract of *Lagenaria Siceraria* (seed and fruit) and *Luffa acutangula* (seed and fruit) were conducted and results were shown in below table.

Table1: Acute Toxicity studies

Treatment	<i>Lagenaria Siceraria</i> seed					
	Dose mg/kg p.o.	No. of animals used	Number Survived	Number died	Mortality %	LD50
Control						
Ethanol extract	1200	20	20	0	0	-
Aqueous extract	1600	20	20	0	0	-
<i>Lagenaria Siceraria</i> fruit						
Ethanol extract	1200	20	20	0	0	-
Aqueous extract	1600	20	20	0	0	-
<i>Luffa acutangula</i> seed						
Ethanol extract	1200	20	20	0	0	-
Aqueous extract	1600	20	20	0	0	-
<i>Luffa acutangula</i> fruit						
Ethanol extract	1200	20	20	0	0	-
Aqueous extract	1600	20	20	0	0	-

Table:2 Effect of *Lagenaria Siceraria* (seed and fruit) and *Luffa acutangula* (seed and fruit) antioxidants

Groups	GSH ($\mu\text{g/g}$ tissue)	SOD (U/mg protein)	CAT (U/mg protein)
Group I	48.74 \pm 0.05	1084.80 \pm 5.39	74.6 \pm 0.5
Group II	25.88 \pm 0.05*	1764.93 \pm 5.36*	29.0 \pm 0.5*
Group III	48.72 \pm 0.05	1188.00 \pm 5.64§	75.8 \pm 4.0
Group IV	32.23 \pm 0.05	1652.80 \pm 5.2	49.4 \pm 0.5
Group V	39.79 \pm 0.05	1478.93 \pm 5.14	57.4 \pm 0.4
Group VI	46.52 \pm 0.05	1187.73 \pm 5.71§	73.6 \pm 0.6§
Group VII	13.00 \pm 0.24	741.33 \pm 25.21	62.8 \pm 1.4

Values are Mean \pm SE, n = 6; * p < 0.05 statistically significant when compared with Group I; § p < 0.05 statistically significant when compared to Group II.

Table: 3 Hydrogen peroxide assay Scavenging profile of *Lagenaria Siceraria*

<i>Lagenaria Siceraria</i> seed					
Concentration/ Absorbance	10 μg	25 μg	50 μg	75 μg	100 μg
Silymarin	1.517 \pm 0.06	1.554 \pm 0.0 4	1.614 \pm 0.0 6	1.623 \pm 0.0 7	1.659 \pm 0. 08
Ethanol extract	0.838 \pm 0.02	0.873 \pm 0.0 4	1.121 \pm 0.0 4	1.118 \pm 0.0 4	1.444 \pm 0. 06
Aqueous extract	1.045 \pm 0.02	0.928 \pm 0.0 3	1.205 \pm 0.0 4	1.174 \pm 0.0 8	1.162 \pm 0. 07
<i>Lagenaria Siceraria</i> fruit					
Concentration/ Absorbance	10 μg	25 μg	50 μg	75 μg	100 μg
Silymarin	1.517 \pm 0.06	1.554 \pm 0.0 4	1.614 \pm 0.0 6	1.623 \pm 0.0 7	1.659 \pm 0. 08
Ethanol extract	0.839 \pm 0.02	0.875 \pm 0.0 4	1.131 \pm 0.0 4	1.128 \pm 0.0 4	1.424 \pm 0. 06
Aqueous extract	1.035 \pm 0.02	0.917 \pm 0.0 3	1.202 \pm 0.0 4	1.172 \pm 0.0 8	1.159 \pm 0. 07

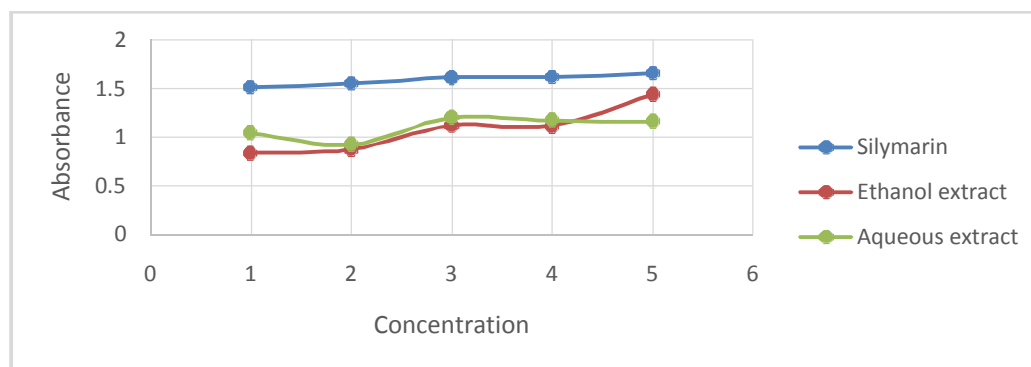


Figure:1Hydrogen peroxide assay Scavenging profile of *Lagenaria Siceraria* seeds

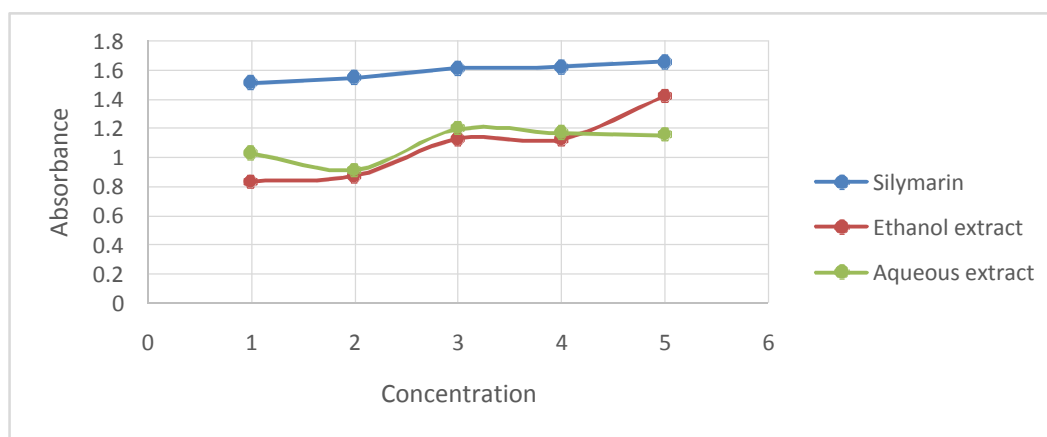


Figure:2Hydrogen peroxide assay Scavenging profile of *Lagenaria Siceraria* fruit

Table: 4 Hydrogen peroxide assay Scavenging profile of *Luffa acutangula*

<i>Luffa acutangula</i> seed					
Concentration/ Absorbance	10µg	25 µg	50 µg	75 µg	100 µg
Silymarin	1.517± 0.06	1.554±0.0 4	1.614±0.0 6	1.623±0.0 7	1.659±0. 08
Ethanol extract	0.829± 0.02	0.871±0.0 4	1.119±0.0 4	1.115±0.0 4	1.437±0. 06
Aqueous extract	1.042± 0.02	0.925±0.0 3	1.202±0.0 4	1.172±0.0 8	1.159±0. 07
<i>Luffa acutangula</i> fruit					
Concentration/ Absorbance	10µg	25 µg	50 µg	75 µg	100 µg
Silymarin	1.513± 0.06	1.551±0.0 4	1.624±0.0 6	1.630±0.0 7	1.655±0. 08
Ethanol extract	0.837± 0.02	0.871±0.0 4	1.129±0.0 4	1.125±0.0 4	1.421±0. 06
Aqueous extract	1.033± 0.02	0.919±0.0 3	1.211±0.0 4	1.169±0.0 8	1.157±0. 07

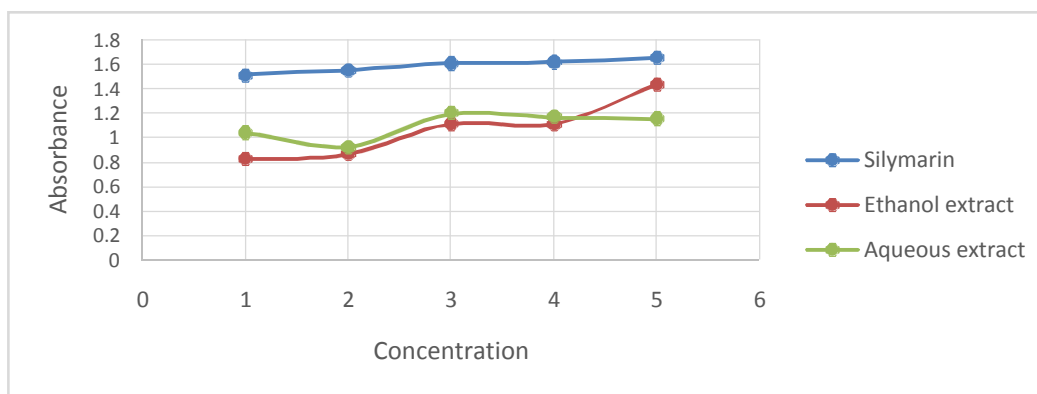


Figure:3Hydrogen peroxide assay Scavenging profile of *Luffa acutangulaseed*

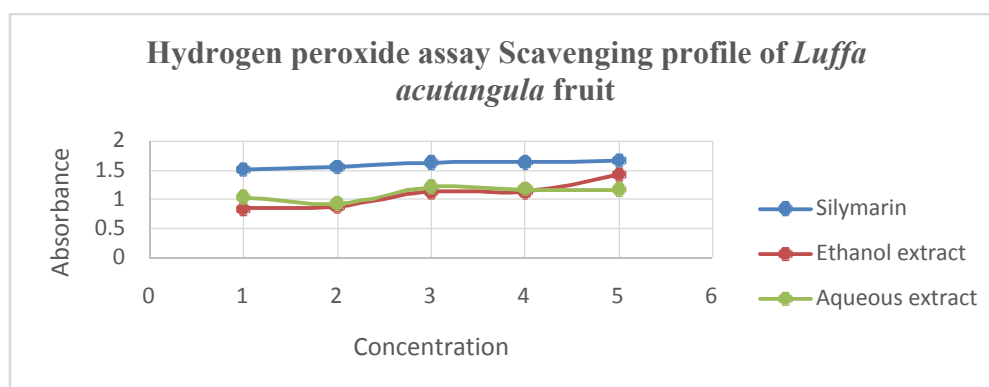


Figure: 4 Hydrogen peroxide assay Scavenging profile of *Luffa acutangulafruit*

Table :5Determination of Reducing Powerof*Lagenaria Siceraria*

<i>Lagenaria Siceraria seed</i>					
Concentration/ Absorbance	10µg	25 µg	50 µg	75 µg	100 µg
Silymarin	1.770±0.06	2.132±0.05	4.943±0.02	4.945±0.02	4.947±0.02
Ethanol extract	0.235±0.04	0.148±0.06	0.201±0.04	0.180±0.05	0.199±0.03
Aqueous extract	0.118±0.04	0.138±0.07	0.166±0.04	0.176±0.06	0.184±0.05
<i>Lagenaria Siceraria fruit</i>					
Concentration/ Absorbance	10µg	25 µg	50 µg	75 µg	100 µg
Silymarin	1.770±0.06	2.132±0.05	4.943±0.02	4.945±0.02	4.947±0.02
Ethanol extract	0.239±0.04	0.150±0.06	0.203±0.04	0.183±0.05	0.198±0.03
Aqueous extract	0.120±0.04	0.140±0.07	0.168±0.04	0.177±0.06	0.186±0.05

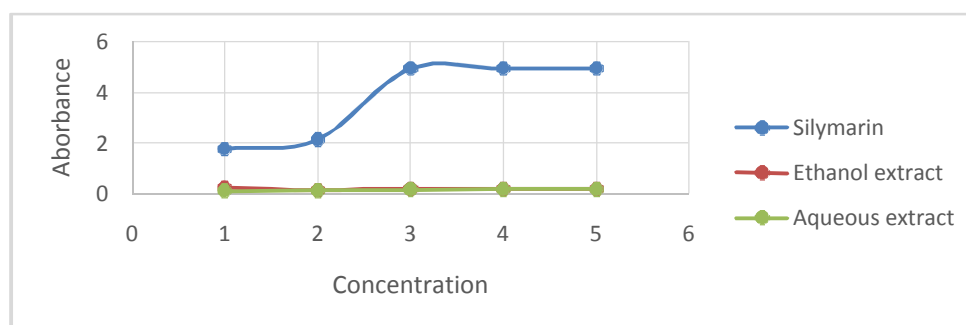


Figure:5 Reducing Power of*Lagenaria Siceraria seeds*

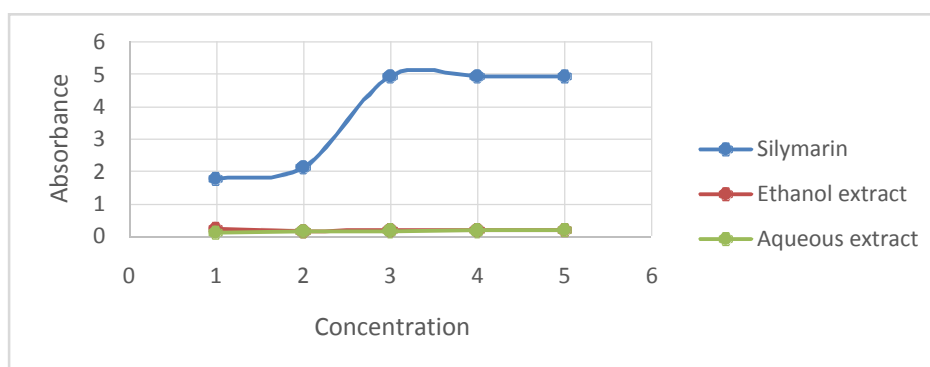


Figure:6 Reducing Power of *Lagenaria Siceraria* fruits

Table:6 Determination of Reducing Power of *Luffa acutangula*

<i>Luffa acutangula</i> seed					
Concentration/ Absorbance	10µg	25 µg	50 µg	75 µg	100 µg
Silymarin	1.770±0.06	2.132±0.05	4.943±0.02	4.945±0.02	4.947±0.02
Ethanol extract	0.237±0.04	0.145±0.06	0.205±0.04	0.178±0.05	0.193±0.03
Aqueous extract	0.115±0.04	0.137±0.07	0.163±0.04	0.173±0.06	0.182±0.05
<i>Luffa acutangula</i> fruit					
Concentration/ Absorbance	10µg	25 µg	50 µg	75 µg	100 µg
Silymarin	1.770±0.06	2.132±0.05	4.943±0.02	4.945±0.02	4.947±0.02
Ethanol extract	0.237±0.04	0.148±0.06	0.204±0.04	0.179±0.05	0.195±0.03
Aqueous extract	0.118±0.04	0.139±0.07	0.166±0.04	0.173±0.06	0.185±0.05

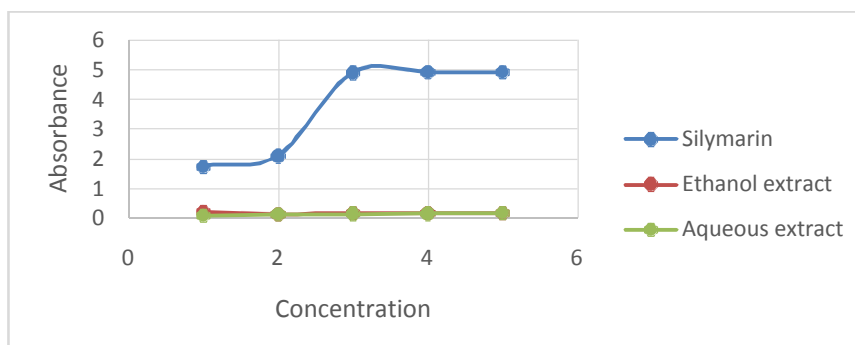


Figure:7 Reducing Power of *Luffa acutangula* seed

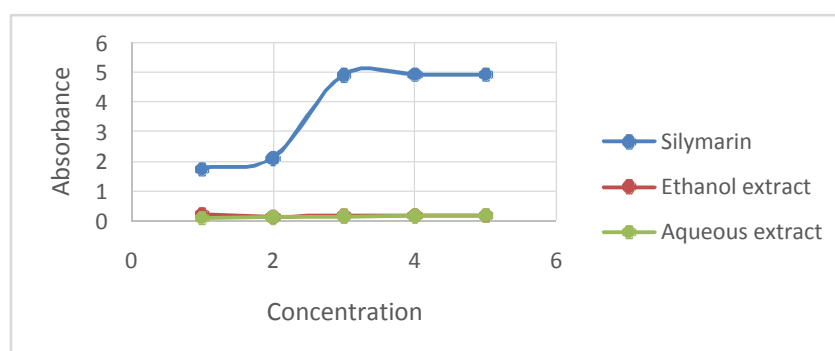


Figure:8 Reducing Power of *Lagenaria Siceraria* fruits

Table:7DPPH (2,2-diphenyl-1-picrylhydrazyl) assay method

<i>Lagenaria Siceraria seed</i>					
Concentration/ Absorbance	20µg	40 µg	60 µg	80 µg	100 µg
Silymarin	1.730±0.06	2.130±0.05	4.941±0.02	4.940±0.02	4.945±0.02
Ethanol extract	0.030±0.08	0.045±0.07	0.057±0.06	0.060±0.02	0.087±0.01
Aqueous extract	0.072±0.07	0.086±0.06	0.096±0.04	0.097±0.04	0.099±0.05
<i>Lagenaria Siceraria fruit</i>					
Concentration/ Absorbance	20µg	40 µg	60 µg	80 µg	100 µg
Silymarin	1.730±0.06	2.130±0.05	4.941±0.02	4.940±0.02	4.945±0.02
Ethanol extract	0.040±0.08	0.045±0.07	0.047±0.06	0.070±0.02	0.097±0.01
Aqueous extract	0.032±0.07	0.036±0.06	0.056±0.04	0.047±0.04	0.089±0.05

Table:8Nitricoxide scavenging activity method

<i>Lagenaria Siceraria seed</i>					
Concentration/ Absorbance	20µg	40 µg	60 µg	80 µg	100 µg
Silymarin	1.720±0.06	2.110±0.05	4.931±0.02	4.920±0.02	4.935±0.02
Ethanol extract	0.040±0.08	0.055±0.07	0.067±0.06	0.070±0.02	0.087±0.01
Aqueous extract	0.075±0.07	0.087±0.06	0.095±0.04	0.098±0.04	0.099±0.05
<i>Lagenaria Siceraria fruit</i>					
Concentration/ Absorbance	20µg	40 µg	60 µg	80 µg	100 µg
Silymarin	1.720±0.06	2.110±0.05	4.931±0.02	4.920±0.02	4.935±0.02
Ethanol extract	0.038±0.08	0.041±0.07	0.043±0.06	0.072±0.02	0.095±0.01
Aqueous extract	0.035±0.07	0.038±0.06	0.057±0.04	0.067±0.04	0.079±0.05

Effect of ethanol and aqueous extract of *Lagenaria Siceraria* (seed and fruit) and *Luffa acutangula* (seed and fruit) on Rifampicin Induced Hepatotoxicity:

Groups	SGOT (IU/L)	SGPT (IU/L)	SALKP (IU/L)	Direct bilirubin	Total serum Bilirubin (mg/dl)
Group I	160.5 ± 0.62	96.95 ± 1.34	179.5 ± 0.99	1.232±0.081	0.82 ± 0.06
Group II	295.5 ± 0.39+	269.5 ± 1.8+	296.5 ± 1.45+	5.915±0.494a	2.02 ± 0.03+
Group III	174.8 ±1.88***	107.5 ± 1.45***	187.7 ± 2025***	2.307±0.148b	0.89 ± 0.04**
Group IV	253.1± 1.09**	228.3 ± 2.13**	246.5 ± 3.40**	4.007±0.379a	1.48 ± 3.26**
Group V	231.3 ± 4.73***	214.2 ± 3.26***	237.3 ± 2.24***	2.201 ± 2.31***	1.37 ± 2.31***
Group VI	98.6 ± 2.9**	70.1 ± 2.7**	103.6 ± 2.9**	2.914 ±0.07**	1.94 ±0.07**
Group VII	84.2 ± 2.3***	62.8 ± 1.8***	87.5 ± 2.1***	2.711 ± 0.06**	1.71 ± 0.06**

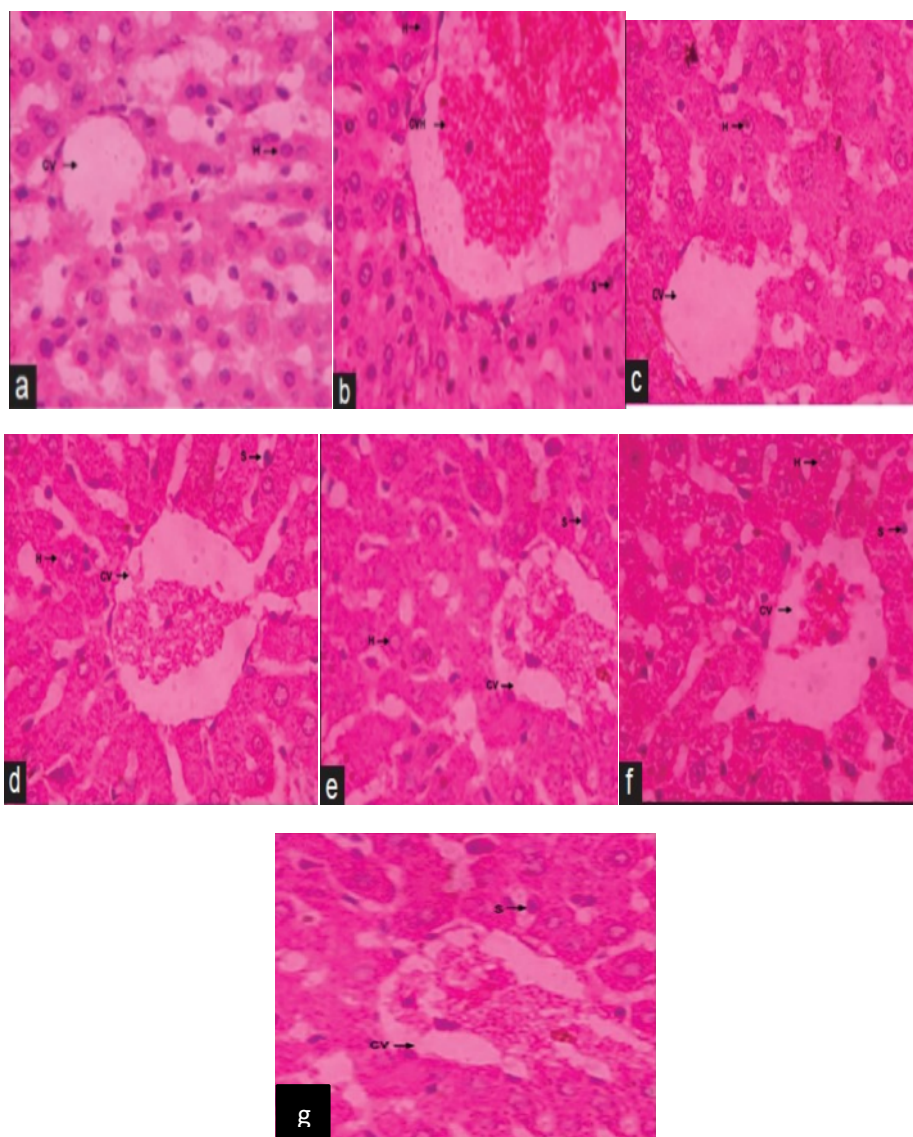


Figure:9 Histopathological studies to rat liver tissue: . a) Hepatocytes of the normal control group showed a normal lobular architecture of the liver b) Hepatocytes of toxic control(Rifampicin) group showed hepatocytic necrosis and inflammation and neutrophil infiltration also observed in the centrilobular region c) showed minimal inflammation and hepatic congestion with moderate portal triditis and their lobular architecture was normal;d-g) showed minimal inflammation with moderate portal triditis and their lobular architecture was normal

Discussion:-Among the two plants, compared to three methods Hydrogen Peroxide method, Reducing Powers Method, DDPH method and Nitric oxide method *Lagenaria Siceraria* (seed and fruit) Plant shows more activity than the other plant *Luffa acutangula*.

Serum levels of SGOT, SGPT, SALKP and Serum Total Bilirubin were significantly increased in Rifampicin treated Group -2 rats. Group -3 rats which were treated with Silymarin, produced significant reduction in SGOT, SGPT, SALKP, direct bilirubin and Total Bilirubin levels. In Groups-IV treated with ethanolic extract of *Lagenaria Siceraria* (250 gm / kg P.O) Simultaneously rifampicin (1 gm / kg P.O) every 72 h. group -V Received ethanolic extract of *Luffa Acutangula* (250 gm / kg P.O) Simultaneously rifampicin (1 gm / kg P.O) every 72 h. there was significant decrease in SGOT, SGPT, SALKP direct bilirubin

and Serum Total Bilirubin levels when compared to Group -2 rats. In **Group VI** -Received aqueous extract of *Lagenaria Siceraria* (250 gm / kg P.O) Simultaneously rifampicin (1 gm / kg P.O) every 72 h.

Group VII-Received aqueous extract of *Luffa Acutangula* (250 gm / kg P.O) Simultaneously rifampicin (1 gm / kg P.O) every 72 h. respectively, there was significant decrease in SGOT, SGPT, SALKP and Total Bilirubin levels when compared to Group-2 rats.

Conclusion:-The seed and fruit extract of *Lagenaria siceraria* and *Luffa acutangula* has shown dose dependent activity against Rifampicin induced hepatic damage in experimental rats. The hepatoprotective effect of the *Lagenaria siceraria* and *Luffa acutangula* was further corroborated by the histopathological examinations. Further investigation of these promising protective effects of *Lagenaria siceraria* and *Luffa acutangula* against antitubercular drug induced hepatic injury may have a considerable impact on developing clinically feasible strategies to treat patients with hepatotoxicity.

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GREEN CLOUD COMPUTING: A STEP TOWARDS SAVING GLOBAL ENVIRONMENT

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ABSTRACT:-The Cloud Computing, most prominent internet -based computing technology wherein almost all the IT companies are planning and designing their software applications and infrastructure. It stands -out as the ever-growing and competent technology due to advancement in computing hardware, economically feasible and simplicity in use for technophile engineers over the globe. This paper gives you the systematic study of green cloud computing by elaborating it in various aspects like energy efficiencies, datacenter power management and virtualization with the brief discussion. I have reviewed over 14 research papers featuring various different aspects of green standards and green approaches, strategies, technologies proposed till current year in a tabular format.

KEYWORDS:-Green Computing, Cloud Computing, global environment, Energy saving, recycling software.

INTRODUCTION:-The computing technology has become the essential part of the global infrastructure leading to the rise in the data usage and computing devices. Green computing provides the pathway for the use of computing resources in an environment friendly approach. It can be also defined as the study of designing, manufacturing/engineering, using and disposing of computing devices in a way that reduces their environmental impact.

The primary objective of green computing is power management and energy efficiency, but it also includes the selection of environment friendly hardware and software by recycling material to increase the product's life.

Green computing improves the way computing devices are used by accomplishing economic feasibility, environmentally sustainable production practices, disposal and recycling procedures and energy-efficient resources.

CLOUD COMPUTING IN DETAIL

1.What is Cloud Computing?

The term cloud computing can be defined as the delivery of configurable tools for computation such as networks, storage, servers, services and applications by enabling ubiquitous convenient on-demand network access that can be released quickly with minimal management effort or interaction of the service provider.

2.Benefits of cloud computing for Business

Cloud computing provides benefits for business like save your money at hosting, instantly scalable resources and pay as you go pricing, strategic competitive advantage, high availability, lightning fast performance with flexible working hours and faster running apps with increased security.

3.Different Types of Cloud Computing Models

The growing popularity of cloud computing with tens of thousands of servers and storage devices has given rise to different types of cloud service deployment models based upon their location and can be categorized as follows:

1. Private Cloud

It is a cloud -based computing service used by stand -alone organizations that are offered either over the internet or a private internal network. These types of clouds provide high security and are good for the organizations with high management demands, and availability requirements.

2. Public Cloud

The cloud services that are offered by the third -party providers over the public internet. It is popular among businesses and organizations of all sizes with fluctuating requirements for their web applications, webmail and storage of non-sensitive data.

3. Community Cloud

It is a cloud computing deployment service model between organizations that belong to a limited number of individuals or organizations such as banks, government organizations or commercial enterprises and is managed and hosted internally or by a third-party vendor.

4. Hybrid Cloud

This model is the integration of both private and public clouds to achieve the best possible infrastructure.

WHY GREEN COMPUTING?

Seventeen percent of the total carbon footprint caused by technology is due to data centers. The electricity that is needed to run these data centers is nearly 30 billion watts. These servers waste 90 percent of the energy they use because they run on full capacity all day long. Green computing helps in the enhancement of the primary goals such as energy competent peripherals, improvement in the consumption of resources and electronic waste which can be satisfied due to efficient use of computers and other technologies that enhances the overall performance of the system. In modern world, there is a need of green cloud computing models to remotely control data centers and servers to make them more energy efficient and economically reliable. While offering the cloud services, the service providers should ensure that they can provide energy efficient services with economical cost. But the challenging and complex task is to lower the usage of energy of data centers. As data is growing exponentially, the green cloud computing having issues related to infrastructures for computations that not only minimize the consumption of energy but can also make the Cloud services reliable and economically efficient.

CONCLUSION:-Green cloud computing is the emerging technology and topic for research in this technocratic world of technical enthusiasts. Now days, IT companies are advancing towards the cloud computing due to increase in the large data storage and computational demands leading to the growth of the cloud infrastructure with ecological and frugal balance.

Cloud computing has designed and developed a top-notch approach to virtualized servers and data centers with maximum energy efficiency. This paper reviews the brief discussion on green cloud computing, its barriers and benefits to the globe. It is followed by, an annual review on green IT areas for cloud wherein the opinions and conclusions of some authors have been stated. The paper concludes that energy efficiency and power management are taken as important objectives with precise norms by the government heading towards the green revolution in near future.

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Machine learning and deep learning for stress detection by multimodal physiological data

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Abstract:-Almost everyone experiences stress at some point in their lives. However, long-term or high stress threatens our security then disrupts our lives. Mental stresses can lead to a number of health issues. Stress can cause noticeable variations in bio-signals such as impedance, thermal, electrical, acoustic, optical, etc. Through detecting stress in people using multimodal data commencing wearable physiological and motion sensors, this paper aims to prevent stress-related health issues. The WESAD dataset contains data from sensor modes such as three-axis electrocardiogram (ECG), electromyogram (EMG), body temperature (TEMP), breathing (RESP), blood volume pulse (BVP) and activity electrodermal (EDA). The accuracies of Linear Discriminant Analysis, K-Nearest Neighbour, Decision Tree, Random Forest, Ada Boost also Kernel Support Vector Machines were assessed and compared. These three-class also binary organizations also have simple feedback for deep artificial neural learning. Machine learning techniques achieved 81.65 percent and 93.20 percent accuracy for 3-Class and binary classification issues, while deep knowledge achieved 84.32 percent and 95.21 percent accuracy.

Keywords: stressors, dichotomous, convex optimization, photoplethysmography, accelerometer, sudomotor nerve activity

1. INTRODUCTION:-Stress and anxiety have a significant impact on a person's quality of life. In Palmer's words, "Stress is defined as a composite psychological besides behavioural state subsequent since significant imbalances between anxieties located on a separate then their aptitude to respond to those demands." [14], 80% of employees experience work-related stress, and nearly half need help managing it, while 42% of employers agree. It is estimated that depression, stress or anxiety caused 44% of all work-related illnesses and 54% of misplaced workdays.(HSE)[15]. Stress appears to weaken the immune system also increase the risk of cancer in humans and animals. As a result of these stats and the effects of stress on human health, a system that can detect and alleviate stress is required. Researchers use the same questionnaire to assess stress. This method is unreliable because it relies on individual responses, and people dislike filling out surveys.

Many studies were done to detect stress using a person's physiological limitations. A psychic event, such as determined fear of behind a job, impending deadline, etc., can cause stress. Stress hormones cause physiological changes such as heart rate, breathing rate, tense muscle clots, and sweat per appearance. Physiological changes cause the body's physical response. The affected individuals send out the corresponding bio signals. These bio signals help quantify an individual's physiological measures to detect stress. Various physical sensors have been used to detect stress automatically. An automated stress detection system using physiological data collected during stressful situations is the goal of the research. Sensory monitoring may help prevent stress-related diseases. Stress is detected using machine learning and deep learning methods. Learning about the WESAD dataset's structure then format, cleaning and converting data into methods for building, exploring, building and comparing machine learning methods.

2. RELATED WORK:- Recently, machine learning replicas qualified with physiological retorts towards stress also emotional stimuli have been developed to predict and detect stress. The WESAD datasets on behalf of wearable belongings besides stress finding were industrialized through Philip Schmidt et al. This study used wearable devices to collect physiological data from 15 people. RespiBAN specialized also Empatica E4. They went through standard, entertainment, stress, and meditation. To detect stress, they compared five Chinese-based learning algorithms: K-Nearest Neighbor (KNN), Random Forest Decision Tree (DT), LDA, (RF), and Ada Boost (AB). For this, we use three-class (amusement, base, and stress) also binary data classification (stress versus non-Stress).

Jacqueline Wijsman et al. [7] used wearable sensors to detect mental stress. It was used to calculate 19 physiological characteristics such as ECG. After reducing studies and normalisation functional values to 7, A subset of nine characteristics was selected. It was found that using the Linear Bayes Normal Classifier, the Quadratic Bayes Normal Classifier, the K-Nearest Neighbor Classifier, and Fisher's Least Square Linear Classifier; it was possible to achieve 80 percent precision in stress classification in this study. The only differences are the number of participants and the traits that were extracted. They compared their findings to those of other studies that only used a single type of stressor, such as a work environment.

Saskia Koldijk et al.[6] created this dataset on behalf of stress investigation and operator modelling. Data remained collected from workplaces where there stayed time heaviness also email interruptions. Among the data are body posture, facial expressions, skin conductivity and heart rate. This dataset has extracted features from raw and preprocessed data. Workload,

mental effort, and other variables were assessed using validated questionnaires. None in this study. In addition to the benchmark, the literature has introduced a new stress dataset.

Biopac's BN-PPGED model Bio-Nomadix was a wearable instrument for measuring physiological responses[4]. The participant wore the BN-PPGED as a wristband with two electrodes measuring PPG and electrodermal signals on two fingers (EDA). AcqKnowledge software also removed the PPG autocorrelation signal and HRV capability. SVM was used to classify a person as stressed or not, with an accuracy of 82%. To investigate the relationship among salaried situations and intellectual stress, Saskia Koldijk et al. [3] used device statistics from body postures, facial expressions, computer logging and physiology. When similar users were sub-grouped and models were trained in those subgroups, the specialized model outperformed a generic model. Among the most important modalities for identifying stressors and non-stressors is posture. Adding data on facial expressions could improve performance. Their SVM classification accuracy is 90%. Stress is also determined by facial signals. Other researchers have created a framework to detect and analyze emotional stress/anxiety conditions using video recorded facial data. Mouth activity, eye events, camera-based photoplethysmographic cardiac rate estimation, and head action parameters were studied. Participants sat 50 cm apart before a computer monitor with a camera. In addition to GLR, Ada Boost Classifier and Vector Support were used to test the process. The Ada boost classification achieved 91.68 percent in the ex-position social process.

Md Fahim Rizwan et al. [5] used the ECG article for classical pressure. The primary candidate was ECG due to its article abstraction methods and accessibility of transportable clinical mark plotters. There is no need for a separate respiration measuring system because ECG information can detect EDR (e.g., ECG derived respiration). The SVM classification method achieved nearly 98.6% accuracy by RR interval, EDR and QT interval features. But this result is unsatisfactory because only one signal was used, the ECG, and other vital body signals were ignored.

Enrique Garca-Ceja et al. [2] used statistics after the integrated smartphone accelerometer sensor towards detect work environment stress levels. This sensor was chosen over others that record location, audio, or video. Due to the situation low power drinking, this sensor can also be used in smaller wearable strategies like suitability followers. 30 volunteers from two organizations received smartphones. They got between 60% and 71% accuracy using comparable users also exact replicas, but that's not enough for stress detection.

Using documents after a commercial wrist device, Random Forest classifies stress with 83% accuracy. [9]. Elizabeth Andre and Jonghwa Kim [10] used the subject-independent EDMc to

identify emotional excitement in 4 songs (emotional multilevel dichotomy classification).

Study participants reported stress levels (0=NO, 1=NO, 2=YES) on a four-point scale [11] through Kurt Plarre et al. Questions like: Happy, Sad, Stressed, Angry, etc. The wearable unobtrusive sensors captured physiological measurements and achieved 90% accuracy on behalf of binary arrangement.

Alexandros Zenonos et al. [12] established a disposition identification classification that could distinguish between eight types of states with five intensities with 62.14 percent subject independence. A study [13] used machine learning to analyze data beginning the FITBIT Wireless Movement Tracker. Work hours, bedtime, sleep minutes, BMI, cardio, max heart rate, fat burns, etc. have all been used to detect stress. This system tracked Indians in IT and other fields. Table I summarises the reviewed articles.

This study will use machine learning and deep learning to analyze biosignals to detect stress-related conditions. The WESAD dataset remains a multimodal physiological/biological dataset composed after people using non-invasive methods. Machine learning algorithms such as K-Nearest Neighbor, Linear Discriminant Examination, Random Forest, Adaboost, Decision Tree, and then SVM are used to classify the subjects' stress levels. This saves a doctor or psychiatrist time. If a person is stressed after classification, proper counselling or stress relief prescriptions can be given.

3. METHODOLOGY

Dataset also Features Extraction:- This study's dataset remains WESAD. In 2018, Attila Reiss, Philip Schmidt, et al. available this dataset [1]. With a Respiration Professional device arranged the chest and an Empatica E4 wristband, the multimodal data set collects motion and physiological data from 15 people. Physiological stimuli, stress, and fun have all been included in various protocols. Reference [1] particulars sensor assignment then the procedure used to figure this dataset, which includes statistics composed during the subject protocol education. Respiration measured ECG, RESP, ACC, EDA, EMG also TEMP. 700 Hz - sampled all signals It took E4 4 Hz to measure EDA, ACC, and BVP. The dataset has a wallet (SX, where X is the subject ID). Every topic heading encompasses the succeeding records: This was done using a 1-second sliding window. Various modalities as of the WESAD dataset remained recycled to extract features, as shown in Table I. These structures are described in [1]. Various statistics were calculated for each axis in the raw ACC signal (ix,y,z) and summarised in absolute magnitudes for all axes (3D). Signals such as ECG were averaged to find average, standard deviation, minimum and maximum values. The BVP peak

frequency and the T EMP signal incline are also used. For example, a 5 Hz low -pass filter passed the raw EDA signal to compute standard deviation and mean[1].

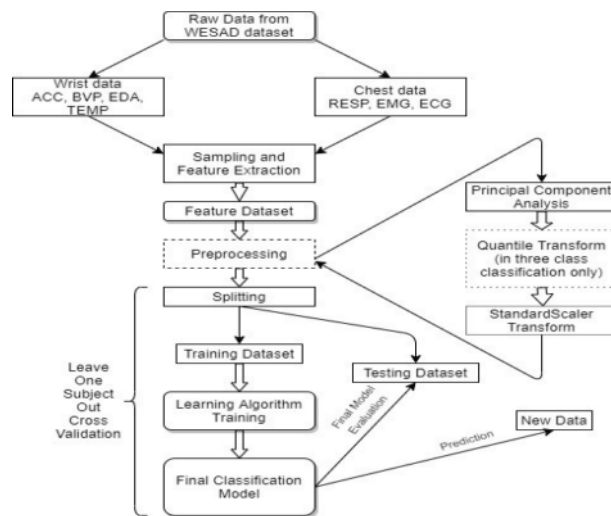


Fig.1.Stress Detection Methodology Flow Chart

The similar as EDA the phasic component yielded a sparse sudo -motor nerve activity (SMNA) driver with similar functionality to EDA (cvxEDA)[16]. To take out the DC constituent from the raw EMG signal, a 5 Hz high -pass filter was used. Then we calculated average, standard deviation, least, extreme, and greatest frequency.

Preprocessings and Classification Algorithms

On the other hand, deep Artificial Neural Networks outperformed six master training methods (Random Forests, Decision Trees, K -Nearest Neighbor,Ad -aBoost, Linear Discriminant Analysis, then Kernel Support Vector (ANN). The extracted characteristics are preprocessed using classification algorithms. Two classifications use the three classes and binary classification. The three classifications are fun, normal, and stressed, while the binary classification is either stressed or relaxed.

All machine learning and profound learning algorithms used the main component component analysis (PCA) with 20 components and full svd solver for three -class classification problems. The data generated was transformed using the Quantile Transformer method to a uniform or normal distribution. Heavily favoured values are spread out, reducing the impact of outliers. So we removed the mean and unit variance scaling with scalar preprocessing.

Binary classification by

Layer (type)	Output Shape	Param #	Layer (type)	Output Shape	Param #
dense_4 (Dense)	(None, 12)	252	dense_4 (Dense)	(None, 12)	252
dropout_2 (Dropout)	(None, 12)	0	dense_5 (Dense)	(None, 6)	78
dense_5 (Dense)	(None, 6)	78	dense_6 (Dense)	(None, 3)	21
dense_6 (Dense)	(None, 1)	7	Total params: 351		
Total params: 337			Trainable params: 351		
Trainable params: 337			Non-trainable params: 0		
Non-trainable params: 0					

Fig. 2. A summary of the binary (left) also three-class (right) arrangement deep learning architecture.

First, main-component analysis with 20 components and full svd solver was used. Algorithms for ML and DL As shown in Fig. 1, PCA data were preprocessed using standard scalar methods. This study used Python's scientific kit to implement machine learning classification devices and the Keras neural network library on behalf of deep learning.

The minimum quantity of dividing node example son behalf of Tree Decision besides Random Forest graders was se t at 10 and the maximum depth at 4 and 9, respectively. A node's maximum depth (pure leaves or less than a sample number to divide a node) was set to aid in binary classification. To split a node, the AB collective learner recycled a Decision Tree as its b asic estimator. The k -Nearest Neighbor algorithm had 9 neighbors' for both organization jobs.

A modest neural network model is developed on behalf of three -class binary organization tasks through hidden and output deposits. The binary classification between two hidden layers lost 0.25. In the binary organization architecture, one node has sigmoid a s the activation function. The three classification model output consumes three swellings with soft max beginning. Fig. 2 summarises both models. The dataset has three classes: fun, baseline, and stress codes, with labels 0, 1, and 2. Sci -kit metrics are e valuated using F1 -score and accuracy (with macro averaging). Using WESAD as an unstable arrangement task is optional due towards the study protocol's multiple conditions of varying lengths. The way people interpret and respond to affective stimuli varies w idely. Thus, personalization is critical. The final correctness is described as the average of altogether test accuracy when one subject remains for cross -validation in LOSO and has been skilled on all addition althemes. This generalises and improves the model, making it self-governing.

4. RESULTS AND DISCUSSION:-The project identified two emotional classification tasks for stress detection. First, three classes were established: fun, baseline, and stress. In addition, a non-stress class was created, defining.

Table II shows the DT classifier's performance three -class and binary arrangement issues. These features and machine learning classifiers were accurate in three -class and binary classification problems (81.6 -93.20%). This classifier has 84.32 percent precision in three classes and 95.21 percent precision in binary classification problems. Table II shows that the DT consumed the worst complete representation, followed by the SVM kernel and ANN. For three-class and binary arrangement, the results beat Philip Schmidt et al. [1].

TABLE III BINARY CLASSIFICATION TASKS PERFORMANCE OF ALL CLASSIFIERS.

Techniques	three-class		binary	
	F1-score	Accuracy	F1-score	Accuracy
DT	53.73	68.16	84.92	87.59
RF	63.09	75.95	88.32	89.53
AB	67.55	78.19	89.88	91.06
LDA	64.66	74.83	87.60	90.15
kNN	66.76	74.71	84.63	87.92
SVM	73.57	81.65	92.31	93.20
ANN	78.71	84.32	94.24	95.21

5. CONCLUSION:- Research proposal assumed the construction also arrangement of the public WESAD dataset, cleansed also converted data into a set qualified towards concept, explore and compare machine learning methods. It includes data from three axes acceleration, respiration, electro dermal activity, electric cardiograms, body temperature, electro myograms, and Blutvolumen Pulse (BVP). This model's accuracy is 84.32 percent for three -class and 95.21 percent for binary cation problems. With fewer subjects, the results must be interpreted with care. Our results show that LOSO can be used to generalise the assessment scheme. Several structured questionnaires can be used to self -report the data set's subjects. Modalities like facial data, logging data, audio/video recordings, FITBIT data, etc. can be combined through physiological data to create a new dataset. This dataset is better on behalf of detecting stress in men because it contains almost all the necessary characteristics.

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STUDENT'S PERCEPTION TOWARD ONLINE LEARNING OF MATHEMATICS SUBJECT

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ABSTRACT: - The entire world is facing various types of Covid -19 for the last one and a half years. Simultaneously Education sector is transformed from offline mode to online mode. Education cannot be stopped but other side learners are facing many problems in this fully online education. They are not able to concentrate online lectures. And the big challenge is there to understand practical subjects like Mathematics. This paper represents the problems faced by students during online lectures and finds out a suitable solution for them. Only 51% of students are comfortable with online lectures. Students are not able to concentrate and are not motivated to practice after their online lectures, they are not comfortable asking their doubts in online mode. They are not able to perform in Mathematics subjects, as they couldn't understand the concepts taught in online mode. 83% of students want face -to-face physical teaching for Mathematics subjects.

KEYWORDS:-Online learning, Mathematics learning, Problem faced, Practical subject, Blended learning.

INTRODUCTION:-Today world is educating its youth online due to covid -19. The education system has been most affected by this pandemic. It has forced us to shift the teaching-learning process from offline mode to fully online mode. To prevent and be safe from Coronavirus, we have to stay at home and have to work from home as well as learn from home. All teachers are teaching from their home and students are learning from home. On one side there is fear of covid - 19 and on another side, students have to focus and learn online. They have to learn all simple and complex concepts online only. Somehow students can manage theory subjects but for practical subjects, there are many problems faced by students while learning Mathematics subjects.

Mathematics is the queen of all sciences. Mathematics is an important subject in education. Many students think that mathematics is one most difficult subjects to learn. As per findings of the survey undertaken by (NCERT, 2020) NCERT reported in August 2020, the majority of stakeholders pointed out that Mathematics as a subject was difficult to learn via online mode. It included many concepts that require interaction, continuous support, monitoring from the teachers. The complex concepts should be sorted out and kept aside for teaching face to face through teacher -directed learning mode. Home assignments need to be carefully given to supplement to classroom teaching and doubts may be cleared during face-to-face teaching.

(Irfan et al., 2020) has conducted a survey aimed at lecturers who teach Mathematics. The study shows challenges faced by teachers like a limitation of presenting material when courses have many mathematical equations and programming language. Overall to use online learning, teachers must at least master presentation software, text processing assessments and video conferencing.

One side (7782448_Public-Notice.Pdf, n.d.) University Gran Commission focusing on the blended mode of teaching and decided that Higher Education Institutes should be allowed to tech up 40% of the syllabus of each course through online mode and the remaining 60% syllabus of the concerned course could be taught offline mode. And the other side students are facing many issues in online mode. There is a need to understand the problems faced by the students and find its solution.

(Hung & Chou, 2015) developed an instrument the online instructor role and behavior scale and uses it to examine students' perceptions of instructors' roles in blended and online learning environments. The result shows that the five-factor structure remained invariant across blended learning and online learning. Students in the online learning environments scored higher in the discussion facilitator than those in the blended learning environment.

(Al-Rahmi et al., 2015) the study proposed a model the UTM e-learning, the result shows the e-learning facilitates an academic experience of the participant and the students satisfy, also the student have the intention to use e-learning.

According to (Karal et al., 2020) The use of digital pen technology in online mathematics courses can increase communication and interaction in the learning environment. And digital link technology and related technologies to display concepts, symbols, and solution process steps, provide sufficient feedback, achieve a high level of interaction, and teach the course more efficiently. It may enable the maximize the teacher-student interaction, eliminate the feeling of isolation in an online mode, and facilitate the display of solving process steps of the math questions.

According to (Robová, 2013) If teachers try to use quality websites in their classes they are likely to find out after a certain period their integration itself does not grant better results of the teaching process. These kinds of websites may provide informed teachers with other ways of motivating and interesting students, increasing the clarity of explanation and including proactive methods in their classes There is a need to understand the problem faced by students during online learning of complex subjects like Mathematics. Effective e-learning on knowledge sharing through interactivity among the students is essential.

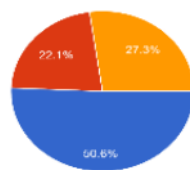
OBJECTIVES: -

1. To study student's perception towards online learning of Mathematics subject.
2. To understand the problem faced by students during online learning of mathematics subjects.

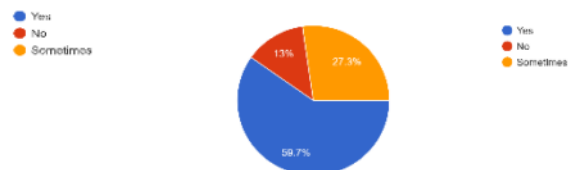
METHODOLOGY:-The researcher has selected a survey method and random sample technique to collect the data. She had a verbal, telephonic conversation with the students in Dombivli and Kalyan area. She asked them 31 questions related to their background, online learning of Mathematics subjects in the pandemic, their experience of online learning, their interest, problems faced by them during the online mode, availability of device and internet, availability of environment at home for learning, software used for teaching-learning, their ability to concentrate, and managing time, understanding concept, their conformability to ask their doubts, etc. A total of 77 responses have been received. 43 females and 33 males have responded to the questionnaire. The age of respondents is between 15 to 25, students are from secondary to post-graduation. Data has been analyzed and represented in pie charts.

FINDINGS: -

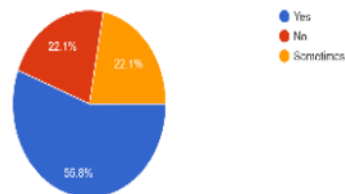
Are you comfortable with online learning?
77 responses



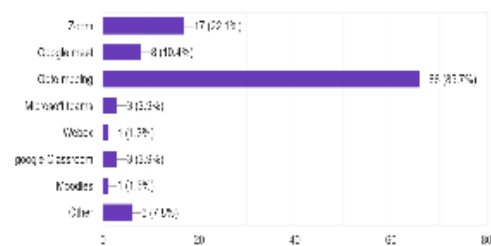
Are you able to do time management during online classes?
77 responses



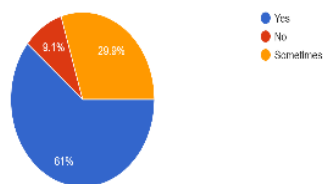
Do you get a helpful home environment for learning online?
77 responses



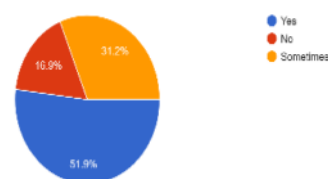
Platform used by educators for online lectures
77 responses



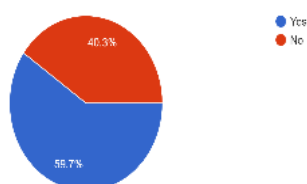
Are you able to see the shared screen, formulas, and formats clearly in online mode?
77 responses



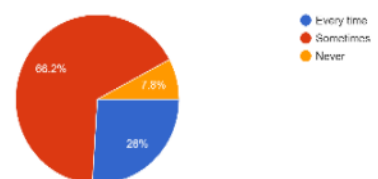
Are you comfortable asking your doubts during online lectures?
77 responses



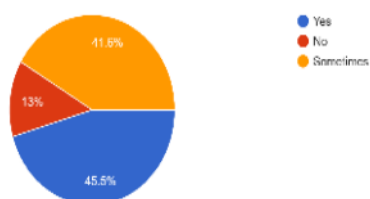
Do you understand practical concepts in online mode?
77 responses



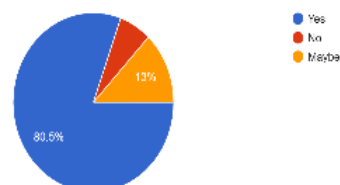
Do you practice concepts after your online lecture?
77 responses



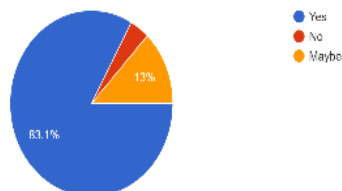
Are you able to concentrate while online lectures?
77 responses



Are you missing face-to-face lectures/ physical lectures?
77 responses

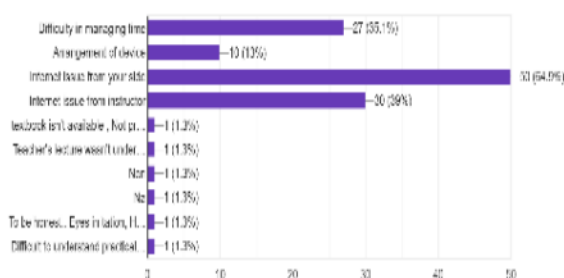


Do you want to have face-to-face learning with physical classroom teaching?
77 responses



Which of the following problems are you facing in online learning?

77 responses



Various video conferencing tools like Zoom, Google meet, Gotomeeting, Microsoft Teams, Webex has been used 96% in the online teaching -learning process, an interactive platform like Google classroom and moodles were used only 4%.

35% of students face difficulty in managing time, 13% of students were unable to arrange devices for online learning, 65% were facing internet issues.

41% of students were unable to understand the practical subject in online mode.

23% of students were not getting a helpful environment at home for online learning.

55% of students get distracted during online lectures. They were not able to concentrate.

49% of students were not comfortable asking doubts in online lectures.

74% of students were not practicing concepts after online lectures.

83% of students selected offline, face-to-face teaching for Mathematics Subjects.

DISCUSSION:-Higher education policies by implementing online learning are not accompanied by the ability to use the platform that can support online learning. Mathematics has been largely neglected in practice. The lack of Connection to use mathematics in day -to-day life.

(Shakah et al., 2019) this study focuses on the effects of motivation on the relationship between difficulties and attitudes of using the E-learning system by university students. Many difficulties should be avoided to improve the motivation level of using the E-learning system. The most important difficulties are technical supporting, service accessibility and availability, system interactivity, and awareness of E-learning benefits. The low motivation leads to a negative attitude hence the colleges should adopt the most effective E-learning system of the high interactivity facilities, low technical requirements. (Karkar et al., 2020) the study proves that social media, despite some of its merits for e-learning, is a negative influential factor that discourages educators from fully custom education management platforms. The study draws a new horizon to policymakers and E-learning platform developers. (Yaniawati et al., 2020) introduce the E-learning mathematics utilization in Resource-Based learning with the scientific approach to improve the ability of mathematical creative thinking ability and develop the student's self-confidence. The result shows that the improvement of mathematical creative thinking ability and self-confidence.

SUGGESTIONS:-Teaching Mathematics subjects is a big challenge nowa days, fully online teaching can not be effective, there is a need for blended teaching. Where concepts can be taught in online mode and practice with doubt solving can be done in offline mode as nothing can replace a teacher. While teaching Mathematics subjects we need to take care of the learner's psychology. And frequently monitor that whether students are getting a proper learning environment or not. Students need continuous and regular support. Teachers should be update and well versed themselves with current and updated technologies in all possible

ways. Universities need to arrange capacity -building programs time to time for teachers so that they can help students accordingly.

CONCLUSION: -Mathematics is a complex subject to learn, it requires an interactive environment in its teaching-learning process. As we will have to adopt technological changes with learner's needs and as per their ability so we need to take care of learner's perceptions while adopting new technologies. And try to give them a comfortable learning environment for maximum outcomes. Teachers should update attend capacity building programs for updating themselves. Same time there is a need to use blended learning as per suggested by University Grant Commission.

LIMITATION: -This study was conducted for Dombivli, Maharashtra only.

SCOPE: - Further studies can be done to find out simple and easiest tools for teaching mathematics online.

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ETHNOBOTANICAL STUDY ON PLANTS OF RAJGARH AND SIDHMUKH TEHSILS OF CHURU DISTRICT RAJASTHAN USED IN DIABETES

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ABSTRACT- Churu district is a rich treasure house of ethno -medicinal plant for health care and covers a wide range of human ailments. Herbal medicinal plants of the area have the property of curing various as well as chronic diseases. Diabetes is considered as a chronic disease of modern day. Some medicinal plants of the area have the property of curing this disease. The present study was carried out to document the knowledge of plants of study area such as Rajgarh and Sidhmukh tehsils of Churu district which are used in curing diabetes. This study enumerates 24 plant species belonging to 22 genera covering 18 families of angiosperms.

INTRODUCTION

The term “Ethnobotany” was first of all used by John.W.Harshberger in 1895. From ethnobotany, “ethno” means study of people and “botany” means study of plants. This term is considered as a branch of ethnobiology which deals with the study and evaluation of plant human relationship in all respects and the effect of plant environment on human society. India as well as Rajasthan desert is one of the richest floristic regions of the world and is well-known for its ancient heritage regarding medicinal plants and plant drugs. The medicinal plants are used in different systems of medicines such as Ayurveda, Sidha and Unani and even in other systems. Among these Ayurveda is the oldest system of medicine. An ancient document Charak Samhita, written on medicinal plants proved the uses of plants for wellbeing of human.

According to World Health Organization (WHO), 21000 plant species are used for medicinal purposes around the world, out of which 2500 plant species are reported from India and 1500 species are used commercially for drug production on large scale (Sharma and Sharma, 2011).

Generally unwanted, undesirable and wasteland plant species are known as weeds. Some of these arid species of area represents a district stock adapted to harsh environmental conditions and has preserved their original genetic makeup. It is documented that traditional knowledge specially, on medicinal uses of plants, has provided many drugs of the modern day (Fabricant and Farnsworth (2001). A large numeric of medicinal important plant species are present in Rajasthan desert and used for treatment of several general and chronic diseases like Alzheimer’s disease, AIDS, asthma, cancer, depression, diabetes, gonorrhea, hepatitis, leprosy, leucorrhea, rheumatism, malaria, nervous disorders, skin diseases, urinary diseases and paralysis. Now a days, natural products and herbal medicines have been recommended in treating diabetes (Gupta and Kumar, 2002). Over 50 plants are present in arid zone of Rajasthan having anti diabetic property (Meghani and Ojha, 2010).

Traditional medicines are used to maintain people’s health as well as to prevent, diagnose and treat physical and mental illness. The tribal people of all over the world use a broad spectrum of plants for their basic needs. They have developed a unique understanding for the forest resources and have passed on their traditions, totems, folklore, etc. by word of mouth from generation to generation in different parts of the world.

Medicinal plants of Rajasthan desert as well as study area of Churu district are good source of important compounds such as antimicrobial substances, alkaloids, steroids etc. These plants are well adapted to arid harsh climatic conditions of the area for their growth and production of secondary metabolites. According to WHO, large populations of the world relies on the traditional system of herbal medicines made to document the medicinal plant of arid zone of Thar-desert of Rajasthan. Ethnobotanical studies in different areas of Rajasthan state are conducted by many workers like Trivedi and Nargas (2000), Sharma (2002), Trivedi (2002), Jain *et al.* (2009), Katewa (2009), Sharma and Sharma (2011), Khan and Singh (2012), Kapoor and Lakhera (2013), Sharma and Sharma (2018), Jeph and Khan (2020).

MATERIALS AND METHOD

STUDY AREA

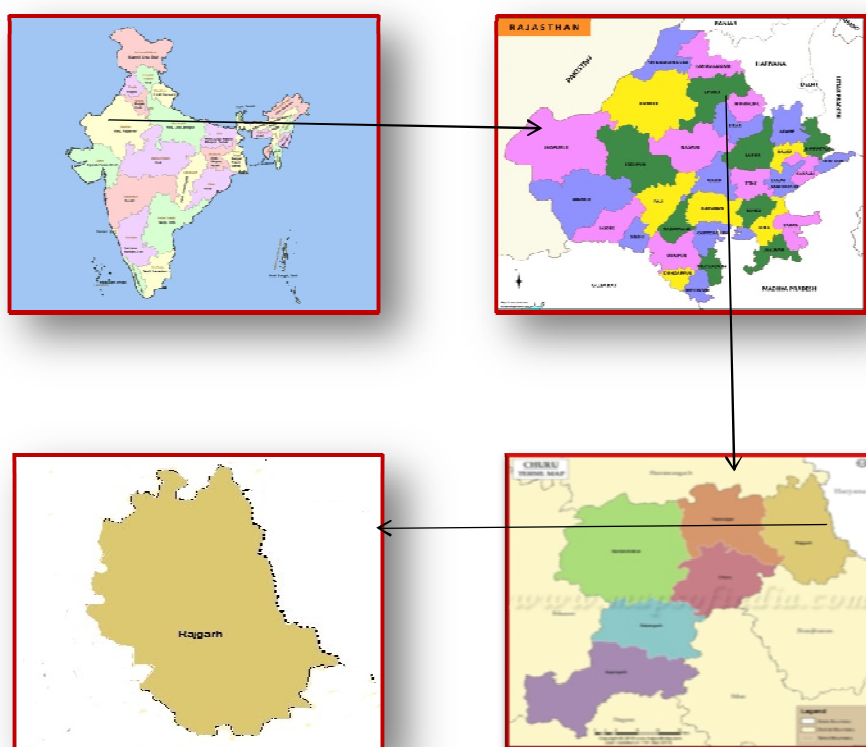


Figure- 1 : Location map of study area

Churu district is the one district of Shekhawati region of Thar Desert of Rajasthan forming eastern most part of the North-West Rajasthan. The study area includes Rajgarh and Sidhmukh Tehsil of Churu district.

Rajgarh is a town and Tehsil in the Churu district of Northern part of Rajasthan state in India. Its railway station is known as Sadulpur which has become a synonym of town's name in recent time. Geographically the study area Rajgarh is located at $28.36^{\circ}\text{N } 75.24^{\circ}\text{E}$. Sadulpur railway station has elevation of 239 meters above mean sea level (MSL). Other part of study area *i.e.* newly formed tehsil Sidhmukh (by segregating from Rajgarh tehsil on 16th May, 2021) is also 239 meters above MSL. The study area exhibits an undulating terrain mostly covered by shifting sand dunes. The entire area is dominated by sandy, dry and less watered,

unkind to all flora and fauna. The area has a desert climate characterized by extremes temperature and erratic rainfall.

METHODOLOGY

Detailed survey has been conducted in remote area of study sites. The information regarding the use of medicinal plant was collected by frequent interviews with local people, priests, tribal folks and physicians practicing indigenous of medicine.

During the survey 60 plant species regarding their medicinal aspect have been recognized which are used for curing various kinds of ailments. Among these 24 plant species used in diabetes were selected. These selected species are arranged alphabetically along with their Botanical name, local names, families, plant part used are mentioned in the following table.

Table 1: Medicinal plants of study area used in Diabetes

S.No	Name of plant	Local name	Family	Part used
01.	<i>Abutilon indicum</i> (Linn) Sweet	Kangi	Malvaceae	Seeds
02.	<i>Argemonemexicana</i> Linn	Satyanashi	Papaveraceae	Leaves
03.	<i>Aloe vera</i> (Linn.) Burm	Gwarpatha	Liliaceae	Leaves
04.	<i>Asparagus racemosus</i> Willd.	Satavari	Liliaceae	Whole plant
05.	<i>Aegle marmelos</i> (Linn.) Correar	Bael	Rutaceae	Fruit pulp
06.	<i>Balanitesaegyptiaca</i> Linn.	Hingoon	Simaroubaceae	Oil
07.	<i>Blepharissindica</i> T.Anders	Billikhojio	Acanthaceae	Whole plant
08.	<i>Capparis decidua</i> (Forsk) Edgew	Kair	Capparaceae	Roots
09.	<i>Carrisa congesta</i> Weight	Karonda	Apocynaceae	Leaves
10.	<i>Citrulluscolocynthis</i> (Linn.)Sch.	Tumbo	Cucurbitaceae	Fruits
11.	<i>Cleodendrumflomidis</i> Linn. f.	Arni	Verbenaceae	Leaves
12.	<i>Cynodondactylon</i> (Linn) Pers	Doobghas	Poaceae	Leaves
13.	<i>Embliaofficinalis</i> Gaertn.	Amla	Euphorbiaceae	Fruits
14.	<i>Ficus bengalensis</i> Linn	Bargad	Moraceae	Stem bark
15.	<i>Ficus religiosa</i> Linn	Peepal	Moraceae	Stem bark
16.	<i>Majoranahortensis</i> Moench	Marwa	Lamiaceae	Leaves
17.	<i>Momordica charantia</i> Linn.	Karelo	Cucurbitaceae	Fruit juice
18.	<i>Moringaoleifer</i> Lamk	Sanjano	Moringaceae	Whole plant
19.	<i>Ocimum sanctum</i> Linn	Tulsi	Lamiaceae	Whole plant
20.	<i>Pedaliu murex</i> Linn	Gokharu	Pedaliaceae	Leaves
21.	<i>Solanum nigrum</i> Linn	Makoi	Solanaceae	Fruits
22.	<i>Solanum surattense</i> Burm f.	Ringani	Solanaceae	Fruits
23.	<i>Tinosporacordifolia</i> (Willd.)Miers	Neem giloy	Minispermaceae	Whole plant
24.	<i>Withaniasomnifera</i> (Linn)Dunal	Ashwagandha	Solanaceae	Whole plant

RESULT AND DISCUSSION

The present paper is documented the knowledge of medicinal plants of study which are beneficial in diabetes with their botanical name, local name, family and plant part used were tabulated (Table 1). The study reveals that 24 plant species belonging to 22 genera covering 18 families of angiosperm were documented. The issue of conservation of plants has been focused in last 2-3 decades. The rapid deforestation resulted in depletion of natural plant wealth. To avoid this, the central as well as state government should take severe action to protect the forest wealth.

CONCLUSION

The rich ethno-medicinal phytodiversity of study area of Churu district has a great potential of plants having medicinal properties. The study will provide a hand list on medicinal plants of study area which are used in diabetes. Thus the present study could play an important role

for future conservation of the valuable medicinal plants otherwise will have to face the consequences of disappearance of such valuable xeric bio wealth.

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STUDY AND ANALYSIS OF WEDM

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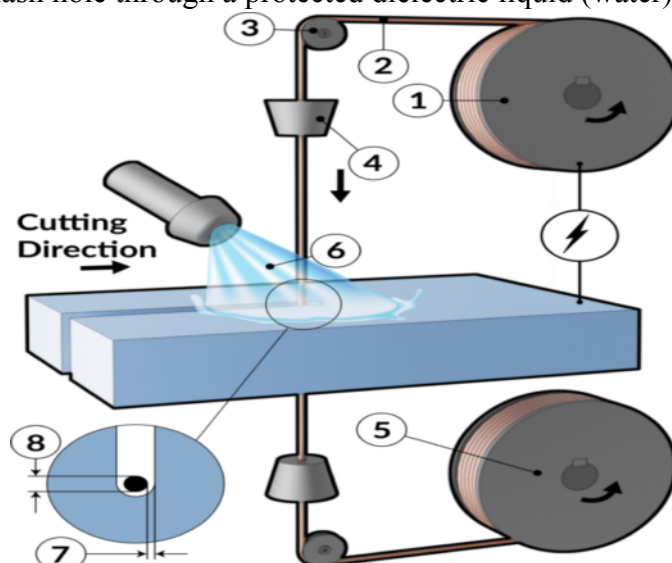
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ABSTRACT-Wire electrical discharge machining (WEDM) is a special form of the traditional EDM process in which material is eroded from the work piece by a series of discrete sparks between the work piece and the wire electrode separated by a thin film of dielectric fluid. The movement of the wire is controlled numerically to achieve the desired three-dimensional shape and accuracy for the work piece.. Wire is generally made of copper, molybdenum or tungsten, which changes electrical power to heat power. This thermal energy is utilized for cutting the materials.

KEY WORDS-WEDM, EDM

INTRODUCTION-Wire EDM makers and clients consistently need to accomplish higher machining profitability with an ideal exactness and surface finish. Effectiveness of the wire EDM process, nonetheless, is influenced by numerous components, for example, ampere current; Ton, Toff wire-tension, pressure of water, and so on and a solitary parameter change will impact the procedure in a complicated way. Wire Electric Discharge Machine (W-EDM) appears a decent choice for machining the entangled shapes for the solidify materials. The impacts of different procedure parameters of W-EDM, for example, Ton, Toff, Wire feed rate (W-F) and ampere- current (I) on the material evacuation rate (MRR), surface roughness (Ra) and the overcut or Kerf width (Kf).

Wire Cut Electric Discharge Machining Wire EDM uses brass, tungsten, or copper as its material for the electrode tool wire. Deionised water is used for the dielectric fluid. Almost like the standard E-DM, the wire is eroded and slowly fed. Although it is similar to standard E-DM, higher currents and lower rest times make this process much faster. Figure 1 shows the principle of W-EDM process. The Principle utilized in 'W-EDM' is same as that of E-DM i.e Thermal vitality of the sparkle is utilized to expel material of the workpiece. W-EDM procedure includes the unpredictable disintegration impact by quick dull and discrete flash releases between the wire and work piece drenched in a fluid dielectric medium. The Spark theory on a W-EDM is essentially equivalent to that of the vertical E-DM process. In wire E-DM, the conductive materials are machined with a progression of electrical releases that are delivered between a precisely situated moving wire (the anode) and the work-piece. High recurrence pulses of AC/ DC ampere current is released from the wire to the workpiece with an extremely little flash hole through a protected dielectric liquid (water).



CONCLUSIONS

In this study, an investigation on the surface roughness and cutting speed based on the parameter design of the Taguchi method in the optimization of WEDM operations has been investigated and presented in trim cutting process. Summarizing the mean experimental results of this study, the following generalized conclusions can be drawn:

1. Based on the analysis of variance (ANOVA) results, the highly effective parameters on both the surface roughness and cutting speed were determined.
2. The cutting speed is affected strongly by the rough setting (91.7%), whereas the number of trim cut (7.46%) and wire off set (0.6%) have a significant statistical influence.
3. The surface roughness is affected strongly by the pulse on (77.63%) whereas the rough setting is (7.76%) and wire off set (6.04%) has a significant statistical influence.
4. Based on the signal-to-noise ratio results in Tables 5.1, we can conclude that the $A_1B_3C_1D_1E_3$ (rough setting= A_1 , peak current=70Amp., pulse on time=105 μ s, wire off set=120 μ m, number of trim cut=3) and $A_1B_2C_1D_1E_3$ (rough setting = A_1 , peak current = 70 Amp, pulse on time=105 μ s, wire off set=120 μ m, number of trim cut = 3) settings are the optimal WED machining parameters for surface roughness and cutting speed, respectively.

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THE STUDY INFORMATION SEEKING BEHAVIOUR OF STUDENTS IN TECHNICAL DIPLOMA COLLEGE LIBRARIES IN GOA

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Abstract:- This study is undertaken to determine the Information Seeking Behaviour of Students in Technical Diploma College Libraries in Goa state. All societies old, medieval and modern have functioned as well as prospered, on the foundation of info. Understanding information is actually power, which plays a crucial role in the growth as well as improvement. It's today turned into a crucial resource. The planet has today moved out of the industrial revolution to the info revolution. The dependency on information in each and every sphere of intellectual task has increased day by day. Now it's come to occupy the main job and driving force for just about all human growth. The word information continues to be produced from 2 Latin word 'Formation' and 'Forma' Both the words convey more or maybe, the same meaning which are actually offering shape to something and developing a pattern. Information is actually a data which is able to be transmitted between people and individual can easily make whatever utilize he can of it. It's an aggregation or perhaps processing of information to give intelligence and knowledge it may be viewed as the objective contents of the connection between interrelated material items. Its history of communicated consent gained by man through experience, observation along with experiments. Human brain is actually generator of strategies. These strategies are derived from particular facts. The investigator has used questionnaire methods to carry out the research and data has been collected from the Technical Diploma College Libraries in Goa through personal visits after obtaining permission from the concerned authorities. Descriptive, differential and correlation statistics have been applied to analyze the data with appropriate interpretations. The Study "Information Seeking Behavior of the Students in the Technical Diploma Colleges in Goa State" has covered in general assessment of the clients about reading propensities, assets, offices and services in the library.

Keywords: information, seeking behaviour of students, technical diploma, college libraries

INTRODUCTION:- This study is undertaken to determine the Information Seeking Behaviour of Students in Technical Diploma College Libraries in Goa state. Library is a storehouse of knowledge. A Library is an organized collection of sources of information and similar resources, made accessible to a defined community for references or borrowing. The society has established & maintained various institutions to meet its different needs. The Psychology of the students, the behaviour in gathering information resources, analyses of the services based on the student's needs are among the various concepts covered in student's studies. The Technical department is one of the most important departments, which looks after its educational, cultural, recreational & informational needs. It provides physical or digital access to materials may be physical buildings or rooms or virtual space, or both. Library is sometimes called the "Memory of the human race". It is a place to understand the present

status of educational administration in terms of its structures, system and processes at various levels. It is a place to study the experiments, innovation & changes and also to identify major issues and future tasks of educational Planning & Management. Technical education is the application of Scientific and Technical knowledge to solve human problems. It is a basic and essential input for national development and for strengthening the industry, economy and ultimately the quality of life of people.

With the continuously changing scenario, everything associated with specialized up gradation as well as info looking for tools have enhanced. Faster ways of communication can be found. Info is the means, which will help us to cope up with these changes. It's said, a society abundant in info as well as info looking for methods is loaded with socio-economic spheres. It not merely shapes the society and also produces the framework of its but additionally impacts the components, which constitutes it. As a result, an updated awareness of the info retrieving tools will be the standard component for development. Data isn't restricted to printed text or text of mouth by itself. It's additionally contained in the type of body movements, facial expressions, gestures, color, and artwork. Data is regarded as the effective tool in case it's organized as well as kept updated. Organized info is the power as well as power of any & every product. Improvement of info technology as well as communication technology has led to increasing expansion of the flow of info. With the creation of communication as well as computer system technologies even created quickly. It was because of this incredible creation that the dissemination of info on worldwide foundation increased. The remarkable quick pace of it is able to be dreamed by the reality that it could retrieve info in just seconds. Additionally, these systems are very easily offered for prices that are inexpensive. These elements result in free flow of info and are readily available to people. As a result, it's being utilized as well as applied to all the work of theirs i.e. professional labor, everyday routine performance as well as decision making process. Existing situation is an info based and engineering dependent era. Quality job requires info that is up-to-date. It's not easy to do some work type with no info. The updated info structure has sped up the procedure of info transfer; individuals are receiving info at the doorstep of theirs in great quantity.

INFORMATION SEEKING BEHAVIOUR

Academic institutions are actually information comprehensive businesses. The idea as knowledge management best practices, intellectual command, company intelligences, procedure, innovation are actually coming up to the mainstream of academic environments due to the prevalent use of information technology, that has an immediate bearing on organizational change. With the progress of information deluge, each one requires information of improving range and variety of levels, frequency, use and volume. For collecting needed information, they pick various methods. People in scenarios, that are different, call for facts about a topic in different level and different forms of explanations. The very same individual seeks information in different methods & forms in different events. These different natures of their information requirements are actually termed as information seeking behavior. Information seeking action has been identified by diverse authors with variation in meaning.

Based on Wilson's Information seeking, behavior results from the recognition of some want, perceived by the user. The behavior might take a number of kinds, the end user might make needs from proper structure like libraries, online services information centers or maybe solutions, which might carry out information run. The user additionally seeks information out of others via "information exchange". The word exchange is meant to draw interest to the element of reciprocity, recognized by psychologists and sociologist as essential element of person interaction.

Information seeking actions as any task of a person that's undertaken to determine a message that fulfills a perceived need.

Based on Girija Kumar "Information seeking action is primarily focused on who needs what information type for what reasons, the way information is discovered, evaluated and used". Accordingly, Wilson defines "Information seeking behavior as those pursuits an individual might engage in when identifying his or her, maybe the personal needs for information, looking for that information in any way and transferring or using that information. Hence, it could be concluded from these definitions that the art of looking or even finding information may be discussed to information looking for. This exercise starts, once the user perceived that the current information is actually underutilized, to cope with several issues with the conclusion of perception, for the procedure of seeking ends. Developing an instinct for information is a behavior type as well as the procedure for looking information, is actually viewed as information seeking behavior of individuals.

LITERATURE REVIEW

Oluwakemi ET AL (2019) This study adopts research survey design on information seeking behavior and need among undergraduate students of the College of Management Science (UCMS), Bells University of Technology, Ota, Nigeria: (BUTON) as a case study. Study states that undergraduate information seeking behavior and needs questionnaire was the research instrument used for data collection. The study reveals that the undergraduate student should be required regular training for searching information from library resources with the help of library staff and also needs to improve e-resources in the library.

Sumaira, Jabeen and Ganaie, Shabir Ahmed (2019) , "Information Seeking behavior of Faculty Members and Students in College of Kashmir Region: Ellis Model Approach". The study includes information pertaining to knowledge advancement, decision making, and advance of duplication in efforts and technology transfer. The study highlights some information seeking models to assist users in their search for information on the internet and also highlights that libraries are a source of information to the users.

Dhondiram, Guldagad Kiran (2018), "Information Needs of Users in Senior College Libraries in Pathardi City: A Survey". This study looks at available and unavailable library facilities and services. Study revealed that, staffs and students get their information in print media and preferred regional languages with the cooperation of staff using computerized services in the modern world. Study also observed, Goan Artists are partly satisfied with an existing library media in order to get enriched environment to their needs in providing the services to the users.

Perumal, A. (2018), Information needs and information seeking behaviors of foreign students in University of Madras. This study reveals the Information needs and information seeking behaviors of foreign students studying in University of Madras. These university students required academic information in their day to day life for their entertainment. Foreign students need advanced knowledge of resources and services. These university library students provide information for their daily needs, from which library users gets satisfaction.

Bukhari ET AL (2018) "Modelling the information – seeking behavior of international students in their use of social media in Malaysia" The purpose of this study is that international students Information seeking behavior use of social media is limited. So the research of this is to model the Information seeking behavior of international students using social media for finding information. Hence, the previous model of information seeking behavior of international students of university and higher education institutions provide valuable insights and social media role to them. Thus, social media is more valuable than search engines.

Shah ET AL (2017) , The study says that use of library resources and services are necessary to help the students to get their required information. In this study it is revealed that the information literacy programme is essential in order to get the information about the

resources available in the libraries and in what ways these resources should be used in order to get the information required to the users. The information literacy programme will increase the use of the library resource in a better way and required information will be retrieved by the users in the best way within the time period.

METHODOLOGY

The following methodology will be adopted. The research methodology helps to enumerate the various steps adapted by the researcher in studying the research problems. It includes the research proposal, research design, setting of the study, description of population, sample size, development of tool, procedure for data collection, and the plan for data analysis.

The researcher will use questionnaire method to collect the data regarding Technical Diploma College Libraries in Goa, to carry out the research. A total of 900 Students of Technical Diploma College Libraries in Goa will be selected for this study.

User behavior of news resources for academic information seeking

In the present time, different news resources like newspapers and news channels have a basic role in embellishing the knowledge space of people in numerous fields of life. There are such resources dedicated to specific fields or some sections or projects of such resources are allotted for some areas of study. In the present examination, the investigator tried to comprehend the propensity for Students under examination using news resources with an intention to discover articles or projects with possible interest to the area of your work/research/study and tracked down that a large greater piece of the Students under examination 813 make use of the news resources moreover for their academic information seeking activities.

Table 1.1 Use behavior of news resources for academic information seeking

Sl. No.	Opinion	UG Students (N = 800)	Teachers (N = 100)	Total (N=900)
1	Yes	735	78	813
2	No	65	22	87

(Figures in parentheses denote percentage)

Table 1.1 focuses on the way that a greater piece of the respondents under examination has the propensity for utilizing news resources for collecting information related to their field of study or research as well. 735 of the UG students and 78 of the Teachers possess this propensity. Few respondents including 65 of the students, and 22 of the teachers use the news resources for news in a manner of speaking.

Role of news resources in academic works

It is discovered news resources assume an essentially critical part in the teaching, learning and research process in several fields of study. To apprehend the role of news resources in its field, the researcher asked the role of such resources in the teaching, learning and research process of the respondents under investigation and the result is given in the below table.

Among the UG students, 473 of them opine that news resources are exceptionally beneficial for their learning activities. While more than one fourth of them 142 see news resources as moderately beneficial, nearly an equal number of them 130 see them as less beneficial and 45 of the students couldn't decide whether they are beneficial or not. It is likewise tracked down that line 10 of the students discover them as not beneficial.

Table 1.2 Role of news resources in teaching/learning/research

Sl. No.	Opinion	UG Students (N = 800)	Teachers (N = 100)	Total (N=900)
1	Highly	473	23	496

	Beneficial			
2	Moderately beneficial	142	23	165
3	Undecided	45	2	47
4	Less beneficial	130	46	176
5	Not beneficial	10	6	16

(Figures in parentheses denote percentage)

Unlike the students, a decent number of the 46 teachers see the news resources as less beneficial to their teaching and research activities. While those who find such resources profoundly and moderately beneficial are equal in number 23, 6 of them are of the assessment that these resources are not beneficial and 2 don't have an assessment in this regard.

Taken as a whole, the academic related information made available through the news resources is discovered to be beneficial to the Students. Among the absolute respondents, 496 see such information exceptionally beneficial and 165 see them moderately beneficial. Then again, 176 of the respondents discover news resources less beneficial and 47 are undecided on the help received from the news resources.

Simply a very modest number of them 16 feel they are not beneficial to their academic works. The results show that a dominant piece of the respondents believe that news resources are beneficial; exceptionally, moderately or less, towards their learning, teaching and research activities. It tends to be concluded that even however news resources are discovered to be beneficial, the respondents don't give a ton of importance to these resources as given to other types of resources.

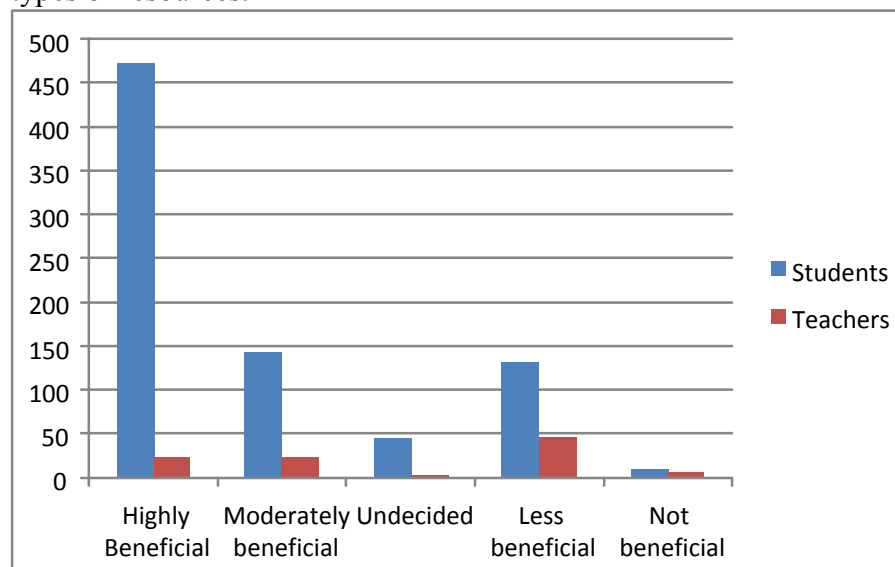


Figure 1.1 Role of news resources in information seeking

COMPARISON OF NEWS RESOURCES FROM OTHER SOURCES

Below table illustrates the view of the Students under examination about the news resources as a learning material conversely with other academically critical resources. It is tracked down that a decent number of UG students 533 judge the news resources the same as other resources. 146 of them judge them as sources which are easy to learn from and around one fourth of them 121 judge them as sources which are difficult to learn from.

The greater piece of the teachers 65 likewise opined that news resources are the same as other resources. 25 of them judged these resources easy to learn from and 10 of them judged these as troublesome resources as far learning from them is concerned.

Table 1.3 Comparison of news resources from other sources

S l. N o .	Opinion	UG Students (N = 800)	Teachers (N = 100)	Total (N=900)
1	Easy to learn from	146	25	171
2	About the same	533	65	598
3	Difficult to learn from	121	10	131

(Figures in parentheses denote percentage)

Dominant piece of the respondents 598 discovered very little difference between news resources and other resources as they expressed a view that the news resources are likewise like other sources. However, more than one fourth of them 171 have an assessment that these resources are easy to learn from them and a noteworthy number of them 131 see meeting information needs through news resources as troublesome.

USE PATTERN OF SOCIAL NETWORKING SITES FOR ACADEMIC INFORMATION SEEKING

The previous decade has witnessed a brisk development in the area of online social networking. This development has helped the academics likewise to enrich their academic life, to improve their teaching and learning and promote research and development. Through social networking, academics get the chance to showcase their accomplishments, and connect and spread out their network exchanging information and ideas related to their teaching, learning and research experiences. The investigation on the respondents' information seeking through social networking, as exposed in Table 5.52, indicates that academic information seeking is prevailing in an extensive manner among the Students as it is evident that 683 of them indulge in the academic social networking activities for gathering information.

Table 1.4 Use pattern of social networking sites for academic information seeking

Sl. No.	Opinion	UG Students (N = 800)	Teachers (N = 100)	Total (N=900)
1	Yes	622	61	683
2	No	178	39	217

(Figures in parentheses denote percentage)

Chi-Square Observed Value = 2.04 Chi-Square Expected Value = 5.99 Degree of Freedom = 2
The tabulated information given below clearly focuses on the way that the lion's shares of the Students under investigation actively make use of the social networking opportunities for academic information seeking activities. 662 of the UG students and 61 of the Teachers make use of the social networking sites for academic information seeking and gathering. This result evidently bolsters Nández and Borrego (2013) who reported that present days' researchers, for the most part lecturers and PhD students, seriously employ social networks to get in contact with other academics, disseminate their research results and follow other researchers' activities. At the same time, 178 of the students and 39 of the teachers are discovered to be not utilizing social media for academic works.

On applying Chi-Square test to estimate the level of diversity among the respondents regarding the use of social media for academic information seeking, it was affectionate that the observed Chi-Square value (2.04) is less than the expected value (5.99) at 5% level of significance and 2 Degree of Freedom. Consequently, it might very well be concluded that UG students, Research Scholars and Teachers, irrespective of their different academic level, seriously seek information through social media.

CONCLUSION

The Study "Information Seeking Behavior of the Students in the Technical Diploma Colleges in Goa State" has covered in general assessment of the clients about reading propensities, assets, offices and services in the library. The study continued the correct way to think about the information looking for conduct of the clients and improvement in Technical Diploma college libraries. Technical Diploma Colleges which goes about as a necessary piece of the organization it serves, planned, its collection and services to meet the instructional projects of its establishments. Technical Diploma College libraries have a decent collection of reading material and lion's share of the students utilizing this office. This office can meet the prerequisite of the information looking for clients, which will be a fruitful Endeavor in driving the clients towards the way of light of information. The current great collection should be enhanced further by the obtaining of a adequate number of different duplicates of reference books Besides this books identifying with specific fields are to be expanded and further developed books are required Latest release of book ought to be made accessible at the earliest opportunity.

A decent college library ought to give dissemination of materials, including bury library credit. The other significant services like reference Services, information services and all technical cycle with their goal of conveyance of services for client and arrangement of room and offices But there is need to improve the services, for example, entomb library advance and Xerox. There is likewise an improvement in the space for reading and drinking water offices. To finish up, the fruitful activity of any library depends generally on the decision of library collections. The decision of the collection should address the issue and prerequisites of the end clients consequently, custodians should know about how the clients look for information. The college libraries being the treasury of information significantly add to examine A grounded college library with sufficient offices, services and collection is appropriate for the investigation. It is the obligation of the library experts to keep in brain the changing necessities of every client and information prerequisites.

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FUTURE DIRECTIONS IN APPLIED ANIMAL SCIENCE STUDIES

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Abstract:-Applied sciences, particularly animal science has had notions to study animals living in farms, where there have been not sufficient studies conducted for understanding the nature of animals domesticated in specific farms and their individual as well as group behavior and laboratory animals in relation to their model use for studies. Moreover, certain studies have been conducted to study the artificial background in which some wilds are kept and behavior of such stimulus activities is attempted. Aim of this paper is to enforce directions for research studies in this area. What this paper also intends is to rectify conventional attitude of researchers towards their working process in this field. Since the implementation of animal protection laws in the country and abroad, researchers have been reluctant to conduct research on animals, rearing systems, and their behavior. Since the enactment of the Forest Conservation Act in some countries, researchers have been able to overcome the situation where it is not possible to observe and study animals; started studying the behavior in zoos. On the other hand, traditional methods are mostly used when studying the behavior of some wild life. All of these conditions have been summarized in this research paper and the right directions for the identification of animals through technologies like GPS, GIS, TVA, VHF, GIS -GEO and DNA technologies as well as real time environment for animals rather than artificial environment are suggested as they have direct impact on feeding, activities, time duration, identification of individual animal in study areas.

Keywords:- Bio-technology, DNA-technology, Rearing system, Gene therapy, Environment enrichment, Public attitude.

INTRODUCTION:-Today's era is the age of science and technology. Very important changes have taken place in the field of science education in the last several decades. There is no doubt that the importance of science is great because of its social utility. Today science is at the peak of its heights. We feel proud to live in the modern civilization we live in today. There is a pleasant feeling of touching the sky and the moon reaching the stars. The mere thought of victory over the atom shudders. The credit for all these achievements goes to science itself. The broad concept of science and society is the work of relating the

achievements of science to the good of human beings and human values. The common gives more importance to science because of its experimental side and not because of its theoretical side. Any society and culture is identified in the theological discoveries under science.

Individuals and groups live their social and cultural lives based on this element of science. Science plays significant role in the areas like agriculture, health, space, atomic energy, biotechnology, business and industry, communication and transportation, water resources, and inter-disciplinary resources. There are different branches of science. Animal science is one of branches of science in which behavioural study of animals, different rearing systems are observed.

Attitude towards Animal Research: -Although animal rights organizations have become more visible and vocal, the question remains how widespread such attitudes have become in the population at large. When it is accessed, it has been observed that there is large amount of oppose towards animal research in different countries around the world. (Gullap and Beckstead 1988). The exploration of public attitude toward animal research is important for many recent research studies. They have also observed the shifting relationship between science and society. Public engagement on issue related to animal research, including exploration of public attitudes, provides a means of achieving socially accepted science practices. (Ormandy and Schuppli 2014). Numbers of research studies based on animal science are incomplete due to rules and regulation. Reducing the number of animals used in experiments has become a priority for the government of any countries. For these reductions to occur, animal free alternatives must be made more available and, crucially, must be embraced by the researchers. In their study, Clemence and Leaman (2016), argued that since the protection of animals “between” 2010 to 2016, research for animals and attitude of public has changed. While, television serves the purpose for animal research as more than 27% researcher respondent in their study found no interest in outside study. This variation in public and researchers’ attitude makes it difficult in having research among the animals and their rearing systems. Hence, the author, through this paper aims to provide some future directions to overcome such situations and make research in science healthy and with gist.

Scientific Growth in animals: -As it has been a matter of worry related to the shortage of animals on the planets as human have reduced their existence for self-purpose, animal protection activities started for last 30 to 35 years. These laws and regulations of protection have restricted researchers to do their study with animals. Allen (1995) in this concern has given certain directions for growth in animals so that research work on animals can be the

simplest method to the researchers. For this, his suggestions for DNA technology is significant. Khan and his colleagues (2016), in their study 'role of DNA technology to improve life', have observed significant role of DNA technology, Gene Therapy, and Genetic Modification. DNA technology and gene transfer are the two areas of biotechnology that will have significant impact on animal agriculture. Application to animal agriculture can be expected in animal health management, to improve crops, and feed. (Petters 1986) The current commercial interest in bovine growth hormone produced by new technology can change the degree of importance that is attached to 'observational' and 'mechanistic' types of research. For example, until the advent of recombinant DNA technology, the mechanistic types of research related to the growth of bone, muscle and adipose tissues were primarily of interest to scientists who were curious about the growth and function of these tissues even though it was very difficult to obtain funding for this kind of research. (Allen 1995)

Perspectives on Animal Use: -Animal use in research has had a vital role in many scientific and medical advances of the past century and continues to aid our understanding of different disease. However, use of animals in research has been a subject of headache for many years due to public attitude and animal protection rights, particularly in 1985 Act of animals. But no responsible scientist wants to use animals or cause animals with unnecessary suffering. The UK's Information Freedom Act (FOI) January 2005, has given rights to its people to know each and every fact about animals in the state and the country. The reasons for such acts may have their own existence and possibilities towards animals and their life, animal use in research have made certain ideas from this policy of acts. Beaver, in his study 'Environment Enrichment for Laboratory Animals', has given directions for animal studies. According to him, specific environment can be evaluated on the basis of basic animal needs. Various cage arrangement and enrichment devices must be looked at from the animal's perspective. Whether or not animal performs a particular behavior probably depends on several factors, including whether the behaviour is typical for the species. How strong the motivation is, whether deterrents are present and early learning experiences. What Beaver from this prospective wants to suggest is that researchers need to locate at basic needs of animals before executing their research on them. In this concern, Lorenz (1981) has directed that 'there is a specific drive environment stimuli will trigger the behavior. If the animal is prevented from expressing certain patterns or if the stimulus does not occur, the thresholds will gradually decrease. Eventually, the behavior could be expressed at an inappropriate time as a vacuum activity when no apparent external stimulus is preset.' From Lorenz direction, it

is noteworthy for researchers that they have to control over the external stimulus so that no impact can change animal behavior in specific environment.

Environmental Enrichment for Research Studies: -Many studies have shown that most researchers are trying to create artificial environments that are suitable for animals rearing and other habitants. Even in zoos also, a model laboratory is structured for animals and this artificial structures in zoos appeal researchers to create artificial environment for animals. But changes in the environment that promote instinctive or learned behaviors are more beneficial to the animals. Artificial Prey chasing in zoos have made significant impact on tiger's movements but how long that tiger rely on artificial prey chasing should be a matter of thinking from research's point of view. Hence, artificial alliances are to be considered just alternatives to the animals for their movements. Bennett (1997) and Rozolt (2002) have given some directions for real environment activities for animals in cage or outside. Bennett in this concern suggested that environmental enrichment by artificial appliance can also be used with no pri mate laboratory animals. Acitivity cages and running wheels work well with rodents. Dogs respond well to running through mazes. Activity can be encouraged for cats by hanging an object that can be swatted or watched or by providing an object that will roll when batted. Gang housing also works well for cats especially if there are numerous perches on which individuals can rest. Scratching posts and large swallow tubes with several holes for cats to climb in and out can also be introduces. It is also directed that while having studies on rearing system of animals and their impact on animal behavior, researchers should pay attention on all possibilities in making real time environment as animals have their own habits in open nature. Fox (1971) at this point argued that food gathering activities in the wild and in a laboratory animal facility are strikingly different. In the wild, an animal spends most its time and energy searching for and gathering food. In a laboratory care facility, food is provided and is usu ally eaten quickly. Food quality in the laboratory is nutritious, but the animal is less active and weight gain must be carefully monitored. For this, researchers need to make animals active in food search or insist zoo authorities to do initiative regardi ng this,so that, real activity of animal and reactions to the stimulus can be observed and monitored.

Use Marks to Link Past and Present Observation: -Researchers, particularly animal behavior study researchers, (Biologist), who study wild life, free -ranging vertebrates have different problems. Most common for those who study motile animals have problem of relocating any individuals of the species each time they go through their study area. Due to

number of natural changes in the area, no individuals may be present in the area where they last studied. Even if, the investigator intends to monitor the same one, must sure that he is observing the same animal from time to time. Though, investigator identifies same with reference to color, size, and sex at the same are, a strong feeling arouses for its identification but finds difficulty in putting together data for analysis. In conventional research a study, this identification was carried out in the midst of twentieth century where animal individual was identified having marks on its back. There are different methods of marking. When study has a short duration in its nature, temporary marks are made e.g. low activity radioisotope for identifying birds, radio telemetry for moving animals, colored elastic waist band. On the other hand, toe cutting and other modes are considered as permanent marks. Korn (1997) with reference to permanent marking system and method illustrated that making such harm things with animal individual for identification make different impacts on animal behavior. Wight lost, permanent injury, body part effect, reducing activity. Silvy and Peterson (2005) further added that this kind of permanent marking interfere the normal behavior of animal and also reduce the time actually used in normal situation. Even if all of the above activities are appropriate from the point of view of animal behavior studies and from the point of individual identification, they are inappropriate in terms of animal protection act. Technology should be used for identification of animals with a view to overcoming this situation and carrying out research work. Marking without capturing individuals in the study are should be applied with reference to different technologies like GPS, GIS, VHF and ATV as tools of radio technology, Satellite Tracking, GPS GEO, and live tracking.

Conclusion:-Research study on animal science has its own scope where wildlife and domestication are two natural and semi -natural areas of animal individual. It provides ample opportunities for researchers to know much about their activities for understanding their life and impact of different rearing systems on their activities. Since the execution of different animal protection law around the world, researchers experienced limitation in their studies and even people's attitude towards it. Once the procedure in animal studies gets its new dimension i.e. studies of animal basis on the basis of animal, will nurture the researcher area. It is suggested from this point that researcher need to study from real time environment.

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Frameworks and Methods for Improvement of Data Analysis Techniques towards Digital User Interface

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ABSTRACT:-The investigations aimed at analysing the user interface and experience in the company application in order to determine the user's aim by means of a design. The interface development phase utilises a goal-oriented design approach and then evaluates the experience of the users using user flows to identify their issues. It is standard practice for user-facing software engineers to convert a mock-up of a GUI into code. This process occurs both at the beginning of a programme and in an evolutionary context when modifications in the GUI maintain pace with changing functionality. Sadly, this is a time-consuming and difficult exercise. In this article we propose a method to this procedure via the precise prototyping of graphical users through three tasks: detection, grading and installation. Link analysis is one of the wildest techniques used for the design of a user interface to organise user interface control components. The domains of big data examined indicate that effective administration and handling of huge data groups utilising big data methods and technologies may provide user-friendly insights which generate company values.

Keywords:-Big data, business analytics, User Modeling, User Interface Experience, Quality of Experience, User Experience.

INTRODUCTION:-User Experience and User Interface is one of the important components in software. However, inappropriate interfaces can lead users to easily leave the software already built [1]. An application when built based on a mental model of the developer, without any mental user model can cause problems i.e. the user could not have found his purpose in using the application. One of the essential components of a programme is user experience and user interface. However, improper interfaces may make it easy for users to abandon the previously developed software [1]. An application developed on a developer's mental model; the user could not find his purpose in using the app without a mental user model. OST contemporary user-facing software programmes are GUI-centered and depend on beautiful UIs and intuitive user experience to attract consumers, make computing activities easy to complete and engage users. Cumbersome or unpleasant UI software is far less likely to succeed, especially since businesses are looking to distinguish their apps from rivals with a comparable functionality. In mobile app marketplaces like the App Store or Google Play, this phenomenon can be easily seen as numerous competing programmes (also known as apps), which provide identical features (e.g. task management, weather apps) may be significantly differentiated through UI/UX. Thus, the creation and prototyping of design mock-ups is an essential stage in the development of any GUI-based application which enables installation and testing with UIs in order to assess or verify abstract design ideas.

User Profiling:-User profiling is a user model that shows the preferences, habits and interests of the user. You can anticipate how a user can utilise a UI. The construction of a user profile is explicit or implicit. Data a user enters through forms or gathered from a certain supplied UI for the purpose of selecting choices as interest is specific information. UI developers utilised feedback before to enhance the pleasure of a user. You may select a user randomly and ask them complete or interview a survey. For a user, this is irritating. On the other side, limited questions and interview time would not all address the user experience. It is a tough procedure to know the true pleasure of the consumer.

LITERATURE REVIEW:

Hashem et al (2020) Discuss cloud and Big Data Computing overviews. Furthermore, it presents essential concepts, features and difficulties for large data analysis to be implemented in the cloud computing environment.

Singh, D et al (2019) Present conventional data mining, the research of knowledge and the distributed data analysis method. However, difficulties, applications, tools and data sources have not been addressed for large data analysis.

Carlos Iñiguez-Jarrín et al (2020) The interaction patterns suggested by analysing 27 actual case studies of mass data analysis have been developed in order to develop huge data analytics UIs. We assess whether the suggested patterns enhance the usability in the context of literature search of the large data analysis UIs. We have replicated the identical controlled trial, one with 24 undergraduate students who have been searching scientific literature and the other with 8 researches who have been searching for biomedical literature.

The growing expansion of available data is a recognized trend worldwide, while valuable knowledge arising from the information come from data analysis processes. In that context, the bulk of organizations are collecting, storing and analyzing data for strategic business decisions leading to valuable knowledge. The ability to manage, analyze and act on data ("data-driven decision systems") is very important to organizations and is characterized as a significant asset

Konstantinos Vassakis et al (2018) A globally acknowledged tendency is the increasing increase in the data accessible, while useful information comes through procedures of data analysis. In this environment, most companies gather, store and analyse data in order to provide useful information for strategic business choices. The capacity for businesses to handle, evaluate and act on data ("data-driven decision systems") is extremely essential and is a major advantage.

Development of the Improved Link Analysis Method :-The costs of the operation of an interface in terms of time, physical or cognitive expenses should be defined first to optimise an interface layout and objectively assess its usefulness. The total transitional cost of U-I and W-I movements representing the amount of demand has been utilised in the algorithm as a minimisation of costs. The cost of each motion (transition) is believed to be a function of its complexity and its significance and frequency weigh the difficulty of each change. The operating cost of each transition should be additive on the basis of assumptions of procedural activities. The total cost should include the sum of the weighted difficulty index of all transitions, including U-I and W-I. Then a basic branch-and-bound algorithm with certain changes would be used to provide the optimum interface architecture, including the priority of entering search tree, the search principle and the cut-off method for branching.

Modified Link Table:-Two issues need to be solved, namely the neglect of U-I motions and difficulty of movement, to enhance a conventional link analysis technique. The origin of each operation should be included in the updated link table and the direction of each movement. Only items to be examined on the interface and only half the table were listed in the traditional link table. This research treated the origin of the operation as an additional element in the link table and used the reverse side of the link table.

	E ₁	E ₂	E _n
E ₁		L ₁₁		L _{1n}
E ₂				L _{2n}
⋮				
⋮				
⋮				
⋮				
E _n				

Table. Traditional link table (unused area)

Mobile GUI Datasets :- REDRAW needs a high number of GUI component pictures marked with their particular domain types, in order to train an effective CNN classifier. In this article, we gather this dataset fully automated by mining and running the top 250 Android applications in all Google Play categories, except gaming category, which results in 14,382 unique screens and 191,300 annotated GUI components (after data -cleaning). A huge dataset of GUI related data for Android applications (named RICO) was just released and made accessible (while this article was being reviewed). The dataset has over 72k distinct screens and over 3M GUI components, larger than the one gathered in this study. However, several important characteristics unique to prototype mobile graphics are distinguished from the REDRAW data set:

- 1) Cropped Images of GUI-components: The REDRAW Mobile GUI data collection includes a series of GUI components identified from bigger screen pictures that are ready to be processed by classification machine learning.
- 2) Cleaned Dataset: We have used several application, screen and GUI -component filtering processes for removing "noisy" REDRAW -dataset components. For developing an effective, accurate machine learning classification, this is an essential component. The precise handling of these filtering methods was checked.
- 3) Data Augmentation: In the extraction of our dataset, we discovered that certain component types were used more often than other components, presenting a challenge to get a balanced GUI component type data set. We used data -increasing methods to assist alleviate this issue to balance our observed classes.

Using CV Techniques for GUI -component Detection: -Due to restrictions in the usage of picture editing tools, or different design methods, such as digitally or physically drawing mockups using pen screens, tablets or papers, the parsing information from mockups results in extremely accurate link boxes for GUI components. In such situations, a mock -up artefact may simply consist of a picture, which requires the identification of CV methods for important GUI component information. Our method uses the CV technique to identify GUI boundary boxes to enable these situations. This method utilises a number of CV approaches to determine bounding boxes around objects that match GUI components. The first method for detecting the borders of an item in a picture is utilised for Canny. These edges are then dilated and mixed to each other's edges. Finally, bounding boxes around atomic GUI components are derived from the contours of those edges. Further techniques used to combine the bounding boxes of logical text chunks using Optical Character Recognition (OCR) (e.g., rather than detecting each word as its own component, sentences and paragraphs of text are merged).

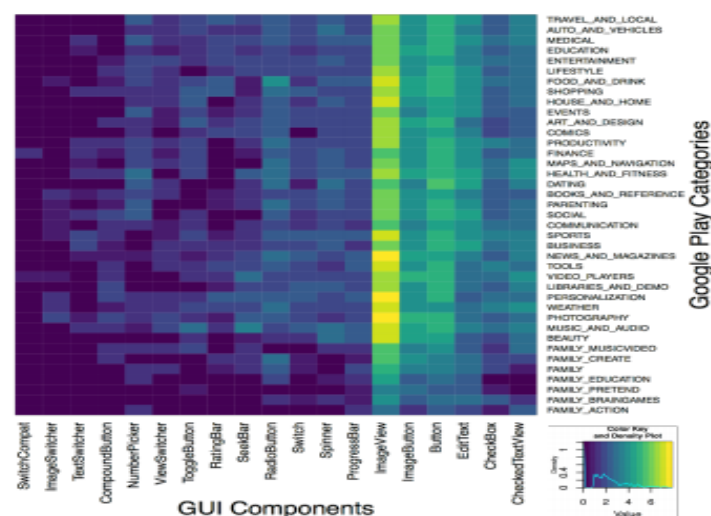


Figure: Heat-map of GUI Components by Category Before Filtering

- 1) **Activity Detector Engine (ADE):** The Activity Detector Engine (ADE) has a number of separate detector components. The core of this framework is UI activity, Mouse, Keyboard detectors (see Figure 1). The newest version of the framework used for Emotion Detector and GSR Recorder are two additional components. A GSR recording machine needs the Blue-tooth-equipped kit for the GSR data to be sent to the framework. Emotions detection needs a camera. GSR is a measuring technique for the assessment of skin electrical conductivity that is usually used to detect emotional conditions in the stress level of a person or user.
- 2) **Activity Analysis Engine (AAE):** ADE (Action Analysis Engine) is a component of the analysis capacity architecture in the local database of stored data and produces certain reports based on ADE identified actions (see Figure 2). Input Analyzer analyses, verifies and transforms input files into a local database and saves them. The analysis engine is responsible in terms of activity, time, frequency and description for evaluating the recorded data and providing some general information. A recognised kind of output such as XML or JSON is exported from Report Generator.

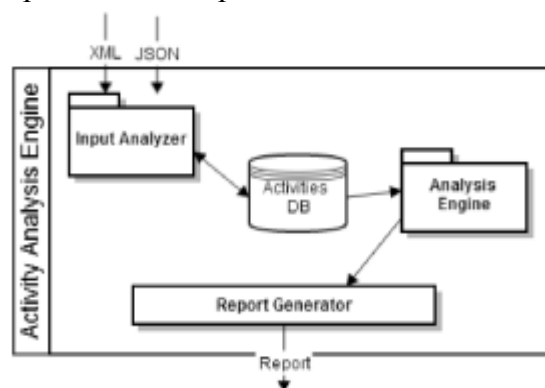


Figure: UIXSim: Activity Detector Engine (ADE)

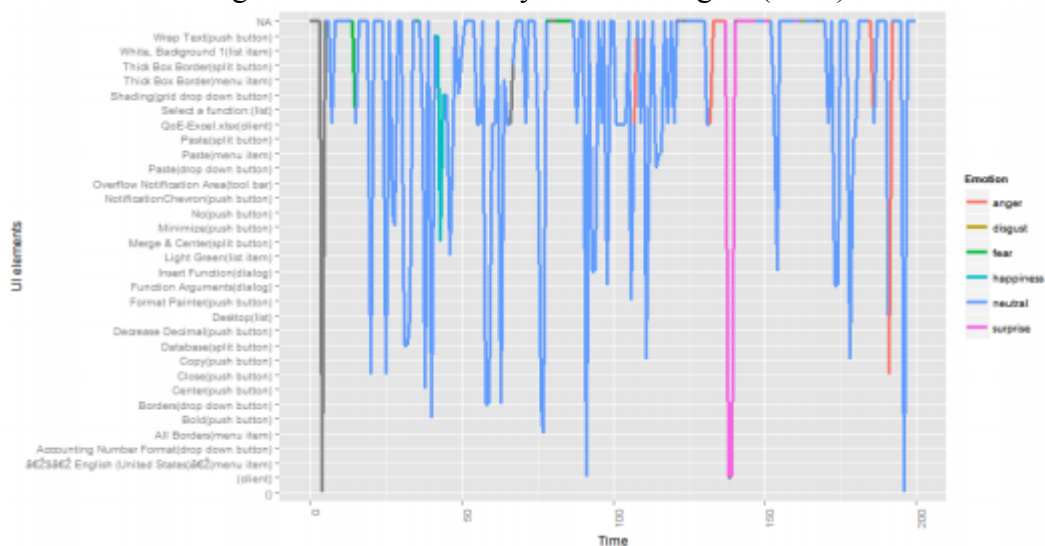


Figure: Series of UI Elements clicked by User 1 and his/her Emotions

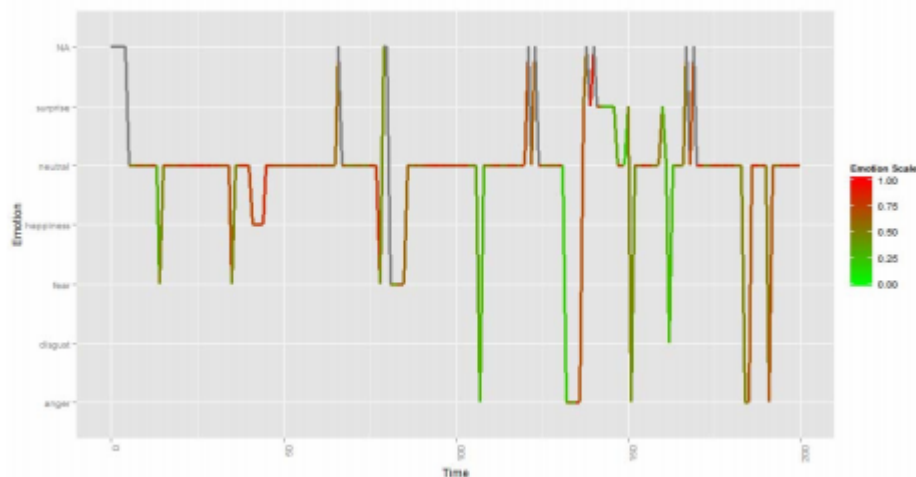


Figure: Emotions for User 1 During Experiment Two

CONCLUSION:-When implementing and testing it may be determined that the interface development using the goal -directed design process creates an interface that fits the user's objective or aims.. To evaluate IT operations and discover similarities and the same activities to categorise them a pattern recognition module has to be developed; this will also assist to define smaller tasks in the context of a bigger job. UI is essential for user experience in the recognition of how a user interacts with the programme. UI is important to user experience. The framework gives some useful information and statistics for the evaluation of a user interface. The surveillance of user operations of the UI does not only have a bearing on the quality of UI components, but can also be regarded as the quality and performance of the programme itself. m. Changing the UI components accordingly, which are more important for a user, may also contribute to improved interface experience by concealing the portions that a user does not utilise. We will explore CNN architectures to better assist the detection job in the future. In the future, we will do so. We intend to collaborate with industrial partners to include REDRAW in their processes and our wider prototyping methodology.

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Effect of Health-Promoting Lifestyle Modification Education on Knowledge, Attitude, and Quality of Life of Postmenopausal Women

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Abstract:-Limited knowledge and negative attitudes about menopause among postmenopausal women (PMW) create a multitude of health-related issues leading to impaired quality of life (QOL) among them. This study evaluated the impact of a health-promoting lifestyle education intervention (HPLEI) on knowledge, attitude, and QOL in a group of PMW in Sri Lanka. A quasi-experimental study was conducted with 72 PMW, matched for sociodemographic status of the community from two geographically separated areas in Galle, and they were allocated to intervention and control groups. HPLEI is comprised of health education sessions focused on postmenopausal health management with lifestyle modifications provided only for the intervention group for 8 weeks and follow-up for 6 months.

1. Introduction:-Health education is a primary strategy of health promotion. It is defined as “consciously constructed opportunities for learning involving some form of communication designed to improve health literacy, including improving knowledge, and developing life skills, which are conducive to individual and community health”. Health education is not limited to the dissemination of health-related information and extends to fostering the motivation, skills, and confidence (self-efficacy) that are necessary to take action to improve health.

Menopause is a major milestone in women resulting from the depletion of ovarian functions. Menopause leads to a new biological state accompanied by a multitude of physical and psychological changes. It causes a wide range of symptoms such as hot flashes, night sweats, muscle and joint aches or pains, sleeping problems, weight gain, and depression, leading to impairment of quality of life (QOL).

The QOL is defined as “an individual’s perception of their position in life in the context of culture and value system in which they live and in relation to their goal expectations, standards and concerns” by the World Health Organization. In postmenopausal women (PMW), QOL usually refers to the aspects pertaining to health based on a combination of symptoms without considering the physical, emotional, or social functions.

2. Materials and Methods

2.1. Study Design, Participants, and Setting :-This study was a quasi-experimental study, which observed the impact of HPLEI that was designed as a part of a main study “Effects of menopause on bodily structure, functions and physical health,” conducted at the Faculty of Medicine, University of Ruhuna, Sri Lanka. The methodology on the selection of a sample and HPLEI has been well described in our previous publication when presenting the impact of HPLEI on health-promoting behaviors and health status of the same cohort of study participants. The women were selected randomly from 05 Public Health Midwife’s (PHM) division in Bope- Poddala Medical Officer of Health area, Galle district, in Sri Lanka, for the main study. During the main study at the initial screening, women on hormone replacement

therapy (HRT) or with non communicable diseases (NCDs) and disorders related to the musculoskeletal and nervous systems and gait or balance problems were excluded. In addition, women aged 60 years or more or have premature menopause (< 40 years), women with menopause secondary to surgery or drug therapy, and women who are exposed to dedicated dietary or exercise programmes currently or previously were also excluded.

Of the 05 PHM divisions, 02 divisions were assigned randomly for the “intervention group” and another 02 geographically separated PHM divisions were assigned randomly for the “control group” to minimize the contamination. One PHM division was excluded. Consenting women with time since menopause ≥ 2 to ≤ 7 years and women who had at least education up to grade 5 were included in the current study.

The sample size calculation was based on a previous study of similar nature done in Iran, by comparing the QOL before and after education intervention. The postmenopausal status was determined on self-stated menstrual history. Only 37 women from the intervention group and 35 women from the control group completed the study.

2.2. Health-Promoting Lifestyle Education Intervention :-HPLEI comprised of 8 weeks health education sessions and 6 months of follow-up. Health education included 8 sessions focused on lifestyle modifications which were carried out for 8 weeks and printed health education package was provided at the end of the training for the intervention group. A health education package was designed by the research team with the contributions from a group of experts including a gynecologist, physician, nutritionist, and sport physician. It was based on menopausal symptom management, healthy diet healthy physical exercises, and spiritual support, individualized for each participant.

2.3. Evaluation of Knowledge, Attitude, and Quality of Life :-Knowledge, attitude, MENQOL, and overall QOL were observed in both the intervention and control groups, separately at the baseline; Evaluation 1, after 8 weeks of baseline (immediately after the education programme of the intervention group); Evaluation 2, after the 6-month follow-up; Evaluation 3, by administering the knowledge and attitude questionnaire, menopause-specific quality of life (MENQOL) questionnaire, and Short-form 36 Survey (SF-36).

2.3.1. Knowledge and Attitude Questionnaire :-Knowledge on physiological basis of menopause, menopausal symptoms, complications of menopause, and health management after menopause was assessed in the knowledge section which contained 23 statements answered in a true/false/no idea manner. The attitude section included 13 statements for measuring the attitude which was designed as a five-choice Likert scale (strongly agree, agree, disagree, strongly disagree, and no idea). The knowledge and attitude statements were developed by the investigators using the statements which had been used to assess the knowledge and attitude of PMW in a previous study. The reliability of the knowledge and attitude questionnaire has been evaluated locally (unpublished data).

3. Results

3.1. Basic Characteristics of Participated Women :-The mean (SD) age of the intervention and control groups was 54.6 (4.5) and 56.5 (3.4) years (), respectively. Age at menopause, time since menopause, and socio demographic characteristics were not different between the intervention and control groups. Knowledge, attitude, MENQOL, and overall QOL scores were not different between the intervention and control groups at the baseline Evaluation 1 values are not shown in tables.

3.2. Changes of Knowledge, Attitude, MENQOL, and Overall QOL :-Knowledge and attitude scores increased in the intervention group during the HPLEI (). In the control group, while a marginal increase in all dimensions of knowledge scores was seen, scores related to attitude remained unchanged. All scores of knowledge in the control group remained low when compared with the intervention group.

4. Conclusions :-This study proved that education intervention focused on health -promoting lifestyle management was effective in improving knowledge, attitude, MENQOL, and overall QOL of PMW. This programme may offer implications for designing and implementing such interventions in future studies in this nature. This approach is recommended as a health care intervention in postmenopausal health management.

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A Study To assess the Prevalence of Menopausal Symptoms Among Post Menopausal Working Women in Government Hospital, Solapur District, Maharashtra.

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ABSTRACT

Background

Menopause is a natural step in aging process, represents the end of menstruation after the last menstrual periods in the previous 12 months. It occurs gradually in women and indicates the transition from the reproductive to the post reproductive era of a women's life. It is the condition that every woman faces, in later life and can have many associates' effects, which might disrupt the quality of life.

Objective

To assess the prevalence of menopausal symptoms, among post menopausal working women in government hospital, Solapur district, Maharashtra.

Materials and Methods

A quantitative descriptive study was conducted among post menopausal working women in government hospital, Solapur district, Maharashtra. Total 60 menopausal women were participated in the study. The pre -tested, pre -designed questionnaire was used to assess the prevalence of menopausal symptoms in the study participants. The questionnaire was set in two parts which includes demographic data and the assessment of menopausal symptoms. In the daily routine and working activities. The data were analysed with the help of SPSS version 20.0

Results

53 participants (88.33%) were having reported experienced hot flushes where 7% participants (11.66%) were not experienced ho flushes. The most common post menopausal symptoms experienced by the participants were joint pain (44 participants), Nervousness (28 participants), Dyspareunia (31 participants), sleep disturbances (23 participants). Post menopausal period was associated with daily routines and working activities.

Conclusion

In this study, the most commonly menopausal symptoms were joint pain, hot flushes, dyspareunia, Nervousness, sleep disturbances which will hamper their daily routine and working activities. It is necessary to conduct the awareness program on importance of lifestyle modification during menopausal period.

Keywords:-Menopausal period, prevalence, post menopausal working women.

Introduction:-A Woman has been the torchbearer of the society for centuries. She is responsible for the miracle of birth. She is the image of the society and considered the guardian of the respect and corner stone of a family . As life goes on, there are lot of changes occur in women's life cycle. Major concern in woman's life is reproductive health, and need much attention than the counter parts.

Menarche and menopause are the turning point in the life of a woman. "Menopause is a stage of life not a disease". The menopause is the time of women's life when reproductive capacity ceases. The post-menopausal period is the time following menopause and premenopausal is a term used to denote the period during which menopausal changes are occurring. The age range at which natural menopause occurs is wide, between the age of 40 - 55 years.

Materials and Methods :-The study was conducted in government hospital of Solapur district, Maharashtra State among 60 post menopausal working women. Age of the sample is ranges between 40 - 55 years. A pre -tested semi-structured, self administered questionnaire was used to collect the information on menopausal symptoms. The questionnaire is divided in three parts. The first part is on information of demographic data and menopausal history and the second part included the questions on assessment of menopausal symptoms. The collected data was compiled and analyzed by using SPSS 20.

Result: ITEM ANALYSIS

Area	Item	Never		Sometimes		Most of the times		Always	
		Frequency	%	Frequency	%	Frequency	%	Frequency	%
Physical symptoms	1	15	24.7%	9	15.3%	4	6.0%	32	54.0%
	2	9	14.0%	13	22.0%	19	32.0%	19	32.0%
	3	5	8.0%	11	18.7%	22	36.7%	22	36.7%
	4	22	36.0%	20	34.0%	13	22.0%	5	8.0%
Psychological symptoms	1	1	1.3%	7	10.7%	17	29.3%	35	58.7%
	2	1	1.3%	4	7.3%	26	42.7%	29	48.7%
	3	4	6.7%	12	20.0%	15	25.3%	29	48.0%
	4	7	12.0%	20	33.3%	19	32.0%	14	22.7%
	5	8	13.3%	20	34.0%	19	31.3%	13	21.3%
Sexual symptoms	1	19	32.7%	15	25.3%	16	26.0%	10	16.0%
	2	19	31.3%	26	44.0%	11	18.0%	4	6.7%
	3	24	40.0%	13	20.7%	13	23.3%	10	16.0%
Urinary symptoms	1	15	24.7%	21	34.7%	16	27.3%	8	13.3%
	2	18	28.7%	18	30.0%	20	34.0%	4	7.3%
Chronic consequences	1	5	8.0%	10	16.0%	9	14.7%	36	61.3%
	2	26	43.3%	19	32.0%	8	13.3%	7	11.3%
	3	8	14.0%	13	22.0%	13	20.7%	26	43.3%
	4	53	87.3%	3	5.3%	2	3.3%	2	4.0%
	5	3	5.3%	5	8.0%	11	19.3%	41	67.3%
	6	3	5.3%	4	7.3%	12	20.0%	41	67.3%

Above item analysis table show

More than half (54%) of menopausal women always were getting hot flushes.

8% of them were never able to sleep adequately at night.

36% of them never experience Palpitation.

More than half (58.7%) of them always were able to remembering daily activity.

48.7% of them were always able to concentrate on their work.

48% of them always felt nervousness.

44% of them sometimes experience pain during the sexual intercourse.

40% of them never felt lack of desire of sex.

Majority of 61.3% of them were always suffering from joint pain.

43.3% of them never gained weight after the menopause

43.3% of them always had hair thinning or hair loss after menopause.

87.3% of them never had any heart problem after menopause.

67.3% of them always had body ache after menopause.

67.3% of them always had headache after menopause.

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Recommendation System for Voters using Naive Bayes

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Abstract:- Recommender systems are an important part of the information and e-commerce ecosystem. They represent a powerful method for enabling users to filter through large information and product spaces. Nearly two decades of research on collaborative filtering have led to a varied set of algorithms and a rich collection of tools for evaluating their performance. Research in the field is moving in the direction of a richer understanding of how recommender technology may be embedded in specific domains. The differing personalities exhibited by different recommender algorithms show that recommendation is not a one-size-fits-all problem. Specific tasks, information needs, and item domains represent unique problems for recommenders, and design and evaluation of recommenders needs to be done based on the user tasks to be supported. Effective deployments must begin with careful analysis of prospective users and their goals. Based on this analysis, system designers have a host of options for the choice of algorithm to take proper decision. Here Accuracy and correctly classified instances are classified by using Naïve Bayes classification algorithm.

Keywords:- Naïve Bayes Algorithm, training dataset of voters, classification

Introduction:- Naive Bayes is a probabilistic machine learning algorithm based on the Bayes Theorem, used in a wide variety of classification tasks. Classification helps the user to take correct decision. There are various types of recommendation systems such as collaborative filtering (CF) recommender systems, content-based recommender systems, and hybrid recommender systems. The recommender systems can alleviate these problems by effectively finding users' potential requirements and selecting desirable items from a huge amount of candidate information [2]. The core idea of the recommender system is the recommendation algorithm. Traditional recommender systems are mainly divided into three types [3]: content-based recommender systems [4], collaborative filtering recommender systems [5], and hybrid recommender systems [6].

1) CONTENT -BASED RECOMMENDER SYSTEMS :- Content-based recommender systems utilize the contents of items and find the similarities among them. After analyzing sufficient numbers of items that one user has already shown favor to, the user interests profile is established. Then the recommender system could search the database and choose proper items according to this profile [7]. The difficulty of these algorithms lies in how to find user preferences based on the contents of items. Many approaches have been developed to solve this problem in the areas of data mining or machine learning [8]. For example, in order to recommend some articles to a specific reader, a recommender system firstly obtains all the books this reader has already read and then analyzes their contents. Key words can be extracted from the text with the help of text mining methods, such as the well-known TF-IDF. After integrating all the key words with their respective weights, a book can be represented by a multi-dimensional vector. Specific clustering algorithms [9] can be implemented to find the centers of these vectors which represent the interests of this reader.

2) COLLABORATIVE FILTERING (CF) RECOMMENDER SYSTEMS:

Collaborative filtering (CF) has become one of the most influential recommendation algorithms. Unlike the content-based approaches, CF only relies on the item ratings from each user. It is based on the assumption that users who have rated the same items with similar ratings are likely to have similar preferences. Collaborative filtering recommends item based on the interest of other like-minded users or identify items similar to those previously rated by the target user. It uses statistical techniques to find the similarity between the user or item vector. CF methods can be classified into two categories Memory-Based and Model-Based [10].

3) HYBRID RECOMMENDER SYSTEMS:

Hybrid recommendation systems are divided into monolithic hybrid recommendation, parallel hybrid recommendation, and pipeline hybrid recommendation [11]. Monolithic hybrid recommendation is a hybrid recommendation method that integrates several recommendation strategies [12]. The remaining two hybrid recommendations require at least two different recommendation methods and then combine them. According to the input, the parallel hybrid recommendation operates independently of each other, respectively generating a recommendation list, and then the output data is combined into the final recommendation set. The pipeline hybrid recommendation connects multiple recommender systems in pipelined architecture, with the output of the previous recommender system becoming the input portion of the latter recommender system. Of course, the latter recommendation unit can also choose to use part of the original input data. Hybrid recommender systems are used either to leverage the power of multiple data sources or to improve the performance of existing recommender systems within a particular data modality [13]. An important motivation for the construction of hybrid recommender systems is that different types of recommender systems, such as collaborative filtering-based, content-based methods, have different strengths and weaknesses. Some recommender systems work more effectively at cold start, whereas others work more effectively when sufficient data are available [14]. Hybrid recommender systems attempt to leverage the complementary strengths of these systems to create a system with greater overall robustness [15].

Proposed System: -In the proposed system, with the help of Weka tool, classification algorithm is applied on the collected voter database which is in arff format. The Naïve Bayes classifier is applied on the database which comes under Bayes classifier.

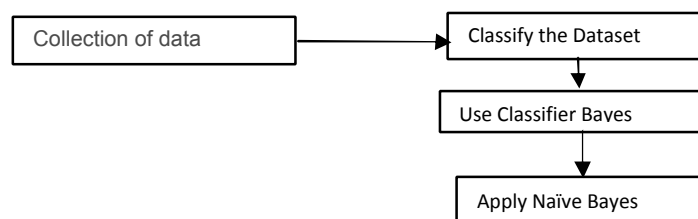


Fig 1: Block Diagram of Proposed system

Here confusion matrix is created for finding the accuracy of the recommendation system and for verifying correctly classified instances. The confusion matrix has four main terms such as True Positive, True Negative, Precision and Recall on the basis of which accuracy is found out. The meanings of these terms are as follows:

- **Accuracy**

- Accuracy is a ratio of correctly predicted observation to the total observations

- True Positive: The number of correct predictions that the occurrence is positive.
- True Negative: Number of correct predictions that the occurrence is negative.
- Precision is the fraction of relevant instances among the retrieved instances, while recall is the fraction of relevant instances that have been retrieved over the total number of instances. They are basically used as the measure of relevance.

Related work:-In the proposed system, voter dataset in arff format is utilized. This dataset is classified with Naïve Bayes classifier which comes under bayes. Here for classification 17 attributes are considered with different percentage of training and testing dataset. On the basis of that correctly classified instances are verified.

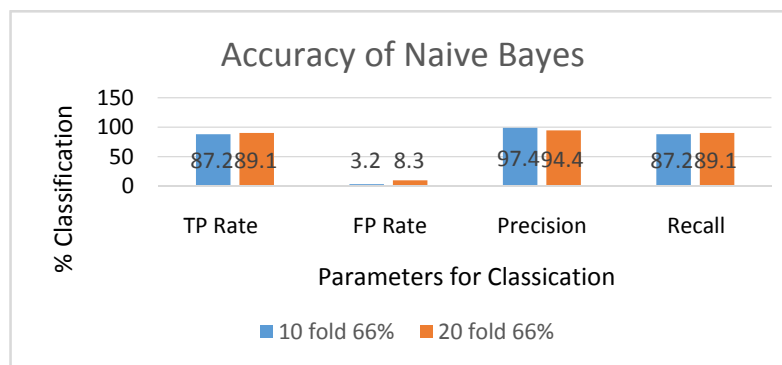


Fig 2: Accuracy with 10fold and 20folds with 66% training dataset

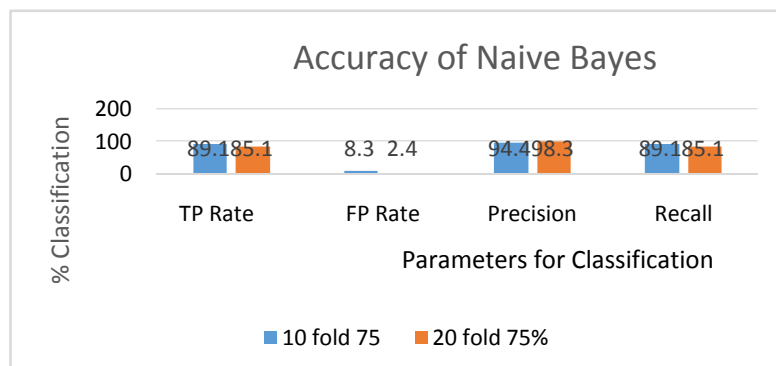


Fig 2: Accuracy with 10fold and 20folds with 75% training dataset

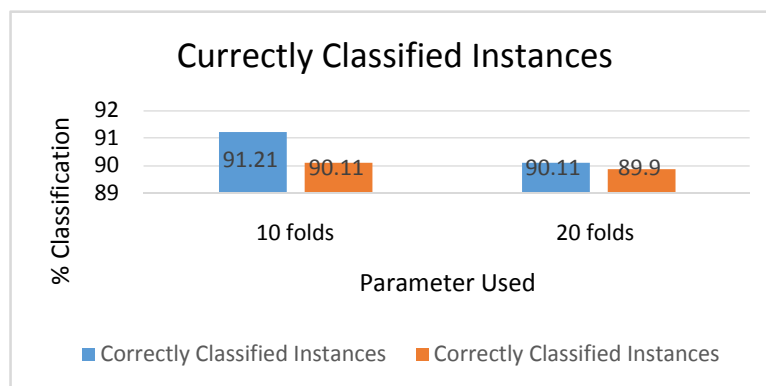


Fig 2: Correctly classified instances with 66% and 75% training dataset

Conclusion:-The voter dataset is classified with Naïve Bayes algorithm where all attributes of voters dataset is considered to give recommendation of voting. Here accuracy is calculated with different percentage of training data set along with different folds. Also observed the correctly classified instances to give proper suggestion. From the graph it is concluded that with standard percentage of training data it classified instances more correctly which is helpful to the user to take proper decision.

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An Analysis of the Impact of Innovative ICT tools on Academic Excellence of Higher Education Institutes with reference to Business Schools in Navi Mumbai

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Abstract:-In today's Era of digitisation the role of innovations in ICT in education sector is becoming more significant. ICT is considered as an engine to enhance the quality of the education. The new emerging technologies have revolutionised the field of education. The use of innovative ICT tools in education has extremely transformed teaching and learning processes. The core purpose behind leading the study is to analyse the impact of innovative ICT tools on academic excellence of Business Schools in Navi Mumbai. This study also finds out various innovative tools that can be used and integrated in teaching, learning and evaluation. 350 students and 100 faculty members have been chosen from B-schools, which are located in Navi Mumbai. Random sampling method is used in this research. Data is collected through questionnaires. The result of the study has been drawn with the help of descriptive statistics. The findings recommend that there is a strong impact of innovations in ICT on academic excellence.

Keywords: Innovations in ICT, Academic Excellence, B-Schools

1. INTRODUCTION

A progress of the nation depends upon its citizens when they are dynamic, enterprising and responsible. Education plays an important role in making such type of citizens. The overall development and growth of nation depends upon higher education because it provides specialised knowledge and skilled manpower. Higher education is a powerful tool to build modern, techno-savvy, knowledge oriented, value based society which can lead the country towards becoming superpower in the world.

In the global context, the scope and demand for higher education is increasing continuously. In India, the stream of management teaching is one of the proficient and advance educational courses of higher education. At the same time quality in education is need of the hour and recently Indian higher education system has realised it.

Today, Navi Mumbai has recognized as a potential business place. Many Business Schools thriving in Navi Mumbai and lots of students are attracted towards the quality management program. With the increasing enrolment of students in Business Schools and advancement in technology it has become essential to study the impact of innovations in ICT on academic excellence of business schools in Navi Mumbai.

There are several innovative ICT tools available, which can be adapted and used in teaching, learning and evaluation by business schools in order to achieve academic excellence. Innovative ICT tools like ZOOM, Google Meet, Microsoft Teams, Cisco Webex, OBS studio can be used for online live lectures. Go To meetings and Microsoft Teams Live can be used in Live Webinars. Also Moodle, Edmodo and Google classrooms are available in the learning management system (LMS) category. Google Docs and Skype can be used for collaborative work. For online surveys, registrations, exams Google Forms, Microsoft

Forms or Teztmoz can be used. There are many more such innovative ICT tools are available.

Quality and excellence is dependent on each other, hence, business schools have to make organised efforts to achieve academic excellence. There are various factors which are responsible for overall quality in management institutes such as infrastructure, experienced and knowledgeable faculty, research based curriculum, adequate funds, accreditation, regulatory issues and above all most important is integration of innovative technology tools into education.

This is the Era of digitisation and world is experiencing rapid technological advances and hence business schools need to understand impact of modern tools in teaching and learning.

2. LITERATURE REVIEW

- Chaman Verma, Sanjay Singla, Dr. Dharminder Kumar (2020) this paper gives overall review of ICT in Indian higher education. The survey was conducted in six universities of Punjab and Haryana. The study recommends that institutes should provide smart class rooms with projectors, interactive boards, internet, and PowerPoint presentation in order to encourage quality education. The study also points out that university management should introduce new rules and policies to lift up the technology usage in higher institutes. The study reveals that there is slow internet bandwidth and poor ICT infrastructure. The traditional ICT resources need to be updated with newest ICT infrastructure. The study recommends that outdated technology needs to be updated or replaced with modern technology to make learning more interesting.
- Muttappa M. Mantur directed a research in (2018) on ICT and innovative practices in higher education. According to him recent developments of ICT within education will have a robust impact on teaching learning process, quality and accessibility of education, learning environment, learning motivation and academic performance. He also discusses that ICT can affect the delivery of education and increases the flexibility so that learners can access the information irrespective of time and place.
- Bindu C.N (2016) this paper discusses the present literature review of the usage of ICTs in education sector. The study focuses on ICT's impact on teaching learning process, quality of education, learning environment and academic performance of the students. The researcher explored that persistent application and innovations in ICTs in the education system improves academic performance, motivates learners and influences teaching learning process.

3. RESEARCH OBJECTIVES

1. To find out various innovative ICT tools that are available and can be adapted in Teaching, Learning and Evaluation by business schools.
2. To study the impact of innovations in ICT on the academic excellence of the Higher Education Institutes W.R.T. B-Schools in Navi Mumbai.

4. HYPOTHESIS

H0: There is no significant impact of innovations in ICT on the academic excellence of the Higher Education Institutes W.R.T. B-Schools in Navi Mumbai.

H1: There is significant impact of innovations in ICT on the academic excellence of the Higher Education Institutes W.R.T. B-Schools in Navi Mumbai.

5. RESEARCH METHODOLOGY

This research has been carried out with the help of quantitative and qualitative techniques. In view of the objective of the study, it was considered necessary to undertake a survey of

students and faculty of business schools from parts of Navi Mumbai. The information has been collected from the respondents by using questionnaire.

- Type of Universe: The Universe of sample is full time faculty and students of business schools from Navi Mumbai region.
- Sample Size: The total sample size is 450; out of that 350 are students and 100 are full time faculty of business schools in the area of Navi Mumbai.
- Sampling Type: Random sample technique is used in this research.

6. DATA ANALYSIS AND INTERPRETATION

H0: There is no significant impact of innovations in ICT on the academic excellence of the Higher Education Institutes W.R.T. B-Schools in Navi Mumbai.

H1: There is significant impact of innovations in ICT on the academic excellence of the Higher Education Institutes W.R.T. B-Schools in Navi Mumbai.

To prove this hypothesis descriptive statistics is used.

Descriptive Statistics- Students' perspective on the academic excellence

	N	Minimum	Maximum	Mean	Std. Deviation
Important factors that contribute towards achieving academic excellence					
Use of Innovative ICT tools in teaching and learning	350	1	5	4.08	.914
Experienced and talented Faculty	350	1	5	4.31	.956
Students' Academic Results and Progress	350	1	5	3.93	.936
Research based Curriculum	350	1	5	3.96	.906
Placements	350	1	5	4.19	1.084
E – Administration	350	1	5	3.94	.945
State of the art infrastructure	350	1	5	4.04	1.022
	350				

From the above table it was observed that the highest mean score (4.31 with standard deviation 0.956) is for the factor *experienced and talented faculty*, the second highest mean score (4.08 with standard deviation 0.914) is for the factor *Use of Innovative ICT tools in teaching and learning*, the next two factors with maximum mean value are *state of the art infrastructure* and *placements* (4.19 and 4.04). It was observed that overall mean value is 28.45 for all the factors that contribute towards achieving academic excellence of the business schools. Thus, we can say that there is significant impact of innovations in ICT on academic excellence. **Hence alternate hypothesis is accepted.**

Descriptive Statistics-Faculty perspective on the academic excellence

	N	Minimum	Maximum	Mean	Std. Deviation
Important factors that contribute towards achieving academic excellence					
Use of Innovative ICT tools in teaching and learning	100	3	5	4.50	.560
Experienced and talented Faculty	100	2	5	4.42	.727
Students' Academic Results and Progress	100	2	5	4.39	.777
Research based Curriculum	100	3	5	4.58	.516
Placements	100	2	5	4.15	1.067
E – Administration	100	2	5	4.42	.781
State of the art infrastructure	100	1	5	4.47	.858

From the above table it was observed that the highest mean score (4.58 with standard deviation 0.516) is for the factor *research based curriculum*, the second highest mean score (4.50 with standard deviation 0.560) is for the factor *Use of Innovative ICT tools in teaching and learning* and *state of the art infrastructure* (4.47 and 4.42). It was observed that overall mean value is 30.93 for all the factors that contribute towards achieving academic excellence of the higher education institutes. Thus, we can say that **there is significant impact of innovations in ICT on academic excellence. Hence null hypothesis is rejected and alternate hypothesis is accepted.**

7. FINDINGS

- It was observed that most of the students and faculties are not aware of the usage of some of the innovative ICT tools in education.
- It was observed that many institutes are making efforts to achieve academic excellence by implementing innovative strategies such as adopting newest technology, whereas some are focusing on teaching methods. State of the art Infrastructure, placements, students' academic results and progress make a huge impact on the academic excellence of B-Schools.
- It was found that there is a significant impact of innovations in ICT on academic excellence of business schools.
- It was found that students and faculties are using Zoom and Google meet platforms for online teaching and learning frequently. But they are not accustomed with other innovative ICT tools like, Cisco webex, OBS studio, Moodle, Google Docs, Skype, Google classrooms, Edmodo etc.
- It was also found that there is a lack of proper training to faculties in using innovative ICT tools in teaching, learning and evaluation.

8. RECOMMENDATIONS

- Management of Business Schools should make it a practice to diligently review and revise their policies related to introducing newest technology as needed to match the changing environment and needs of the student, faculty and other stake holders.
- Business schools should develop their ICT infrastructure like well -equipped classrooms with modern technology, digital libraries and usage of innovative ICT tools such as Cisco Webex, Microsoft Teams, Moodle, Google classroom, Edmodo, Google Forms, and Microsoft Forms etc.

- Business Schools should introduce and integrate latest technology into the system and accordingly provide training to faculties.
- Achieving academic excellence requires the appropriate integration of the internal educational resources and external environment. In the process, a special emphasis should be put on providing tight collaboration throughout the educational organization for attaining necessary synergy across functional areas.
- The institutes must adopt a broad approach for the overall development of their students and other stakeholders.

10.CONCLUSION

This study concludes that there is a significant impact of innovations in ICT on academic excellence. This learning also concludes that the adoption and usage of innovative ICT tools in teaching, learning and evaluation helps in achieving academic excellence. It also enhances the quality of teaching. It would improve the quality of education and provide the best learning environment which creates motivation for entire teaching and learning process. This has a profound impact on student performance and academic achievement.

The use of innovative ICT tools in teaching and learning will become increasingly predominant in the years to come and institutes will be under pressure to adapt and incorporate modern technologies into the classroom. Therefore, it can be concluded that if the Institutions of Higher Education, especially B - schools implement the strategies for adapting innovative ICT tools, then it will not only help them to attain academic excellence but also result in creating brand image.

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Machine Learning Algorithms for Predicting Personality Traits from Videos

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Abstract:-This paper explains artificial intelligence studies that seek to automatically identify personality characteristics of video by using techniques for machine learning and image processing. Determining people's character and emotion through the analysis of their behaviour is already important for human resources in particular. When an individual's body language is properly analysed, much information about his personality characteristics can be obtained. The major task of this study is to predict personality dimensions of the five factor model in video images through machine learning and artificial neural networks. In this study, video images and emotional status of the person obtained from video were used and an artificial intelligence system was developed in order to automatically predict the personality characteristics of a person from video with precision 0.8951 through artificial neural networks, machine learning and imagery. The study highlighted a prediction of 5 important personality traits, extraversion, conviviality, awareness, neuroticism and openness.

Keywords—emotionanalysis, personality analysis, artificial neural networks

1. INTRODUCTION

The latest achievements in image processing technologies nowadays are the development and use of artificial neural networks to imitate the learning and decision-making processes of a human being. With this method, a model is developed in advance using machine learning techniques. A picture does not mean anything to a computer. In order to make it meaningful for the computer, the images are expressed as matrices containing primary colour values between 0 and 255 (red, green, blue). These values are also called short [1] "rgb" (red, green, blue). Each matrix actually reflects a picture mathematically. The learning process in neural networks basically involves the most efficient modelling of these images, i.e. the matrices, depending on their labels. Learning is similar to a human brain's learning stage. If a person meets an object that he hasn't seen before, he focuses on the parts of this object that he can distinguish best from other objects. In other words, it retains in its memory the distinguishing features of the object, rather than keeping it in the memory. However, it can be difficult to define it for different forms if we learn about an object with a single form. For instance, it's usual for someone who only saw an animal's tail and knew it belonged to a cat and defined the animal as a cat based on his tail when he sees a dog. The more examples a person sees about an object, the more precise and faster he can predict the object. Artificial neural networks also work along these lines. When images are processed in neural networks as matrices of "rgb" values, the computer can understand a pattern arises that can distinguish between the labelled images. Convolutionary neural networks known as "cnn" (convolutionary neural network) are often used in this process. The convolution process can simply be called the filtering process. The filtering process is the protection of the parts that are considered to be important on an image and to destroy the other parts of that label[2]. In the filtering process, for example, the corners of objects are found in the image and all other information such as the background is discarded.. The transformation process is the matrix multiplication of the image matrix and filter matrix [2]. A network is created through different orders and combinations of these filters. These filters pass through each tagged image. The weights of the filters are changed by using the error in the estimate produced by the final filter model. The neural network thus tries to create a model that produces the best estimate of the maximum number of pictures. Thanks

to classifiers like Softmax, one of the learned tags can be assigned to images. This model consists of matrices in the artificial neural network, namely filters. Maintains information. When the rgb matrix of a new image is given to this model, it passes through previously learned filters through the neural network matrix. If we submit the resulting matrix to a method for classifying such as softmax, the label is estimated. Classification is the process of turning the final matrix into a matrix that holds the label probability values for certain mathematical operations[3]. This principle is the basis for the methods used in this study. A study on the extraction of personal features was carried out through the use of machine teaching techniques in video images through artificial neural networks. The model to be used in defining such characteristics has been taught artificial intelligence by passing through artificial neural network structures the labelling clips of a data set in the competition called 'First Impressions V2 (CVPR' 17). This dataset contains a total of 10000 15 seconds clips. These clips were developed with the extraction and conversation of 10,000 15-second clips from 3,000 different high-resolution youtubes. Tags were created with Turkish mechanical Amazon (AMT). Five key personality characteristics have been scored[5]. AMT employees, that is, actual users, used the 5 basic features of tagging these video pictures. The users showed videos and asked to rate the person in the video 5 essential personal characteristics. The averages of personal characteristics gathered for each video thus formed the probabilistic tags of the video[5].

The content of these videos is usually a person who speaks in front of the camera. In general, videos contain people's individual or product presentations. There is therefore only one person in the videos speaking in front of the camera. Sections of several video images are shown in Figure 1.

This artificial intelligence system added emotional tags to these video tags, using a model for emotional analysis taught in another artificial neural network and data set. Thus, not only the individual's attitudes before the camera, but also the emotional states caused by these attitudes were used for personal characteristics. This is the major difference from other studies in this field.

Thanks to the model created using another data set, the emotional characteristics of the people in the videos were also determined and the relationship between these feelings and personal characteristics has been examined. The model that provides the estimation of personal traits is implemented by combining models that learn from both emotional traits and video. A deep neural network using pre-trained "Extended Cohn-Kanade" and "FER+" datasets [6] is used for the detection of emotional features. In order to increase the accuracy of the model before using it, learning was also obtained from the "Facial Expressions" image dataset [7] offered by kaggle. The learned model was applied to the images in the video and the emotional analysis predictions produced were recorded for that video as new information. 7 different emotional traits for education of emotional state: "disgusted", "surprised", "sad", "irritable", "scared", "happy" and "natural" It is focused on the determination of . Figure 2 shows some examples from the learned data set.

2. CURRENT WORK

Today, methods for the recognition of face and motion from images or videos have been developed. The purpose of these studies is to deduce a related similarity[8]. Through continued use of this work and the use of neural networks, it can extract important information from the picture, that is a storey.

Studies are also available, such as [9]. Identifying personal characteristics of people, however, is a far harder problem, since all images in a video are related over time. Studies also address this issue[10–14]. The common purpose of these studies is to train videos with different parameters with different artificial neural networks. The data set they used is the data set presented in the "ChaLearn" competition, which is also used in this study. Both audition and

visual data of the person in front of the video are used in recent studies. In other words, the structural characteristics of the sound are artificial. In this study, neural network convolution models were developed based on audio and visual data. The structural characteristics of the voice, that is, the voice, were also shown to be more important than what it said.

The common point of the study is that the training models are models that are learned from a single data set. In our research, a new model was developed, different from other studies, and we discovered that the people in the video depend on the time when we run this emotional analysis model on the video dataset presented by "ChaLearn." Emotional states were revealed so as to study the effect of personal characteristics on emotions and the model of emotional analysis can also be used to predict personal characteristics.

3. IMPROVED METHOD

In order to analyse the personality characteristics of a person from video images, a method consists of five basic stages. A model is trained to predict the emotional state of the person (surprised, frustrated, etc.).

Photos were extracted most effectively from the videos offered by Cvpr in the data set "First Impressions V2." The images taken from the videos were transferred to the model that predicted the emotional condition and the emotional conditions predicted by the model were recorded as a tag for the picture. This model is applied to the images extracted from the videos one by one. Emotional information was generalised and recorded as the general emotional information of the videos when analysing the images for the person in every video. For this purpose, the formula is used based on the probability and frequency of the emotion. The strength of the relationship between the person's emotional condition and his personal characteristics was determined. The images of tackled videos are provided as an input into the artificial neural network and a model has been developed which can predict five basic human personal characteristics while at the same time using the emotional state data detected for the videos, estimating personal characteristics and combining probability output of the models. In the training of artificial neural networks, two computers are used simultaneously. These computers are equipped with i7 7700HQ processor, GTX 1060 graphics card, 16GB ram. Models of artificial neural networks have been developed using the software libraries python 3.5 and tensorflow. Model training to predict the person's emotional state (surprised, frustrated, etc.)

The general purpose of this study is to identify 5 distinct personal features of an individual as a 'openness to new experiences,' 'responsibility,' 'extraversion' and 'emotional instability.' It is to create a system that can detect works from video images and information about the emotional state. Training a template capable of detecting these basic personal characteristics from tagged video pictures is possible, but since an emotional attitude is an important factor which could reveal the personal characteristics of a person, emotional attitudes are also curved. It is important to take this into consideration. It is therefore not desired to rely only on video images in this study. A model that can also detect the emotional state of people from another data set has been developed. This model also adds the emotional state of the people in videos as information for the videos, in addition to the video pictures. This information was used to predict the personal characteristics of people from video footage. Learned for emotional state education, It focuses on detecting 7 different emotional features as surprised, sad, angry, frightened, happy and natural.

A. Extraction of Pictures from Video Footage

The 'First Impressions V2' dataset used 10,000 15-second video datasets to learn personal characteristics. To benefit from these videos, the videos were first transformed into images. These videos contain about 30 pictures per second. However, the formal contribution to the neural network increases the training time significantly. Since these videos often involve people speaking before the camera, more than 30 images are similar in a second. For this

reason, the least similar images, i.e. the most important images for education, were collected from the 450 images included in the 15-second video. The "Manhattan Distance (L₁ norm)" formula (15) is used in the calculation of image similarities to reduce computational complexity. This was a method that both improves training efficiency and reduces time.

B. Modeling images extracted from videos to predict emotional state

When the images were removed from the videos, these images passed through the model that can recognise the person's emotional state from the images. All images of each video will be given as an input to the model at this stage. Because the knowledge of how often the emotion before the camera is experienced is also wanted. Thus, information about the individual's emotional state in each image was obtained. There are 7 different emotional states discussed. These are the states of disgust, surprise, sadness, anger, fear, happiness, and nature. This information was added as a feature of the video for the images contained in each video. In order to ensure that the probabilistic emotional status information derived from the images passed from the model is a significant feature of the video, the chances of emotions are collected in themselves. This includes both the probabilistic assessment of the model and the information on how often the emotion is experienced in the video. The x-sense score for the video is calculated using the following formula.

C. Examining the relationship between a person's emotional state and personal characteristics

After the emotional information variables extracted from the videos were generalized for that video, it was determined to what extent these emotion variables were related to personal characteristics. For example, can someone who is often in a sad mood in the video be considered unwilling to take responsibility? Or vice versa, can a high sense of responsibility be deduced for someone who is upset about everything? Here's how emotional data like this is related to personal characteristics.

TABLE I. THE RELATIONSHIP BETWEEN EMOTIONS AND PERSONAL FEATURES

	openness to new experiences	responsibility	extroversion	understanding	emotional instability
disgusted	0.3436	-0.4048	0.4135	-0.7157	-0.2307
surprised	-0.2872	0.5482	0.6207	0.1245	-0.2564
sad	-0.6102	-0.5724	0.7001	0.6436	0.5012
angry	-0.5846	-0.6024	0.5140	-0.7024	0.4245
scared	-0.6572	-0.5240	0.5864	0.2832	0.2146
happy	0.7283	0.6645	0.5785	0.4021	-0.6240
natural	0.2223	0.6274	-0.3278	0.4037	-0.7367

D. Analysis of a person's personal characteristics using videos and emotional information from videos

The images extracted from the videos and the emotion obtained from the images from the First Impressions V2 dataset were used for training. Descriptor Network Aggregation (DAN) is used as a neural artificial network. A model is trained using the emotional state information previously taken from videos using a softmax method for multi-class logistic regression. General probabilities of emotional states determined by videos are used as input for this model's training. These probabilities are calculated in section "3C." In other words, the first trained model only learned through the emotional state. The softmax model is then applied to the test data set and the probability is calculated for each video of five basic personal attributes. The Softmax model personal trait predictions were made using only the video's emotional state information. Thus the neural network model, in which the videos are provided as input, is trained with this model. Using the Descriptor Aggregation Network, the network training was supplied with important images in the videos. The model was then run on the test videos and 5

basic personal features were developed in this model. Combine both models' outputs and achieve the best result.

4. DISCUSSION

The study resulted in the development of an artificial intelligence system consisting of 2 different models capable of automatically predicting personality traits of people using video images, which can be used in fields like human resources, psychology, health and safety. One of these models analyses the video emotionally, and attempts to predict five fundamental personal characteristics from the emotional data obtained. The other model predicts 5 basic personal features on the images by learning directly from the video pictures. The following precision calculation was used for the model evaluation.

OD is the mean value, DEO is the correct probability of the label and TEO is the probability of the predicted label. This format removes the absolute distance from the correct value of the estimated value for the five personal attribute tags of each video and averages the sum of all videos. Thus, the closer to the true probability value the predicted probability value of the label is, the higher the value.

TABLE II. ACCURACY OF MODELS

METHOD/MODEL	DIRECTION
DAN for Personality Analysis	0.8814
Softmax+DAN for Personality Analysis	0.8951

As is shown in Table 2, the fact that, in addition to personality analysis videos, emotional state information generated from another model is taken into account provides a minor increase in the accuracy of the model in which only visual data were used.

TABLE III. "FIRST IMPRESSIONS V2 (CVPR'17) - CHALEARN" ACCURACY VALUES FOR TEST DATA IN THE COMPETITION

DESK	DIRECTION
1	0.9129
2	0.9120
3	0.9109
...	...
10	0.8758

Table 3 shows some of the accuracy values obtained in the competition on the detection of personal characteristics organised by "ChaLearn." According to these values, the method we have developed using visual and emotional data alone has achieved a precise value that can be included among the top ten. It should be noted, however, that in our study only visual data were considered. The study did not include audio data. The top three models in this competition have benefited from visual as well as auditory data. By using the structural features of the voices of the people before the camera, they developed artificial neural network models. Our work helped to develop the model, which only uses visual data. The main reason for our success in personal feature analysis with visual data is that we have been able to benefit from the emotional state information generated by the emotive analysis model and to provide visual data directly as an input to the artificial neural network. In addition to our study, audio data will achieve a better accuracy. The relationship between emotions and personal features has also been determined in this study. Below are some important findings, which can be made according to table 1, which includes the relationship between emotions and personal properties as a result of the video correlation study.

Emotional "understanding" with "understanding" personal characteristic is very correlated in a negative way and weakly correlated with other personal characteristics.

Although the "surprising" emotional status has a strong correlation with the personal "extraversion," it is weakly correlated to other personal characteristics.

While the "sad" emotional state was very correlated with the personality trait of "openness for new experiences" and with the personal traits of "extraversion" and "understanding," other personal traits were highly correlated. Has a weak proprietary relationship. The "frustrated" emotional state has been closely linked to personal "responsibility" and "comprehension," while having a faint relationship with other personal features.

The emotional state of "scared" is very much linked to "openness to new experiences," while it is weakly linked to other personal properties. "Happy" emotional state is highly correlated with "openness to new experiences" and characteristics of "responsibility" and positively related to "emotional stability" feature, while weakly related to other personal characteristics. There's a person here. "Natural" emotional state is highly related to personality traits of "responsibility," and "emotional instability" is highly correlated with other traits has a weak connection with. These inferences, which show the link between emotions and personal characteristics, are also very important for psychological science.

5. CONCLUSION

As a result, when 2000 videos not used in training artificial intelligence, which was not shown previously for artificial intelligence, were demonstrated in artificial intelligence, people speaking before the camera determined their personality characteristics with an average accuracy of 0.8951 by using emotional analysis. A system based on artificial intelligence has been developed to predict. In the evaluation of personal characteristics, the determination of the relationship between emotional state and personal characteristics and the determining that accuracy can be increased is one of the most important outputs of the study.

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A STUDY TO ASSESS THE EFFECTIVENESS OF SELF INSTRUCTIONAL MODULE TO GAIN KNOWLEDGE REGARDING BEHAVIORAL OUTCOME AFTER CORONARY ARTERY BYPASS GRAFTING SURGERY REHABILITATION AMONG CLIENTS OF SELECTED CARDIAC HOSPITAL IN JABALPUR IN THE YEAR 2020

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ABSTRACT

INTRODUCTION:-The investigator conducted a descriptive study to assess the effectiveness of the self -instructional module to gain knowledge regarding behavioral outcomes after coronary artery bypass grafting surgery rehabilitation among clients of the selected cardiac hospital in Jabalpur in the year 2020.

METHOD:-The conceptual framework adopted for the study was based on the “Roy adaptation model”. Clients from the selected cardiac hospital in Jabalpur were taken as samples for the present study by using the non-probability purposive sampling technique. The necessary data using structure knowledge questionnaire. The data for the final study was analyzed using both descriptive and inferential statistics. Statement of the problem “A study to assess the effectiveness of self -instructional module to gain knowledge regarding behavioral outcome after coronary artery bypass grafting surgery rehabilitation among clients of the selected cardiac hospital in Jabalpur in the year 2020”

RESULT:- Findings of the study revealed that the pre -test knowledge score was 211 and the post-test knowledge score was 493. It showed a highly significant difference in pre and post - test knowledge suggesting that the self -instructional module was effective in increasing the knowledge among clients of the selected cardiac hospital.

CONCLUSION:- The bottom line is this person in the prescribed zone were having comparatively lesser knowledge in regard to cardiac rehabilitation as well as CABG.

KEYWORDS:-Assess, Effectiveness, Awareness Cardiac rehabilitation, Behavioural outcome

INTRODUCTION:-Coronary cardiopathy may be a condition during which a substance known as plaque builds up within the coronary arteries. Plaque is created of fat, cholesterol, LDL, calcium, and alternative substances found within the blood. Plaque will slim or block the arteria and cut back the blood flow to the center muscle. The blockage causes severe angina, shortness of breath and in some cases, a heart failure will occur. regarding associate 18.2million adults age twenty and older have arteria malady (about vi.7%). regarding two in ten deaths from arteria malady happen in adults but fifty five years previous. To scale back the fatality rate of internal organ diseases arteria bypass graft surgery is suggested. arteria bypass graft is usually indicated once the arteria features a 50-99% obstruction, it creates new routes around slim and blocked arteries permitting ample blood flow to deliver chemical element and nutrients to the center muscle. Overall mortality associated with arteria bypass

graft is 3-4%. During and shortly when arteria bypass graft surgery heart attacks occur in 5 - 10% of patients and area unit the most reason for death. Cardiac rehabilitation is the coordinated sum of activities including nutritional counseling, weight management, blood pressure management, diabetes management, tobacco cessation, physical activity counseling and exercise training to influence favorably the underlying cause of cardio vascular disease. A previous study was conducted among 50 patients who ages between 60-70 years and who had previously undergone coronary artery bypass grafting surgery.

NEED OF THE STUDY :- The study was conducted to prevent the reoccurrence of cardiac disease after surgery because cardiac disease reoccurs due to negligence of proper diet and healthy lifestyle. The study was also conducted to create awareness among the client and their family members about cardiac rehabilitation through self instructional module.

The study also conducted to reduce risk factors of cardiac disease

Risk Factors	Prevalence in men %	Prevalence in women
High blood pressure	23.2	23.3
Current smokers	77.7	48.5
Excess weight/obesity	25.5	52.5
Alcohol consumption	58.1	12.1
Family history of cardiovascular disease	32.4	35.2

It is the right technique to solve the research problem. It deals with define the problem, method adopted for data collection in statistical techniques used for analyzing the data with the logical reason behind it. The study was conducted with the purpose a study to assess the effectiveness of the self -instructional module to gain knowledge regarding behavioral outcomes after coronary artery bypass grafting surgery rehabilitation among clients of selected cardiac hospitals in Jaba lpur in the year 2021. The investigation aimed at finding the effectiveness of self -instructional module in knowledge gain regarding rehabilitation after coronary artery bypass grafting surgery among cardiac patients of the selected cardiac hospital in Jabalpur. In the present study, experimental design is selected which is of exploratory nature. This study intended to ascertain the knowledge of cardiac patients regarding rehabilitation after coronary artery bypass grafting surgery. stuctured knowledge i s as the tool for this study as it consists of following section-

Section-A

Socio-demographic data 1st section consists of 5 items for obtaining information about socio - economic demographic factors such as age, marital status, educational status, socio - economic status, source of information.

Section-B

Questionnaire to assess the knowledge regarding rehabilitation after coronary artery bypass grafting surgery. It consists of 20 items regarding coronary artery bypass grafting surgery rehabilitation. The res pondent were requested to place tick mark (✓) against one single answer for each question for each answer carried one score.

RESULT :- The following tables analysis was made in order to get perfect result

ORIGIN AND INTERPRETATION OF DATA

The data collected was organised and presented under following headings:

Section-1:- Description of demographic variables.

Section-2:- Assessment of pre -test knowledge score of cardiac patients regarding cardiac rehabilitation.

Section-3:- Association between pre -test knowledge score of cardiac patients and selected demographic variables.

Section-4:- Assessment of post -test knowledge score of cardiac patients regarding cardiac rehabilitation.

Section-5:- Association between post -test knowledge score of cardiac patients and selected demographic variables

Section-6:- Evaluation of the effectiveness of self instructional module among cardiac patients.

SECTION – 1

DESCRIPTION OF DEMOGRAPHIC VARIABLES

TABLE - 1

FREQUENCY PERCENTAGE OF AGE GROUP OF CARDIAC PATIENT

S.No.	Age	Frequency	Percentage
1	35-41	2	6.67%
2	42-49	6	20%
3	50-55	14	46.67%
4	56-60	8	26.67%

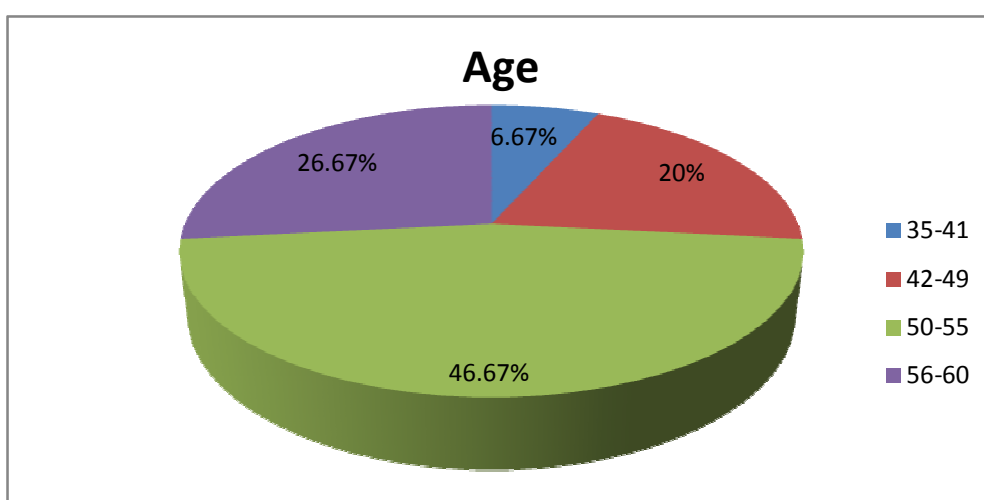


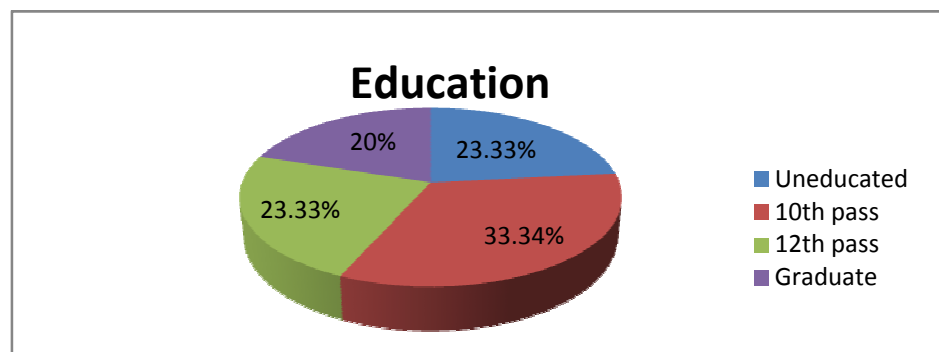
Fig. Pire diagram representing frequency percentage of age

TABLE -2

FREQUENCY PERCENTAGE OF EDUCATIONAL STATUS OF PATIENTS

CARDIAC

S.No.	Education	Frequency	Percentage
1.	Uneducated	7	23.33%
2.	10 th pass	10	33.34%
3.	12 th pass	7	23.33%
4.	Graduate	6	20%

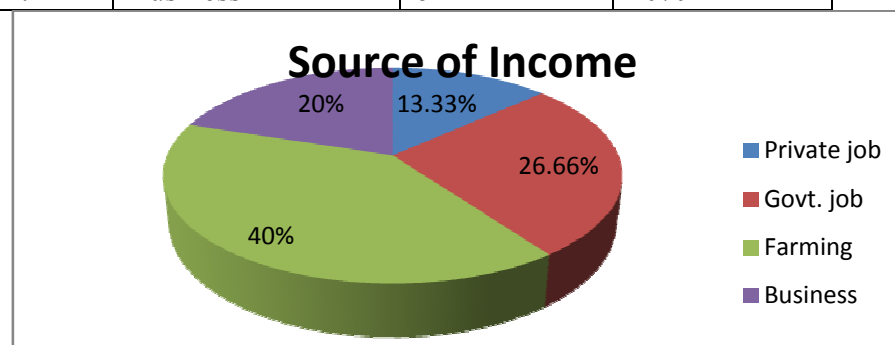


Pie diagram representing frequency percentage of educational status

TABLE-3

FREQUENCY PERCENTAGE OF SOURCE OF INCOME OF CARDIAC PATIENTS

S.No.	Source of Income	Frequency	Percentage
1.	Private job	4	13.33%
2.	Govt. job	8	26.66%
3.	Farming	12	40%
4.	Business	6	20%



Pie diagram representing frequency percentage of source of income

TABLE - 4

FREQUENCY PERCENTAGE OF SEX OF CARDIAC PATIENTS

S no.	sex	Frequency	Percentage
1.	Male	17	56.67%
2.	Female	13	43.34%
3.	Transgender	0	0%

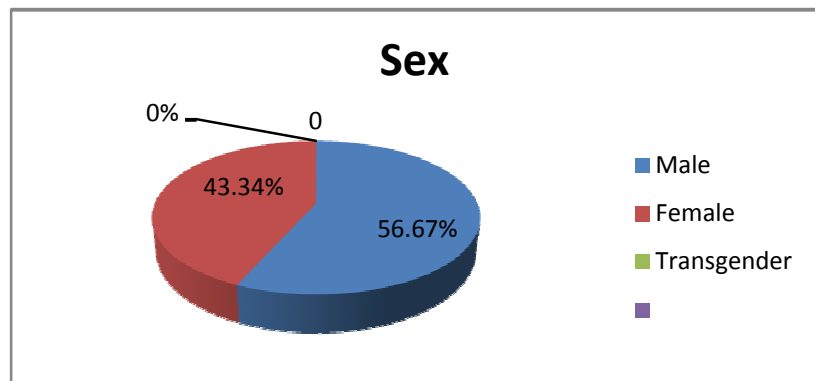
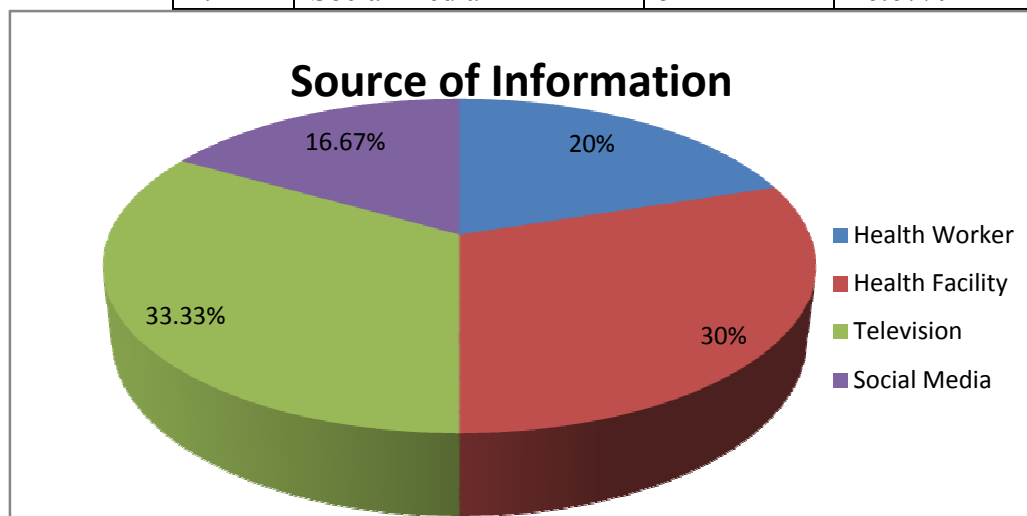


Fig. pie diagram representing sex of cardiac patients

TABLE-5

FREQUENCY PERCENTAGE OF SOURCE OF INFORMATION RELATED TO HEALTH OF CARDIAC PATIENT

S.No.	Source of Information	Frequency	Percentage
1.	Health worker	6	20%
2.	Health Facility	9	30%
3.	Television	10	33.34%
4.	Social Media	5	16.67%



SECTION – 2

TO ASSESS THE PRE TEST KNOWLEDGE OF CARDIAC PATIENT REGARDING CARDIAC REHABILITATION

TABLE - 6

Category	Range	Frequency	Percentage
Poor	1-10	22	73.33%
Average	11-15	8	26.67%
Good	16-20	0	0%

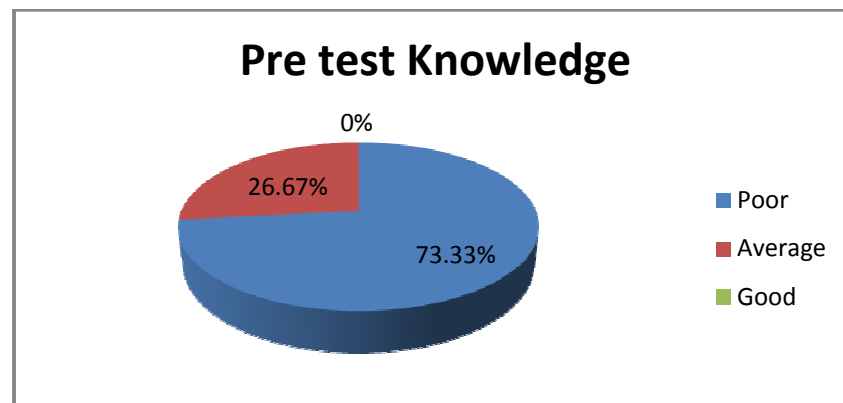


Fig. Pie diagram representing pre-test knowledge

SECTION – 3

Frequency of subjects according to demographic variable

TABLE – 7

ASSOCIATION OF POST-TEST KNOWLEDGE WITH AGE

Age	Poor	Average	Good	Total
35-41	0	2	0	2
42-49	3	3	0	6
50-55	12	2	0	14
56-60	7	1	0	8

AGE

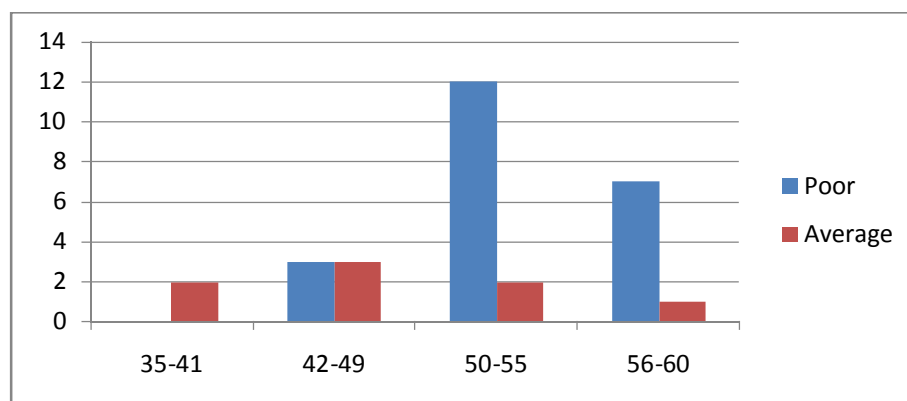


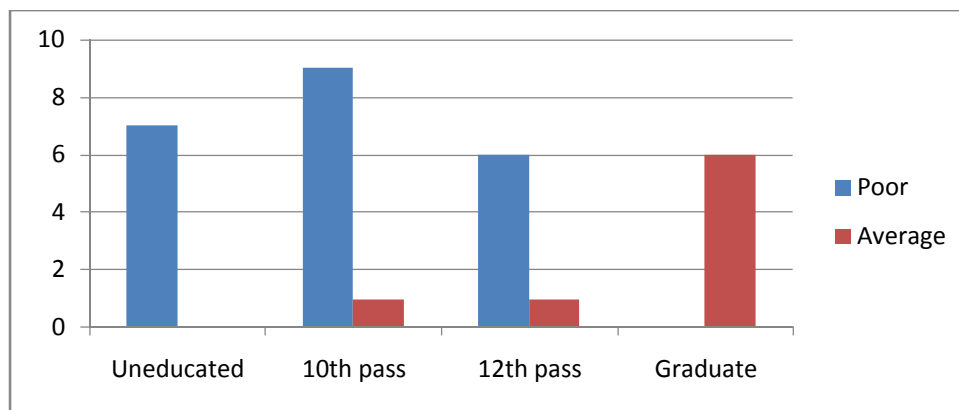
Fig. Bar graph showing association of pre-test with age

TABLE-8

ASSOCIATION OF PRE -TEST KNOWLEDGE SCORE WITH EDUCATIONAL STATUS

Education	Poor	Average	Good	Total
Uneducated	7	0	0	7
10 th pass	9	1	0	10
12 th pass	6	1	0	7
Graduate	0	6	0	6

Educational Status



Bar graph showing association of pre-test knowledge score with educational status

TABLE – 9

ASSOCIATION OF PRE - TEST KNOWLEDGE WITH SOURCE OF INCOME OF FAMILY

Status	Poor	Average	Good	Total
Private job	3	1	0	4
Govt. job	5	3	0	8
Farming	10	2	0	12
Business	4	2	0	6

Source of income of family

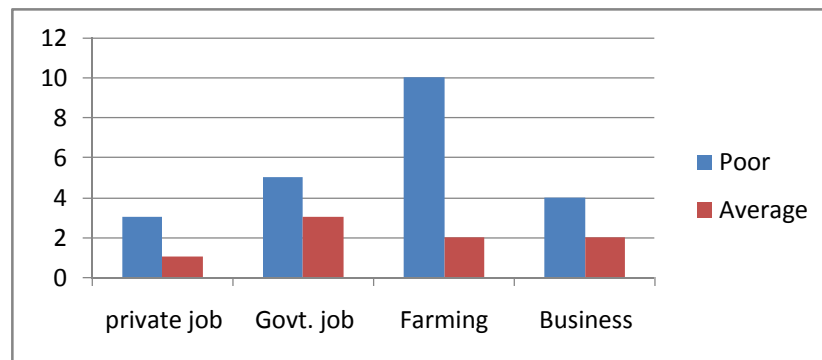


Fig. Bar graph showing association of pretest knowledge with source of income of the family

TABLE – 10

ASSOCIATION OF PRE-TEST KNOWLEDGE WITH SEX

Sex	Poor	Average	Good	Total
Male	12	5	0	17
Female	10	3	0	13
Transgender	0	0	0	0

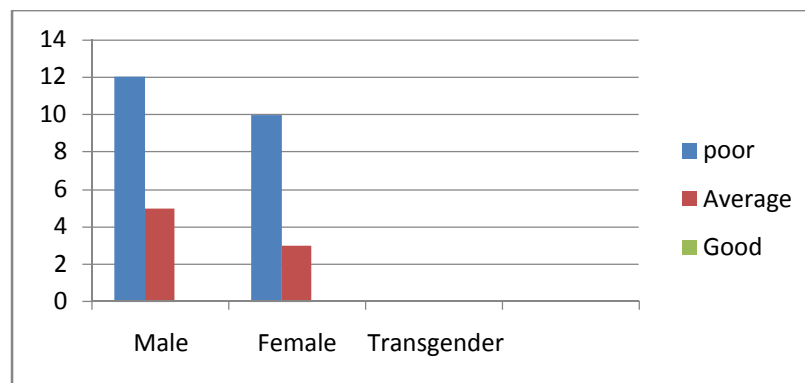
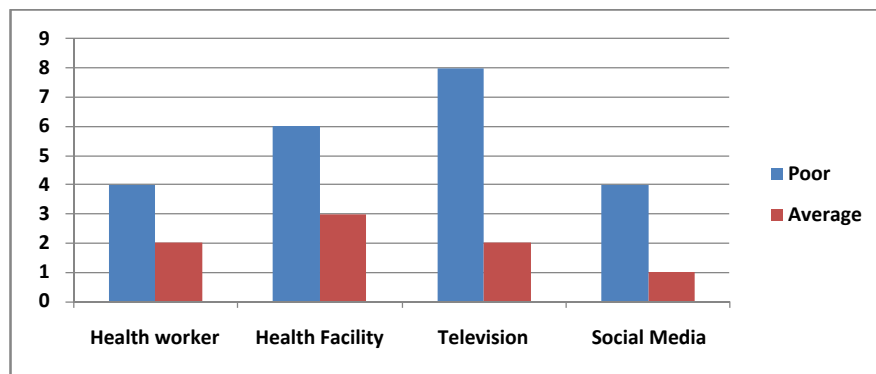
Sex

Fig. Bar graph showing association of pretest knowledge with sex

TABLE-11**ASSOCIATION OF PRE -TEST KNOWLEDGE SCORE WITH SOURCE OF INFORMATION RELATED TO HEALTH**

Source of information	Poor	Average	Good	Total
Health worker	4	2	0	6
Health Facility	6	3	0	9
Television	8	2	0	10
Social Media	4	1	0	5

Source of Information

Bar graph showing association of pre-test knowledge score with source of information related to health

SECTION 4**TO ASSESS THE POST TEST KNOWLEDGE OF CARDIAC PATIENT REGARDING CARDIAC REHABILITATION****TABLE - 12**

Category	Range	Frequency	Percentage
Poor	1-10	0	0%
Average	11-15	9	30%
Good	16-20	21	70%

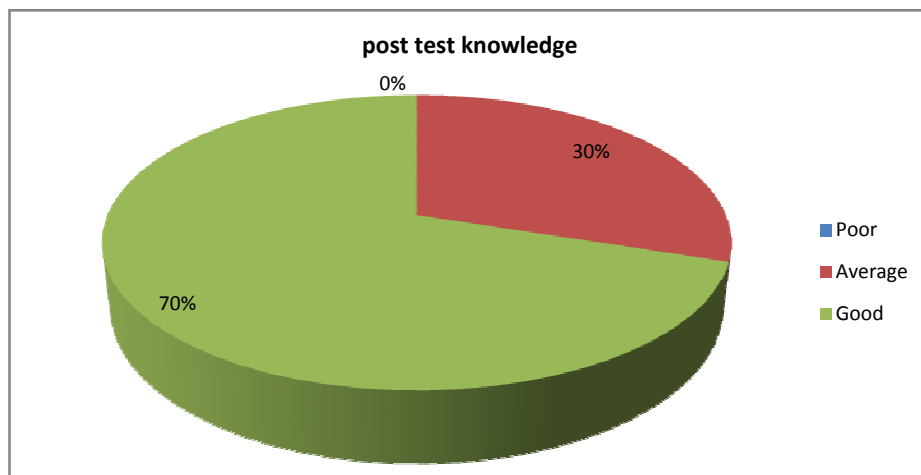


Fig. Pie diagram representing post-test knowledge

SECTION-5

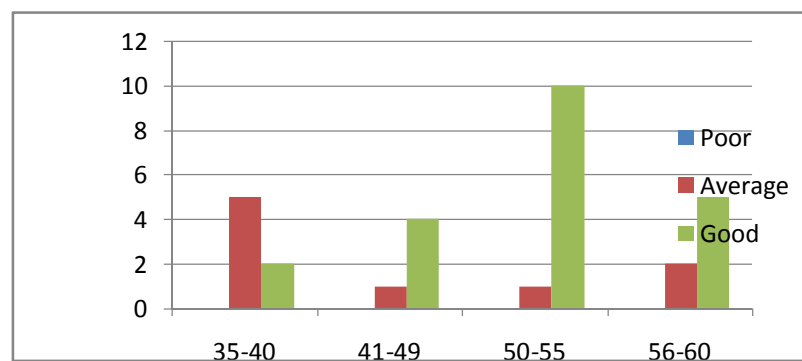
FREQUENCY OF SUBJECT ACCORDING TO DEMOGRAPHIC VARIABLES

TABLE-13

ASSOCIATION OF POST-TEST KNOWLEDGE SCORE WITH AGE

Age group	Poor	Average	Good	Total
35-40	0	5	2	7
41-49	0	1	4	5
50-55	0	1	10	11
56-60	0	2	5	7

Age Group



Bar graph showing association of post-test knowledge score with age

TABLE – 14

ASSOCIATION OF POST- TEST KNOWLEDGE WITH EDUCATIONAL STATUS

Status	Poor	Average	good	Total
Graduate	0	0	6	6
12 th Pass	0	1	6	7
10 th Pass	0	3	7	10
Uneducated	0	5	2	7

Educational Status

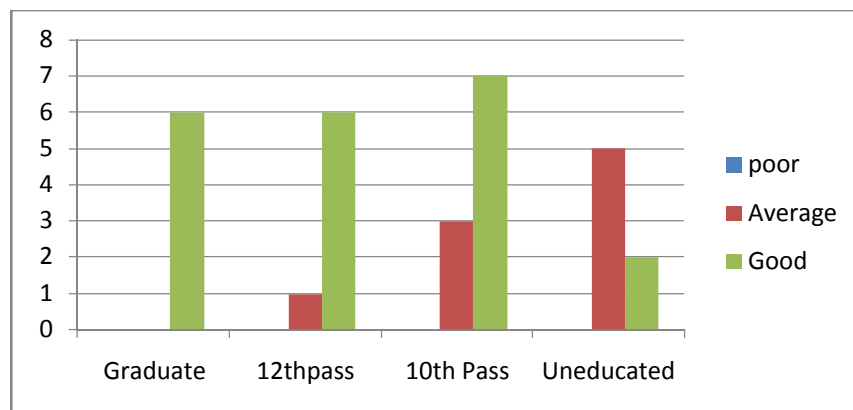


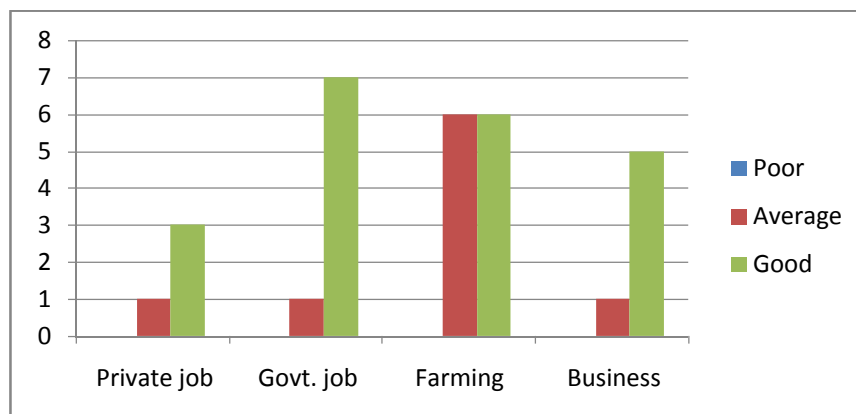
Fig. Bar graph showing association of post test with Educational status

TABLE-15

ASSOCIATION OF POST -TEST KNOWLEDGE SCORE WITH SOURCE OF INCOME OF FAMILY

Status	Poor	Average	Good	Total
Private job	0	1	3	4
Govt. job	0	1	7	8
Farming	0	6	6	12
Business	0	1	5	6

Source of Income



Bar graph showing association of post-test knowledge score with source of income

SECTION - 6

COMPARISON BETWEEN PRE-TEST AND POST-TEST

TABLE – 18

S. No.	Grade	Pre-test	Post-test
1	Poor	22	0
2	Average	8	9
3	Good	0	21

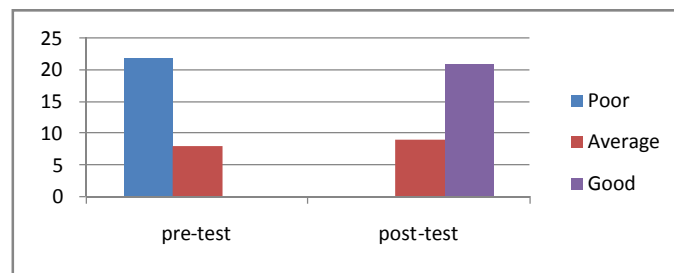


Fig. Bar graph showing comparison between pre-test and post-test

ASSUMPTIONS

- We assume that the clients have little knowledge regarding diet, physical exercise and behavioural therapy.
- We assume that self instructional module will help in enhancing the knowledge of clients regarding cardiac rehab.
- We assume that cardiac patients in the hospital will have interest to participate in this study.

DELIMITATIONS

- The study limited only to the cardiac patients who undergone coronary artery bypass grafting surgery.
- The study is limited only to the age group 35-60 years.
- The study is limited only to the selected cardiac hospital Jabalpur.
- The study is limited only to the selected 30 cardiac patients.

CONCLUSION

- Pre-test knowledge score = 211
- Pre-test knowledge score percentage = 35.16%
- Post-test knowledge score = 493
- Post-test knowledge percentage = 82.16%
- Mean of pre-test score = 7.33
- Mean of post-test score = 16.5
- Average increase in mean = 9.17
- Average increase in percentage = 47%
- Standard deviation of pre-test = 4.02
- Standard deviation of post-test = 2.29
- Effectiveness of study(T) = 13.26

From the above following score conclusion can be drawn that pre test and post test have partial relationship with each factor taken into consideration.

To Assess The Effectiveness Of Video Teaching Method On Breast Self-Examination Among From A Selected School In Mumbai

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ABSTRACT

Background:

Breast cancer is the most common cancer in women both in the developed and less developed world and also classified as the top cancer in women worldwide where the majority of cases are diagnosed in late stages. In spite of the advent of modern screening methods, more than 90% of cases of cancers of breast are detected by women themselves. Even though BSE is a simple, quick, and cost-free procedure, the practice of BSE is low and varies in different countries. Stressing the importance of BSE on female school teachers, they are not only educators, but serve up as role models and change agents who often offer useful counsel on health promotion especially in a very low literate society. BSE training thus should be repeated periodically for better efficacy.

Objective: The study aimed to assess the effectiveness of video teaching method on breast self-examination among from a selected school in Mumbai.

Methodology:

It is Quantitative Quasi experimental research design - (pre-test and post-test). An anonymous questionnaire based study was conducted teachers from a selected school of Mumbai. Questionnaire on BSE validated from expert's doctors from oncology and gynecology from tertiary hospital. A total of 35 participants aged 22-58 years fulfilled the inclusion criteria and were enrolled in this study. Paired t-test and Anova was used to find out association and effectiveness of BSE.

Result:

The finding of this study displays that data from 35 teachers in age group 21 to 58 before and after video assisted teaching programme. It was found that statistically there is no association of knowledge with demographic variables. Whereas knowledge is associated with awareness of BSE among teachers. The change in knowledge regarding the steps and the pattern of performing BSE was not statistically significant. Thus the video teaching method has proved to be one of the best teaching-learning methods for the teachers with a change of 0.7% difference progressively.

Keywords:-Structured Video Teaching, Effectiveness, Breast Self-Examination, Teachers and School.

Conclusion: Background:

Breast cancer is the most common cancer in women both in the developed and less developed world. It is estimated that worldwide over 508 000 women died in 2011 due to breast cancer (Global Health Estimates, WHO 2013).¹ Although breast cancer is thought to be a disease of the developed world, almost 50% of breast cancer cases and 58% of deaths occur in less developed countries (GLOBOCAN 2008).

Recommended preventive techniques to reduce breast cancer mortality and morbidity include breast self-examination (BSE), clinical breast examination (CBE), and mammography. CBE and mammography require hospital visit and specialized equipment and expertise whereas BSE is an inexpensive tool that can be carried out by women themselves.³ BSE benefits women in two ways: women become familiar with both the appearance and the feel of their breast and detect any changes in their breasts as early as possible. In the literature, it is stated that 90% of the times breast cancer is first noticed by the person herself.²

Even though BSE is a simple, quick, and cost-free procedure but in different countries; like in England, a study by Philip *et al.* reported that only 54% of the study population practiced BSE. Furthermore, in Nigeria, the practice of BSE ranged from 19% to 43.2%, and in India, it varied from 0 to 52%. Several reasons like lack of time, lack of self-confidence in their ability to perform the technique correctly, fear of possible discovery of a lump, and embarrassment associated with manipulation of the breast have been cited as reasons for not practicing BSE. Early diagnosis & timely treatment with regular follow can extent survivor rate of cancer breast patients.³

A 6-month follow-up study by Nev inAldolunBalkaya et al (2007) aimed to evaluate the efficacy of pre-planned BSE training concluded that BSE accuracy of the students was increased after education and also positive attitude and behavior of the students toward BSE were improved. The student s started to practice BSE with the right techniques and positions at the right time.⁴

This study will help teachers to: -

- a) To adapt right techniques of performing BSE.
- b) To help prevent BSE and health educate the students and common people.

In this study A R Assaf et al (1985) in their article titled Comparison of three methods of teaching women how to perform breast self-examination concluded that passive methods of BSE instruction such as the use of pamphlets or films were of little value in helping women develop the tactile skills necessary for proficient BSE. The opportunity to practice doing the examination with corrective feedback on performance appears to be a critical variable in the acquisition of BSE skill.⁵

Methods: - Study Design

It is Quantative Quasi experimental research design - (pre-test and post-test). Multiple choice questionnaires (Pre -test, validated video teaching method and post -test), an anonymize questionnaire was conducted amongst teachers from selected school. Questionnaire on pretest and posttest to find out effectiveness of BSE via video teaching was given. The survey was open as per availability of teachers as they were called only thrice a week due to pandemic. School teachers is defined as a teacher (also called a **school teacher**) is a person who helps students to acquire knowledge, competence or virtue. Teachers from primary and secondary session were participants including any medium. Teachers as

an individual were respondents to this study. It was conducted in a government grant aided school in Mumbai. Approval from principal was taken. As per schedule teachers were invited for survey. Per day 4-5 samples were taken alternatively day for two - three weeks of duration. Teachers were made comfortable and general instruction was given on social distancing, wearing mask and use of hand sanitizer. All preventive aspects Covid - 19 pandemic was compulsorily followed. Confidentiality of data maintained.

Study Tools

Tool on assessing effectiveness on Breast self-examination was validated by experts in oncology and gynecologist from tertiary hospital. Demographic data contain 09 items. Assessing effectiveness Pretest and posttest each had questionnaire 29 items and video from Indian cancer society. Permission was granted before display to groups. The score was right score (1) marks and Wrong score (0) marks. Pretest and posttest was based on Multiple choice questionnaires (Pre-test, validated video teaching method and post-test).

Statistical Analysis

Informed consent form was obtained by each participant. The

questionnaire given to the participants did not have any unique identifiers. Paired T test is used to find comparison between pre and post knowledge. ANOVA test was used to find the association between knowledge levels and demographic variables. Analysis was done using the Statistical Package for the Social Sciences (SPSS) software (version 20) (IBM Corp., Armonk, N.Y., USA).

Results: Demographics

A total of 35 participants fulfilled the inclusion criteria and were enrolled in this study. Those teachers who responded (35) gave a response rate of 100%.

Table 1 – Distribution Of Teachers According To Their demographic data:-

Demographic Data		Frequency	Percentage
Age	21-30 years	9	25.7
	31-40 years	9	25.7
	41-50 years	12	34.3
	51-58 years	5	14.3
Family	Joint Family	16	45.7
	Nuclear Family	19	54.3
Family History of cancer upto 3	Yes	1	2.9
	No	34	97.1
Residence Status	Hostel	1	2.9
	Family	34	97.1
Educational Status	Primary	5	14.3
	Secondary	11	31.4

	Graduation		15	42.9
	Post Graduation		4	11.4
Marital Status	Single		10	28.6
	Married		25	71.4
Work Experience	0-1 year		3	8.6
	2-3 years		1	2.9
	3-4 years		10	28.6
	4 and above		21	60.0
Menstrual Cycle	Regular		23	65.7
	Irregular		4	11.4
	Menopause		8	22.9
Do you know about BSE?	YES, If yes then source	Magazines	9	25.7
		Journals	2	5.7
		Lectures on BSE	5	14.3
		Friends	2	5.7
		Family Members	2	5.7
		Any other source	5	14.3
	No		10	28.6

Diagrammatic Representation (Distribution of teachers according to their demographic data) :-

Table 1 and Fig. 1D displays the demographic data of teachers. Regarding Age, it shows maximum 12 (34.3%) teachers were aged between 41 -50 yrs and 9 (25.7%) teachers each were aged between 21 -30 yrs and 31 -40 yrs respectively. Maximum 19 (54.3 %) of the teachers belonged to nuclear family and remaining 16 (45.7 %) teachers belonged to joint family. 34 (97.1 %) teachers replied that they had no family history of cancer. Similarly 34 (97.1 %) teachers lived with their family. Data of education shows that maximum 15 (42.9%) teachers had completed graduation education, 11 (31.4%) of the teachers had completed secondary education, very few 4(11.4%) were post graduates. Maximum 25 (71.4 %) teachers were married and rest 10 (28.6 %) sample was Single. In terms of experience most 21 (50%) of the teachers had a experience of more than 4 yrs and 10 (28.6%) of the teachers had a experience of 3 – 4 years. Most 23 (65.7%) teachers replied they had regular periods and 8 (22.7%) teachers were into their menopause. 15 (71.4%) teachers replied they had knowledge of BSE, while 10 (28.6%) teachers did not have any knowledge of BSE.

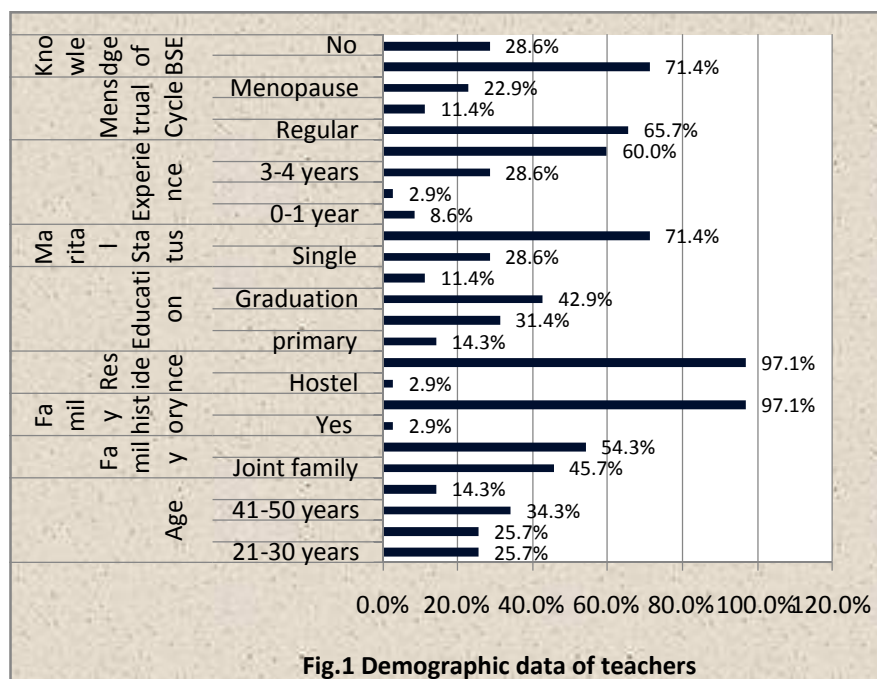


Fig.1 Demographic data of teachers

Table 5 - Distribution of teachers based on assessment of knowledge levels regarding BSE. N= 35

Sr. no.	Knowledge levels	Score range	Percent range	Pre test		Post test	
				F	%	F	%
1	Poor knowledge	0 - 7	0 - 25 %	1	2.9	0	0
2	Average knowledge	8 - 15	26-50 %	8	22.9	2	5.7
3	Good knowledge	16 - 22	50-75 %	23	65.7	20	57.1
4	Excellent knowledge	23 - 29	76-100%	3	8.6	13	37.1
	Total			35	100	35	100

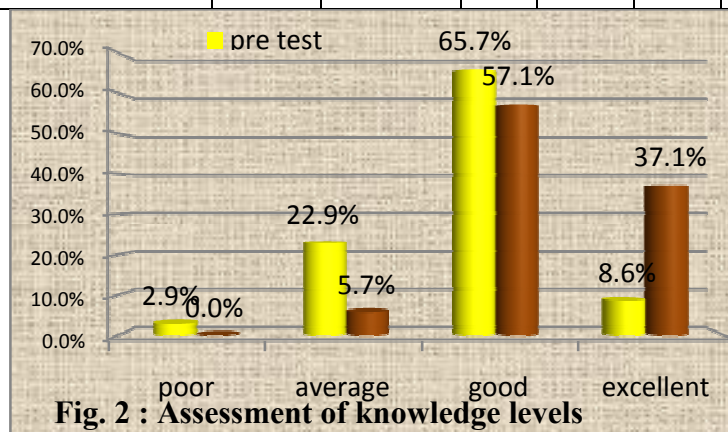


Fig. 2 : Assessment of knowledge levels regarding BSE among teachers.

Table 2 and fig 2 illustrates the pre and post assessment of knowledge levels regarding BSE among teachers.

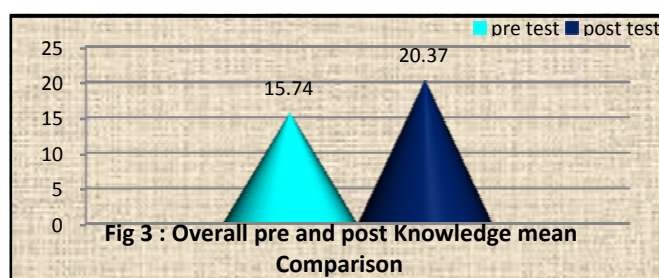
Pre test depicts that maximum 23(65.7%) teachers had good knowledge followed by 8 (22.9%) teachers with average knowledge. Very few 3(8.6%) had excellent knowledge. Only 1 (2.9%) teacher had poor knowledge of BSE. The post test score reveals shift of teachers to better levels of knowledge as 20(57.1%) teachers displayed good knowledge and 13 (37.1%) teachers displayed excellent knowledge. Only 2 (5.7%) teachers showed average knowledge.

Nil teachers were there in poor knowledge range. This table shows that after video assisted teaching programme there is improvement in knowledge of teachers regarding BSE.

Table 3 - Effectiveness of video assisted teaching programme by comparing pre test and post test Knowledge scores N = 35

Overall Knowledge Comparison		Mean	S. D.	M.D.	SEMD	t value	p value
Overall Knowledge	Pre test	15.74	3.75	4.63	0.61	7.63	0.001
	Post test	20.37	3.82				

df = 34, level of significance is 0.05 for 't' table value of 2.03



The data displayed in table 10 and bar graph 12 highlights the significant difference in the mean of pre and post test knowledge scores of the teachers. Effectiveness of video assisted teaching programme in improving knowledge regarding BSE among teachers is proved by comparing pretest and post test Knowledge scores of teachers and analyzed in terms of 't' test to find out the level of significance. The level of significance considered for this study is 0.05. Paired T test is used to find comparison between pre and post knowledge.

The two tailed 't' value for 0.05 level of significance is at 2.03 for degree of freedom 34. The calculated 't' value was found to be statistically greater than table 't' value at 7.36. The post test knowledge mean is more than the pre test knowledge mean. This suggests that video assisted teaching programme is effective in improving knowledge of teachers regarding Breast self-examination.

Pre test grade

	Frequency	Percent	Valid Percent	Cumulative Percent
.poor	1	2.9	2.9	2.9
Average	8	22.9	22.9	25.7
Valid Good	23	65.7	65.7	91.4
excellent	3	8.6	8.6	100.0
Total	35	100.0	100.0	

Post test grade

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid Average	2	5.7	5.7	5.7

Good	20	57.1	57.1	62.9
excellent	13	37.1	37.1	100.0
Total	35	100.0	100.0	

Table 4 - Association of Knowledge with demographic variables among teachers.N = 35

Sr.	Association of demographic variable with	df	Calc. F	Table F value	p value	Whether significant at 0.05 level
1	Age	3, 31	1.89	2.92	0.151	No
2	Type of family	1, 33	0.79	4.15	0.379	No
3	Education	3, 31	1.16	2.92	0.340	No
4	Marital Status	1, 33	2.14	4.15	0.153	No
5	Experience	3, 31	2.08	2.92	0.124	No
6	Menstrual Cycle	2, 32	1.16	3.29	0.328	No
7	Knowledge of BSE	1, 33	5.12	4.15	0.030	Yes

The calculated F value for demographic variables Age, Type of family, Education, Marital Status, Working Experience and Menstrual Cycle is statistically less than the F table value at 0.05 level of significance. Hence there is no statistical significant difference between the groups of above demographic variables with knowledge. Thus knowledge is not associated with them. Whereas the calculated F value for demographic variable Knowledge of BSE is statistically more than the F table value at 0.05 level of significance. Hence knowledge is associated with Knowledge of BSE among teachers.

Discussion:-In conclusion the present study findings demonstrated that the structured teaching programme was very effective in enhancing the knowledge as well as the practice of school teachers regarding BSE. So appropriate health education plan should be prepared to improve the knowledge and practice of school teachers regarding breast self examination to diagnose early detection of breast cancer. The limitation of this study is conducted in single school. Further this study recommends that research can be conducted in multiple schools and on larger group of teachers

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Analysis and Implementation of defocused images based On different Point Spread Functions

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Abstract:-Now a days the use of images in our real life is increased because of digitization. In long distance communication by using digital systems like mobile some challenges are elevated associated to quality improvement of images. In image restoration of digital image processing important parameter is to remove the noise or blur from defocused images. In this paper the point spread function is the important parameter related to image restoration of image is considered. As the different values of point spread functions, images are restored with different quality of restored images. Implemented results are given and compared with blur type and different point spread function values.

Keywords: -Point spread function, defocused image, image restoration, Gaussian blur.

Introduction:-Now a days the use of images in our real life is increased because of digitization. Instead of analog processing systems, digital processing systems are preferred. Some important advantages of digital systems are long distance communication, increased efficiency, easily possible to design and implement, systems are compact, easily possible to detect the errors or noise etc. In digital image processing, noise in the image means blur in the image. In digital communication process the real images are converted into blurred images because of different aspects. These different aspects are improper lens settings of camera, image defocus, gaussian or motion blur and image capturing from the camera [1,2,3]. In digital image processing because of all above aspects the blur is introduced and that blur is based on the point spread function of that image. Point spread function is important parameter in restoration of blurred or defocused images. In blind deconvolution method generally point spread function is unknown parameter. Estimation of point spread function different techniques or different methods are used [4,5,6]. These different techniques or methods are depending on different parameters like defocus blur radius, mean, variance, standard deviation, signal to noise ratio, mean square error, symmetrical structural similarity index. Inverse and Wiener filtering methods are used for comparative analysis of these parameters. Wiener filtering method gives better results for image restoration [7,8].

Implementation details:-In the implementation of this paper Blind deconvolution algorithm is used to restore the reconstructed image [9,10,11,12,13]. In blind deconvolution algorithm following steps are used for implementation.

1. Store the captured image for processing.
2. Read and Resize and store the image for processing.
3. Add Gaussian Blur and store Blurred image.
4. Apply Undersized, Oversized and True PSF for blurred image,
5. After some iterations store Undersized, Oversized and True PSF output images.
6. Restore the image with Blind Deconvolution with different PSF.
7. Compare the results with different PSF.

After implementation by using these steps, the simulated results are shown with comparison in implementation results.

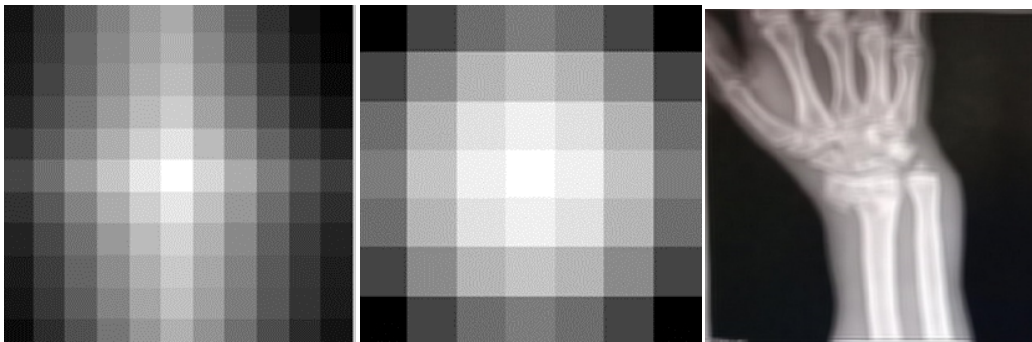
Implementation Results: -In this implementation two X - ray images are used as original images. The original X -ray image is shown in Fig.1,2 a. Blurred images are shown in b. Undersized, Oversized and True PSF images are shown in c d and e respectively. True PSF reconstructed image is shown in fig. e



Fig.1. a) Original image

b) Blurred Image

c) Undersized PSF



d) Oversized PSF

e) True PSF

f) Reconstructed image

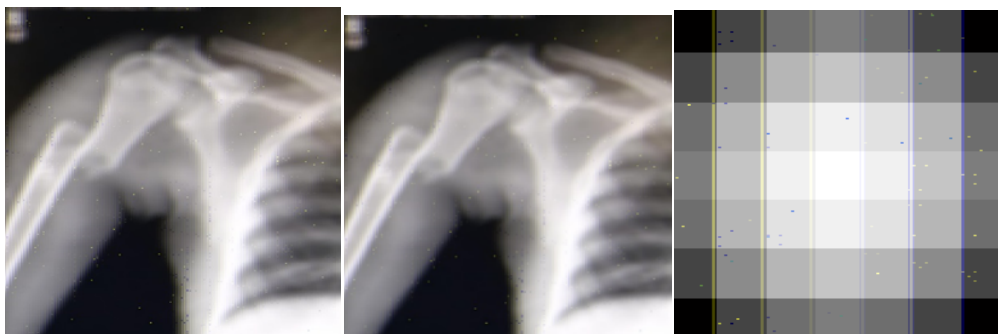
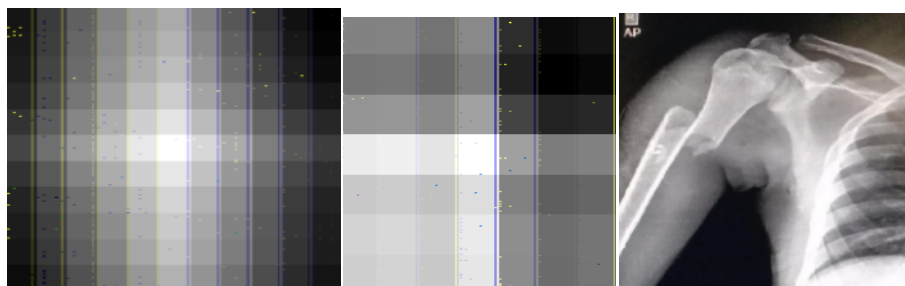


Fig.2. a) Original image

b) Blurred Image

c) Undersized PSF



d) Oversized PSF

e) True PSF

f) Reconstructed image

Result Analysis: - In the adopted methodology for restoration of image or removal of images to resize the image is very important. The original images are resized with 255X255. Blind deconvolution algorithm is used to remove the blur and reconstruct the original image. Generally, in blind deconvolution previously point spread function is unknown. But if the previously point spread function is unknown to retrieve the original image is complex process. In this implementation oversized, undersized and true point spread functions are used for reconstruction or original image to increase the efficiency of reconstructed image.

Conclusion: - In this implemented work blind deconvolution algorithm is used for image restoration. In digital image processing in communication process the real images are converted into blurred images because of different aspects. These different aspects are improper lens settings of camera, image defocus, gaussian or motion blur and image capturing from the camera. The main aim of this paper is to remove the blur and reconstruct the efficient original image. As compared to oversized PSF and undersized PSF, by taking True Point spread function the efficient and without loss of information is possible to reconstruct the original image.

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A PRE-EXPERIMENTAL STUDY TO EVALUATE THE EFFECTIVENESS OF PLANNED TEACHING PROGRAMME ON KNOWLEDGE AND ATTITUDE REGARDING ROBOTIC CARDIAC SURGERY AMONG THE NURSING OFFICERS WORKING IN SELECTED HOSPITALS KOLHAPUR, MAHARASHTRA, INDIA

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ABSTRACT

BACKGROUND:- The robotic cardiac surgery is one of the advanced types of technique, which is used in case of medical surgery in which the cardiac system is operated by very small openings in the wall of the thoracic. This method of advanced technology is very effective than open heart surgery, the reason of advantages behind this technique is the small devices and some advanced robot mechanism of controlling devices. In this advanced technology of robotic cardiac surgery, the generally the da Vinci type of surgery is regularly applied for all type of cardiac surgery.

AIM:- To evaluate the knowledge and attitude regarding the robotic cardiac surgery aimed at the Nursing officers, before & after administration of the planned teaching program.

METHODS:- one group pretest -posttest, the pre -experimental design was used intended for the training. The non -probability sampling / Purposive sampling method was used for 60 Nursing officers of selected hospitals, Kolhapur, Maharashtra, INDIA.

RESULTS: The majority of the 60 Nursing officers (80 percent) were between the ages of 21 and 30. The majority of the participants (49.7%) were female Nursing officers. The majority of nursing officers (58.3%) were qualified as general nurse -midwives. The majority of subjects (25%) had more than four years of work experience, and the majority of nursing officers (38%) knew English. Sixty percent of the Nursing officers (60%) worked in the private sector. The majority of the respondents (48 percent) had prior experience with in-service education.

The majority of the Nursing officers (48.3%) learned about robotic cardiac surgery during a symposium. In the pre -test, the majority of 45 (75%) Nursing officers had an average score for robotic cardiac surgery, and the majority of 35 (58.3%) Nursing officers had a negative attitude. Following the administration of the PTP, the majority of the Nursing officers (43.7%, to be exact) had an adequate understanding of robotic heart surgery. The majority of Nursing officers, 47 (78.3%), have a positive attitude toward robotic heart surgery.

The difference in knowledge and attitude scores between pre -and post -test is larger than the tabulated value ($t_{tab}=2.000$). As a result, H_{01} and H_{02} are both rejected. At the 0.05 level, this shows that the growth in knowledge and attitude is statistically substantially higher than the pre-test knowledge and attitude scores. As a result, the planned teaching program (PTP) on robotic heart surgery is successful in improving participants' knowledge and attitudes. Job experience is related to the pre -test knowledge score in the sociodemographic factors, thus H_{03} is rejected. The pre -test knowledge score H_{03} has a residual connection with socio-demographic variables, which is acknowledged. H_{04} is rejected because Gender is linked to the pre-test attitude score. It is believed that there is still a link between socio-demographic variables and pre -test attitude score H_{04} . The study looked at the relationship between knowledge and attitude. The average knowledge scores were 8.7, and the average attitude

scores were 53.90; the estimated r value is 0.23, which is lower than the table value ($R_{\text{tab}}=0.25$). As a result, H_{05} is approved. This implies that the knowledge and attitude scores on robotic heart surgery are unrelated.

CONCLUSION:-The study revealed that the Planned teaching program on robotic heart surgery was an effective method in improving the knowledge and attitude of Nursing officers.

KEYWORDS:-Nursing officers; Planned teaching program; robotic heart surgery ; Socio-demographic variables; Knowledge; attitude.

INTRODUCTION:-The robotic cardiac surgery is an advanced form of technology that is used in medical surgery to operate on the heart system through extremely small holes in the thoracic wall. This sophisticated technology procedure is far more successful than open heart surgery; the reason for this is the tiny devices and advanced robot mechanisms that manage the gadgets. The da Vinci kind of surgery is commonly used for all types of heart surgery with this sophisticated technology of robotic cardiac surgery. Robotic cardiac surgery has a number of advantages over open-heart surgery, the most important of which is that it is less invasive. Smaller incisions help patients to recover more quickly and resume their usual activities sooner. If a patient requires arterial bypass surgery to facilitate the proper blood supply to the cardiac system, the doctor sometimes recommends robotic cardiac surgery. It's also possible and utilized to repair or replace cardiac valves that are stiff or leaking. Atrial fibrillation is a frequent form of arrhythmia that can be treated. If the patient has a cardiac tumor, should get it removed. Congenital cardiac defects must be treated. Other causes may exist for a patient's healthcare practitioner to propose the same procedure of robotic heart surgery. The best advantages of robotic heart surgery is that it has less chance of risk than open-heart surgery. The cardiac surgeon no need to incision through the sternum bone to open the thoracic of chest. So many of the risks associated with heart open surgery are eliminated. Anesthesia is still required for robotic cardiac surgery, and there are always dangers associated with any type of surgery, which comprises the cardiac arrest, myocardial infarction, cardio cerebral stroke, contamination by infections and result of collapse or even death. The doctor might not be able to finish the procedure in the presence of the robot some circumstances. The patient would require open-heart surgery in this instance. Other hazards may apply depending on a patient medical condition. Before the patient's procedure, be sure to discuss any concerns of the patient may have with the healthcare practitioner. The healthcare practitioner will examine the patient medical history, lifestyle, and the overall severity of the condition to determine if the person being treated is a good contender for this type of medical surgical procedure. The healthcare practitioner will go through the process with the patient and answer any questions of patients may have. The individual who is being treated You'll be asked to sign a consent agreement, permitting the treatment to be performed. If something is confusing, the patient has to read the form carefully and ask the questions. The healthcare providers may perform a physical exam in addition to a full medical history to verify the patient is in otherwise good condition before the operation. The healthcare providers may advise the patient to take aspirin before the operation. If the female patient is pregnant, then the doctor was advised prior. The patient was advised to concern the healthcare provider for allergic or sensitivity any medications, latex, iodine, tape, contrast dyes, or any other substances of anesthetic agent. Altogether drugs prescription and herbal and over-the-counter supplements the patient is attractive should be disclosed to a healthcare provider. If the client has a history of bleeding problems or is using anticoagulant of any kind (blood-thinning) medications, aspirin or other anti-clotting medications, tell the healthcare practitioner. Before the surgery, the patient may need to stop taking these medications. If the patient has a pacemaker or another implanted cardiac device,

the patient is advised to tell the healthcare provider. Before the end of the year, quit smoking as soon as feasible prior to operation if the patient smoke. This will increase the patient chances of a good surgical recovery as well as the patient's general health. Before the procedure, the patient will be advised to fast for 8 hours, avoiding eating, drinking, or taking any oral medications after midnight. The patient's healthcare providers may ask for further preparation based on a patient medical condition. In these incisions, many precision-guided robotic arms will be implanted, depending on the treatment being performed. This robotic arm, ms hold and operate small devices that are used to perform tasks on the heart or nearby arteries. Another incision will be used to insert a small video camera that will offer a magnified, three-dimensional picture of the surgical site. Using a console in the surgeon will be in the operating room control robotic arms then camera. After that, the cardiac surgeon will disconnect the devices by covering the wounds soon after they are finished. It is recommended that the patient discuss what they will experience throughout their procedure with their healthcare practitioner. After the operation, the patient will be transferred to a recovery area where he or she will be watched. After that, the patient should anticipate a hospital stay that is roughly half that of standard open-heart surgery. When the patient's The patient's discomfort is under control, he or she may drink liquids without nausea or vomiting, and the test results are normal values are close to normal or to patient baseline before the surgery, the patients' healthcare practitioner will usually dismiss the patient. On top of that, the patient can recognize the decreased healing process of the chest.

Most individuals Afterward presence satisfied from the clinical hospital, they may accomplish their discomfort through nonprescription ache reliefs such acetaminophen or isobutylphenyl propionic acid. In addition, ache dissipates more faster than it does after open-heart surgery. Maintain a clean and dry environment around the incisions. Dusts, creams, and gels avoided on incision lines because it leads to irritate the membrane, slow remedial, then rise risk for infection. Patient must able to wait till the doctor says it's okay to soak the incisions with water. Make arrangements for someone to drive patients returning home from the hospital. The patient might similarly be able near resume regular actions of daily living activities sooner than following open-heart surgery. After a few weeks, most people can resume their usual activities. The healthcare practitioner will make specific activity suggestions. Follow-up visits with the healthcare practitioner are usually scheduled to monitor the progress. If the patient experiences any symptoms following the operation, such as chest pain or discomfort, the patient must contact the healthcare practitioner straight once. Complications are uncommon following robotic heart surgery, but they do happen, so keep an eye out Any symptoms should be reported to your doctor. Keep in mind that the patient must take all of the medications exactly as directed. .

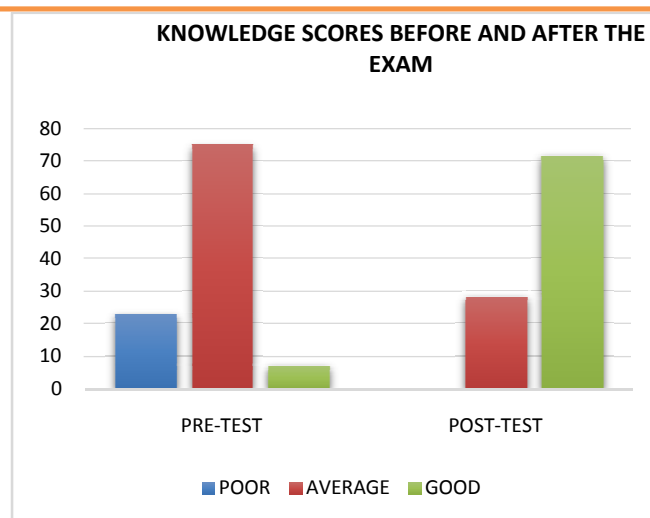
The nurse is a trained person who is available round the clock in the hospital, ambulance services, and first-aid clinics. The emergencies can't wait for someone to come, as "time and tide wait for none". Looking at the precious life and life fighting its threatening emergency of cardiac arrest, the nurse can easily employ a lifesaving robotic cardiac surgery, if he/she has the necessary knowledge and attitude of robotic cardiac surgery and can save a precious life.

METHODS:- This study's conceptualization is based on the general system concept of Ludwig Von Bertalanffy. The Convenient sampling approach was used to perform pre-experimental research. In this study, 60 samples were taken from several locations, including 20 samples from D.Y. Patil Hospital, 20 samples from Aster Adhar Hospital, and 20 samples from AppleSaraswathi multispecialty Hospital in Kolhapur. A systematic information survey then a Likert measure were applied to gather the information data for attitude toward robotic heart surgery. The tool's validity was determined by topic specialists

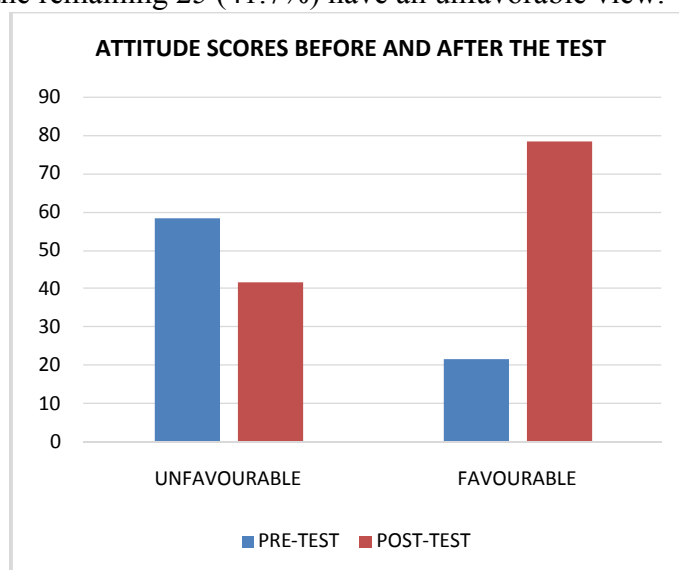
in a related discipline. The Karl Pearson technique was used to assess the tool's reliability. Pilot research was undertaken to determine the study's practicability and viability. Structured questionnaires and a Likert scale were used to collect data from the samples. The information was gathered descriptive and inferential statistics were used to examine the data.

RESULTS:-Table 3 shows the majority of nursing officers had average knowledge, 23.3 percent had poor knowledge, and just 7% had a high understanding regarding robotic cardiac surgery during the pre-test. Their knowledge score improved after PTP was administered. Following the post-test knowledge assessment, the majority of nursing officers had average knowledge, 71.7 percent had high knowledge, and no one had bad knowledge.

Graph 1: Nursing officers distribution based on Knowledge scores before and after the test.

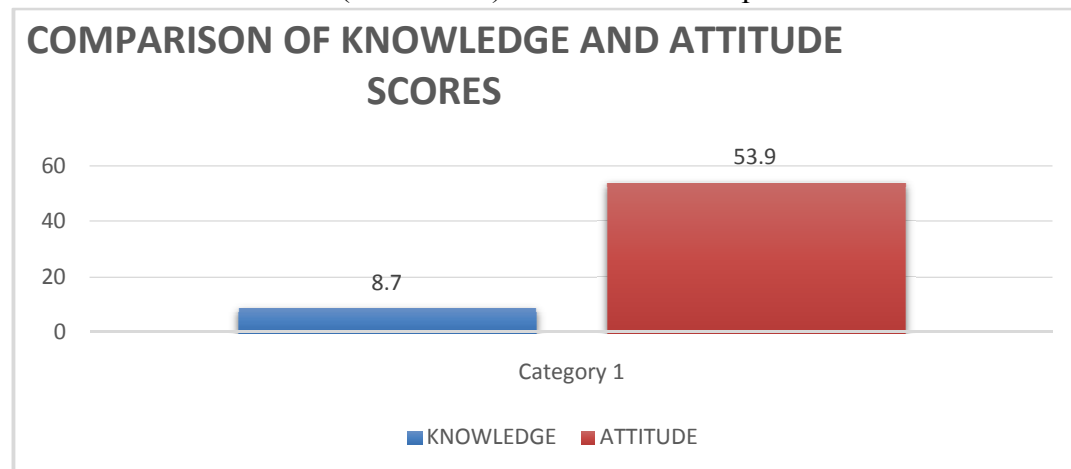


As seen in Table 5: The 35 (58.3%) Nursing officers had a negative attitude before the exam, while 13 (21.7%) women had a positive attitude. Following the administration of PTP post-test findings, the majority of women 47 (78.3%) had a favorable opinion about robotic cardiac surgery, while the remaining 25 (41.7%) have an unfavorable view.



Graph13:Nursing officers are distributed based on their attitude scores before and after the test

comparison between pretest Score on knowledge and attitude. The average score for knowledge is 8.7 and attitude mean is 53.90, here the calculated r -value is 0.23 is less than the table value ($R_{tab}=0.25$). Hence H_0 is accepted.



Graph 14: Co-relation between pre-test knowledge and attitude scores of Nursing officers regarding robotic cardiac surgery

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Advance Synthetic Methods for Succinimides

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ABSTRACT:-The present review informs about the advance synthetic methods for the important succinimide pharmacophores as drug candidate including the applications. A brief information about the chemical reaction for succinimides has also been discussed herein. However the radical study is not involved.

Keywords: - Succinimides, cyclic imides, Biological activities.

INTRODUCTION:-Cyclic imide derivatives of phthalimide group has been synthesized and reported by total et al using following methods. They synthesized using iso-indolinedione moieties as a pharmacophore. Isoindole moiety exhibit various bioactive properties such as hypnotic and sedative properties. Isoindoline 1,3-dione (phthalimide) is one of the compound within cyclic imides group consisting of two carbonyl groups bounded to an amine. Isoindoline moiety is one of the precursor pharma moieties. Total et al used all and catalytic reagents for the synthesis purpose and TLC used for purification with silicagel and UV light of 254 nm.

CYCLIC IMIDES:METHODS FOR SYNTHESIS

General process- Total et al (2015)

Synthesis of phthalimide derivatives: - 0.013 mol. of phthalic anhydride and amine volume 0.14 mol. Was taken in a round bottom flask and acetic acid (glacial) was gradually added to the reaction mixture (volume-15ml). The temperature was kept 110 °C for a time period of 10 minute. After completion of reaction the reaction mixture was transferred into cooled water for the solidification precipitate was filtered washed well using water and collected crystalline was performed by help of Et-OH. Synthesis: N-Amino phthalimide

A quantity of 14.7 gm (0.1mol) was mixed well in Et-OH (100gm) and reaction mixture was ice cooled at a temperature of 5 °C with continuous stirring. After than a 3.6ml of hydrazine (0.11) ml was gradually added to it along with continuous stirring of mixture about 02 hours. Reaction mixture were ice cooled and crystallisation was done using Et-OH. C. Synthesis of imine derivative For N- Amino phthalimide Aldehyde with concentration of 0.0063 ml and N- amino phthalimide (0.0062) ml was placed in to a sand bottom flask fitted with reflux condensation and magnetic stirrer. Then a 50 ml volume of methyl alcohol and H₂SO₄ (1 drop) pushed into the reaction mixture. The reaction mixture was further refluxed for 35 min. now the mixture was cooled down for solidification with cold water and crystallization was performed using Me-OH. The method reported by total et al(2015). For a newer series of phthalimides which are joined to various bioactive heterocyclic compounds. It is a multistep synthesis. In which firstly phthalimide and hydrazine are refluxed to form N - amino phthalimide. In the next step of synthesis this compound reacts with aldehyde compound or acid chloride using greener microwave approach and reflux process. The reaction leads to the production of a Schiff base and amide derivative. Results of the process were analysed and confirmed using various spectral as well as physical techniques. Compounds were found to be good antimicrobial agents is tested for the same activity as for standard methods author specially marked the antifungal and antibacterial activities for

special species.

Synthesis of cyclic imides derivatives- Total et al (2015) Method 1 0.013g zinc dust with N amino phthalimide (0.01mol) acid taken in a flask and 0.019 mol acid chlorides was added to it. The mixture was stirred well for four minutes at room temperature. The extraction for products was performed using a 25 ml volume of chloroform. The layer of chloroform was washed twice with a 10ml saturated solution of sodium bicarbonate. After then extracted compound was washed well with water. Now this washed products was further concentrated and crystallization was done using Me-OH.

Method (II) Total et al (2015)

A small reaction glass vial was placed in to a microwave oven containing N -amino phthalimide (0.003/mol). Reaction was performed at 450 watt for 4 min and the obtained product was crystallised by means of methyl alcohol. Above methods is originally separated by Langale et al. (2011).

Number of N -Phthalimides were prepared and reported well by means of reflux reaction using phthalic anhydride and amine. Sulphonic acid was used as reaction catalyze in this work. Products were confirmed with a good yield. Similarly another work marks for the synthesis of N- isophthalate imides by lighter et al (2007) by reacting the N -phthalimise (in Me-OH) With Hydrazine AT 05 °C. In above reported method different aldehyde molecules were reacted with N- amino phthalimide and acid halide in a similar way. Results were found to be excellent in respect of yield and crystallinity as reported by author. Author performed the amide derivative synthesis here in with two different methods as described earlier method 1 and method 2. Method 2 seems to have an advantage being one pot microwave assisted and solvent free process.

Method 1 has a bigger workup as compared with method –ii as first one requires for Zinc purification procedure in respect to obtain pure product in a good yield.

Method –ii results with a good yield as compared with method 1 as this involve crystallization of product with a pure state in reaction vessel there in. author reported antimicrobial activities of synthesized compounds. For MRSA strain s. Aureus and methellin resistant; ELBS producing species E.Coli as well as S. Pyogens. Ampitin and carbomocillin (100 microgram/disc) was used as antibiotic standard whereas nystonin for the antifungal activity against C.albicans.

Di-methyl sulphonated (3%) solutions was used as control medium. Incubate period was fixed as 24 hrs and 72 hrs at 37 °C for antibacterial and antifungal activities respectively. Significant antifungal activity for C.Albicans is separated with N -Hydroxy naphthalene sulphonic acid phthalimide and thiophenene phthalimide derivatives compounds synthesized are separated by author have a more pronounced antifungal and antibacterial activities as compared with other antibiotic drugs used here in assay.

Dhivare and Yadav R et al (2016) separated the synthesis of N -substituted phenyl succinimide derivatives. They performed synthesis using reaction between 1° aromatic amines and succinic anhydrides in the presence of acetyl chloride and benzene.

N-Phenyl succinimide (Dhivare.c , R.yadav et al 2016).

A significant volume of succinic anhydride taken in reaction vessel (1 mol) and benzene was added to it gradually. After then mixture was under processed for reflux condensation for 20 minutes along with continuous stirring. As the reaction mixture turns into a clear solution. A mixture of anilines substituted (1mol) with benzene (10ml) was gradually mixed into reaction vessel and reaction was allowed for a time period of 20 min with continuous stirring. As a result a homogeneous reaction product is obtained. Now benzene is evaporated and a white creamy powder (3-N-Ph-propanoic acid was obtained. The next closure of ring

was accomplished with acetyl chloride in next step of synthesis the synthesized 3 -N Phenyl propanoic acid was refluxed up to evolution of hydrogen chloride and subsequent N -phenyl succinimide formation for 20 min. similarly the 4 -(ph-carbonyl)-butanoic acid was refluxed for 20 min with acetyl chloride for the complete HCl gas evolution and subsequent formation of N-Phenyl glutarimides. Author explored formation of some newer phenyl succinimide derivatives by means of ring opening process for acid which was formed as an intermediate. They achieve good yield with this method or say using the acetyl chloride ring closure process. They also tested the synthesized compounds for their antimicrobial actions against A.niger and C.Albicans using solvent DMSO.

Amphotericin was used as leprose drug for the antifungal assay. Furthermore author remarked the significant key role for the newly synthesized compounds in their work which establishes the method of synthesis is excellent one. succinimide derivatives are reported will for their antifungal activities specifically against A.niger and C.Albicans. However other derivatives in their work were found to be not active for antifungal activity. The method adopted herein may be allowed for future similar drug synthesis as references.

Patil M. (2016) et al reported their Work for the Synthesis of some novel di-azo compounds of cyclic Imides. Author Performed his work by names of Diazo Coupling reaction They synthesis a new series of azo coupled complexes of N - substituted cyclic imides. Compounds were tested for anti microbial activities and found to be good in action in an enhanced way.

Along with above authors also proposed the uses of newer Synthesize, compounds for dyeing purpose to silk cotton, polyester, fabrics.

Author noticed the importance of halo vinyl. Aldehyde, azo and cyclic imide as a pharmacophore. They made an immense effort to commute these moieties say halo vinyl aldehyde, azo compounds and cyclic imides as a single molecule structure.

This work scheme can be described as following:

(1) Synthesis of 2,5- diazido-1- substituted phenyl-1-H pyrrol -3,4- di carbaldehyde.

Solution- 2,5- diazido-1- substituted phenyl -1-H pyrrol -3,4- di carbaldehyde was mixed (0.01 mole) with Et-OH (10ml) and 0.02 mole P-toluene sulphuric acid along with. 0.03 mole sodium azide was mixed in addition.

Reaction mixture was refluxed for 4-6 Hrs time period and then poured in twice cooled water for the precipitation of compounds. The Crude Product were washed with water and crystallized by the help of Ethyl alcohol.

2.Synthesis: 2,5-di amino-1- substituted phenyl 1-H- Pyrrol — 3,4- dicarbaldehyde. The compounds. Obtained from (I) (0.026 mole) were added with 12 ml volume of Me- OH and. 0.05 mole sodium dithionite and reflux for the period of 5 Hrs. at oil bath. After the Process refluxed product was filtered off and washed with Me-OH. Now excess solvent was distilled off and mixture was transferred over the ice for solidification. The Crude Product obtained filtered and washed with water. Recrystallisation was performed using the solvent Et-OH.

Synthesis of 2,5- bis (E)-(2-hydroxy naphthalene -1-yl) diazenyl)-1- substituted ph – 1-H-pyrrol-3,4- di carbaldehyde.

The compounds obtained (A) from step (II) were mixed with HCl(Con.) 6 ml and 6 ml H₂O. The reaction mixture was cooled at a temperature of 5 °C in ice. Now 0.02 mol of NaNO₂ were mixed in 20ml water at temperature of 5°C in respect to obtain mixture (B).

Now solution (A) and (B) were mixed gradually and drop wise with continuous stirring. This solution in then mixed with solution of 0.02 mole 2 - naphthol dissolved in to 40ml. NaOH (10%) at a temperature of 5°C. Ice bath was used for the chilling of Reaction mixture for 10 minutes along with continuous stirring. After the 10 minutes, precipitated was obtained then filtered, as washed well. Recrystallisation was performed with glacial acetic acid and finally product was dried for 12 hour at a temperature of 70° C in an electric oven. The initial Compounds for vinyl aldehyde were synthesized by the treatment of 2,5- diazido-1- substituted phenyl - 1H- Pyrrol-3,4 dicarbaldehyde and sodium dithionite. After than diazonium Reaction was performed over 2, 5- diamino -1- substituted phenyl 1-H- Pyrrol-3, 4- dicarbaldehyde which was underwent a coupling reaction with 2- naphthol in respect to obtain the product. The product yield was found to be satisfactory and products structures were confirmed by means of spectral, techniques. Researcher performed anti microbial test for synthesized compounds using agar diffusion method. Mueller Hinton agar (Hi -media) was used for in vitro anti microbial activities. In respect of prepare Muller plates a volume of 15 ml media in to sterile Petri dish after than plates were solidified for 5 minutes in time period following the swabbing of 0.01% in column suspension in a uniform way. Now these inoculums were allowed to be dried for a time period of 5 min and a fix concentration were transferred to the disks. The disk was now put over the medium surface and the compounds were allowed to get diffuse in to for 5 minutes followed by the incubation for 24 Hrs at the temperature of 38 ° C. Inhibition zones were obtained after the completion of incubation which were measured and recorded. Both gram positive as well as gram negative bacterial strain were used for assay with solvent DMF. Standard was used as Ampicillin, Antifungal assay was performed using PDA (potato Dextrose Agar) nutrient Medium, A. Nizer and C. albicans in Dimethyl sulphoxide solvent Amphotericin – B used as standard reference drug for antifungal screening.

Author reported, the Synthesis of a new series of compounds in a facile way along with good product yield. They claimed for the potent anti bacterial anti fungal activities of compounds synthesized (Azovinyl derivatives containing a cyclic imides scaffold) along with their use as dye for silk, cotton and polyester fibres.

Author also emphasized, here in the development of newer strategies in continuation as cyclic imides as key scaffold as a pharmacophore. Comprehensive methods in synthesis of succinimides scaffold as a pharmacophore: - Patil m.m et al (2014) described in his review the widely used synthesis method for succinimide scaffold as a pharmacophore moiety. It Inform about key method and related anti microbial properties and their related derivatives-

(A) By means of Succinic acid and SOCl₂ (Rajput A.P 2007) - synthesis for the 1-substituted phenyl pyrrolidine-2,5-dione is reported (Rajput A. P 2007) by means of condensation Reaction of Succinic acid and 1 ° aromatic Amine with SOCl₂. The reaction is proceed under reflux conditions.

Succinic acid + 1 ° Aromatic amine $\xrightarrow{\text{SOCl}_2 / \text{reflux}}$ 1 - Substituted Ph - Pyrrolidine -2,5 – dione

(II) By means of cyclic Anhydride and Lewis acid (catalyst) (Raddy py 1997)

In this method a direct synthetic approach is used to obtain substituted succinimides. In this order Succinic anhydride reacts with 1° Amine along with Zn Br₂ (Lewis acid), Reaction time reported for 1 -2 hours in benzene solvent and then followed to obtain substituted succinimides

(III) By means of acetic Anhydride and sodium acetate (anhydrous) in Acetone (Dry) Shetgin NP 2005)

Author reports a condensation reaction in mild conditions for aromatize amine and succinic anhydride in presence of dry acetone leading to amic acid intermediate

which further undergoes in a cyclization process by means of acetic anhydride and anhydrous sodium acetate at a temperature of 100° C resulting in to N- Phenyl Succinimide scaffold.

- (IV) By means of cyclic anhydride and amine with Ac — Cl, (Martin SF 1997) This method involves treatment of succinic anhydride with primary amine in the presence of Benzene Solvent : Acetyl chloride is used as a dehydrating agent in this reaction obtaining succinimides scaffold.

- (v) With cyclic anhydride and SOCl₂ (Zentz F. et al – 2005).

Reaction of succinic anhydride with primary amine leads to the amic acid intermediate. In the presence of SOCl₂ the intermediate amic acid furnishes cyclisation leading to the Product dithin-di-imide and di-imides. Here- N- Substituted Cyclic Imides (succinimide) is not formed in this Reaction.

- (vi) Without any solvent method (Chandra sekhar s. 1997)

Author reports synthesis of cyclic imide (Succinimide) by means of succinic anhydride (cyclic anhydride) in Tacl₅- silica gel reaction conditions. Tacl₅ being a Lewis acid act as a reaction Catalyst.

- (v) Solid phase Method using SBBC (Red Mogadam; 2005)

A solid phase reaction approach is used in this method to obtain N - Aryl- Succinimide. SBBC or Silica Bound Benzoyl chloride was used as a dehydrating agent in this reaction. The key feature of method is the solvent free approach and the recyclability of silica bound Benzoyl chloride

- (vi) Modified Mitsunobu Reaction (Walker M.A et al 1995)

Author used a modified version of Mitsunobu reaction to synthesis N- substituted succinimides they used this reaction between alcohol and succinimides in presence of triphenyl phosphine as well DIAD (DI0-ISO propyle- azodicarboxylate

- (vii) Green approach: microwave assisted method (upadhyay S.K 2015) Author reports a microwave assisted synthesis method for N- substituted succinimides.

Reaction process involves primary amine and succinic anhydride reaction in DMF solvent, water or acetic anhydride. The key Feature of microwave assisted method is reported as its excellent high yield.

Using Sub Critical Water-S.F. Alpman(2003)-

Author reports synthesis approach for the synthesis of succinimide derivatives by means of sub- critical water. In This Method Aniline is reacted with succinic acid at 280° temperature with water for a time period of 30 min. Process results a comparative and noticeable high yield of Product

In Form Ionic Liquids — (Dabiri M. Et al 2007) in this method Alkyl or aryl amine treated with cyclic imides leading to the synthesis of N - Aryl or N- Alkyl- Amides in the presence of Ionic liquid and mild reaction situation.

This method is significant and has advantage of easy operation, Simplicity, good yield; shorter time duration and more green approach as it avoids toxic solvents or catalysts.

Using choline chloride (Lewis Acid) Process involves (xie Y et al 2009) reaction of Aniline) and alkyl amine and succinic anhydride by means of ionic liquid choline chloride (Lewis- ACID). 2ZnCl₂, leading to N- ph-Succinimide. Process occurs under mild conditions with good yield at a temperature of 60 degree centigrade.

By tri fluoro acetic acid SB at all 2011

Author reports synthesis of N substituted succinimide by the reactions of chiral amine and anhydride. Synthesis proceeds in a gentle manner with good yield.

One pot Synthesis

This is one pot method for the synthesis of and substituted succinimide in nomads. Action of succinic anhydride and amines aryl or alkyl with sulphuric acid 10% as a catalyst results into the synthesis of N-substituted succinimide. One pot character of this method is the advantage of this along with good yield.

By acetyl chloride and substituted Succinic acid: (Kumar et al. 2008.) Author reported synthesis of final succinimide by means of the reaction with hydroxyphenyl succinimide and acetyl chloride.

Kotigobbe et al.1998: This method reports about the synthesis of chiral succinimide. Reaction starts with (R)-2 succinimide make acid and auto ISO butyl aniline using EDC

3-(Di-methylamino-profile): Carbondiamide. By means of succinimide and aryl halides:-

It is hard direct synthetic method synthesis of N-substituted succinimide reaction involves the treatment of succinimide with coumarin halide and azo coumarin resulting into the desired product. Reaction proceeds under the presence of carbonate in acetone. (Maarula Siddharth et al.2012).

By carboxylic acids Bhrama et al.2008: Pirate into 3 dicarboxylic acid is reported with acetic anhydride. By 2 amino 5 chloral and progeny and hydrate (Banneman et al. 2008) Author reported about the synthesis of substituted succinimide in a good yield by means of a reaction of progeny and hydride and 2 amino chloral pirating. Process also claims for a good yield.

The chemical reactivity of substituted Succinimide:

Chloroformylation halo Vinyl derivative is obtained on the dichloro, di or my listen of and substituted succinimide. Reaction proceeds under the presence of phosphorus ox chloride and dimethylformamide.

Chloroformylation and succinimide Shoot At All 1965 and final succinimides. Chloroformylation and succinimide images- Kvitko et al 1973.

Alkyl and substituted succinimides nights proceeds dichloro diphenyl myelination leading to the dichloro diformyl pyrroles by means of ring aromatisation has intermediate species.

Reaction occurs in the presence of phosphorus oxychloride and dimethyl formamide. This product substituted dichloro formal pyrrole is used as a precursor for the synthesis of various derivatives. Ring opening of succinimides of N-substituted succinimide shows nucleophilic ring opening reactions in both intra as well as intermolecular.

Ring opening reaction of succinimide can be designated as per the nucleophile species like oxygen nitrogen, carbon or any hybrid.

Ring opening reaction of N-substituted succinimides can be classified as intra and intermolecular.

N-linked nucleophiles : carbonyl group present succinimide scaffold enables it to react with amine molecules. Reaction has been reported with a means of diamine and hydrogen as a nucleophilic species. N-hydroxyl succinimide molecules react with amine leading to with good yield.

CONCLUSION:- Succinimides are very high reactive compounds due to methylene as well as carbonyl group in its structure, leading to the various important scaffolds for different pharmaceutical purpose. Reaction and synthetic methods are summarised in this contemporary review.

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The growth of CryptoCurrency in india: Its challenges and potential impacts

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ABSTRACT:-Information and communication development showed rapid development in our daily life which is relying on online computer activities which are very effective and flexible. In recent years online users increased who are using virtual world concepts have created new business concepts known as Cryptocurrency which help in monetary activities such as buying, selling and also trading. Cryptocurrency is electronic money which is used in different applications such as online social games, peer to peer networks, online social networks and virtual world. This paper presents our expectancy to Cryptocurrency in the near future. Even though there are a lot of benefits when using Cryptocurrency we have to deal with various hurdles on the other side of the coin like using virtual is not controllable. This paper presents a clear view of Cryptocurrency. It also says how 21 countries responded in terms of legislation and regulation.

Key Words : - Bitcoin, Cryptocurrency, challenges in Cryptocurrency legislations, uses of Cryptocurrency.

INTRODUCTION: - Information and communication technologies created an era of several golden aspects and opportunities in financial sector. The finance and business sectors showed a lot of growth by using these online connections. Online users are growing day by day and created which lead to development of new business phenomenon. New kind of currencies and trading has started. Financial sector has been widely used in Cryptocurrency for the past few years. Cryptocurrency is nothing but medium of exchange. Cryptocurrency can be used both for real world or virtual world transactions. This paper analyzes Cryptocurrency issues, Problems, System and Platforms. It also deals with problems and issues of using Cryptocurrency and its challenges, Law breaking rates, Business industry, real monetary system and crime payments. It also presents legislative situations in some countries.

IT'S RISE IN INDIA: -India population that's over billion has been on one thing of an economic renaissance within the previous few years. Such has been the extent of the country's growth that the International Monetary Fund has known as the fastest growing rising economy. Population has access to telecoms and web services are considered total 50% of the world. We are very rich in our culture and History and also we are not lagging anywhere in Technological advancement. Bitcoin and many cryptocurrencies are being used within the country for a number of years. From 2012, small scale Bitcoin transactions were already made within the country. These were starting days in the development of Bitcoin. From 2013, Bitcoin gained a level of popularity and it was spread across many countries. From 2013 many businesses began to accept Bitcoin. A Pizza shop called Kolonial in the Worli area of Mumbai is the first restaurant service in India to accept the payments of Bitcoin. Very soon cryptocurrency exchanges began to spread within the country. Many Pioneers like Unocoin, BtcxIndia, and Coinsecure began to offer Cryptocurrency exchange & trading services in India. With the beginning of crypto trading and exchange, the crypto market in India has grown fast. Along with these online exchanges many of crypto shops in the country grown. Many Bitcoin ATMs in major Indian cities created crypto economic hub. On November 8, 2016, our Prime Minister (PM) Narendra Modi announced the implementation of demonetization. Government demonetized nearly 86

percent of the country's paper currency. Rich People with huge cash holdings adapted a new means of holding wealth without paying tax and come across government scrutiny. Many people made large orders of Bitcoin and many other cryptocurrencies. These electronic currencies can be sold at later date. They also circulated their money to banking system. The demonetization policy also led to huge criticism of the financial system in the country. Within 24 hours, 86 percent of the country's paper currency became valueless with single government proclamation. Indians began to use many alternative currency models. Many Indians, especially in the villages began to access internet and take up Bitcoin and Cryptocurrency investments.

CRYPTOCURRENCY BUSINESS

CEO of IMVU game company Rosenzweig, compared virtual currencies to miles of airlines, and he said virtual currency as symbolic currency that we can exchange it for anything that is sold with electronic media. Virtual currencies help in all trading activities & financial transactions for users. At the same time, they help in earn, spend and exchange money easily. They help us to buy virtual goods and currencies among different platforms. They help u in purchasing digital and physical goods. Virtual currency offers a very good opportunity for companies to increase their revenues by monetization

Cryptocurrency are implemented in many different platforms including Cryptocurrency in social networks, social games, loyalty points & Cryptocurrency in peer to peer networks. These platforms are be divided into 2 main categories namely centralized Cryptocurrency and decentralized Cryptocurrency platforms. The centralized Cryptocurrency is similar to the central bank. The administrator of that has full control of transferring the Cryptocurrency value between persons or different locations to another. The decentralized Cryptocurrency has no centralized repository or a single administrator. De- centralized Cryptocurrency can be obtained by computing effort.

Generating and obtaining Cryptocurrency

We have no universal virtual currency in the digital medium, there are different ways to Generate or obtain the virtual currencies.

- 1. Pay for Cryptocurrency method :** This method allows users aged above 18 to pay for Cryptocurrency with real money or debit cards, credit cards or electronic - payment systems may be like PayPal. Every Cryptocurrency unit has its separate method of pricing and exchanging rate which denote s the amount of bought currency. The Virtual currency that is purchased is stored in
- 2. Offer based Method :** buyers' accounts. Many users are not able to buy Cryptocurrency by paying cash. This scheme helps users and gamers to earn Cryptocurrency by participating in surveys, watching advertising videos, signing up for a trial subscription and winning gaming levels. Users complete the promotional activities to get points in order to fill their accounts which are in the game platforms
- 3. Loyalty based method:** Here customers earn points and credits, from Cryptocurrency provider. Commercial companies reward customers with loyalty by redeemable points in their future purchases. These points can be gained with vouchers, discount coupons and many gifts. Customers or gamers earn Loyalty points from the provider's products after purchases or gaming.
- 4. Self-effort based method:** Decentralized cryptocurrency uses such systems such as Bitcoin. It generates virtual money in the networks like peer to peer networks. There will be number of virtual coins in Bitcoin which is equal to million units and sometimes there

will be no more. It is not generated by one or more central authority. The Bitcoins are generated and obtained by the network peers. These network providers execute special software for solving complex mathematical puzzles and they are producing virtual coins. These virtual coins are stored inside digital wallet of the end user machines so that the coins are managed and controlled by them.

5. **Exchanging Cryptocurrency for virtual items:** Spending and exchanging Cryptocurrency is followed in online gaming and social networking. Gamers spend their Cryptocurrency to improve the experience of the game by purchasing clothes and different accessories for their avatars and, weapons. Gamers purchase advanced level of the game using their virtual money known as Cryptocurrency. Many Cryptocurrency units provide payments activities with Bitcoins. Users can buy virtual items with the help of Bitcoins.
6. **Exchanging Cryptocurrency for real items:** Relation among Cryptocurrency and the real world can be bifurcated in to 3 main parts:
 - **Cryptocurrency to real money** is a system where the CryptoCurrency can be exchanged with that of real cash. This type of spending indicates the operator's system which has business connection with the original money systems. There is a fixed Exchanging rate that is set up to control the financial exchanges.
 - **Real money with BitCoin** is another type is exchanging the real money with the Bitcoin. There are many online providers who can exchange real money with the Bitcoin. This is one of the ways for circulating real money.
 - **Cryptocurrency to real goods:** Here Virtual Currency is exchanged for tangible goods. Many of the CryptoCurrency platforms allow customers to purchase clothes, perfumes and many electrical appliances by using virtual currency.

DATA COLLECTION & DISCUSSION

A pilot study has been conducted in April 2019 to collect different aspects of Cryptocurrency. The survey is conducted through face book. The survey aimed to measure a clear picture from the practical view. It explored how the participants used Cryptocurrency. In addition to that the survey also explored the participants' confidence of using Cryptocurrency dealing with security issues which are not controlled and fully regulated. This survey investigated the many people of different age groups, valid to be analyzed where the others were discarded since they were incomplete. More than half of the participants were none other than students and the students represented 77.42%. The remaining participants were unemployed.

- The survey says that spread of **Loyalty points** was wide; nearly about 80% of participants were using Loyalty practices.
- Near about 70% of the participants were using Cryptocurrency in **gaming**. Daily near about 2 million people are participating in games and they are using Cryptocurrency.
- Coming to **peer to peer networks** like Bitcoin they were not so, much successful. 90% of the people are unaware about such platforms. These are impractical projects which did not win the support of all online users.

FUTURE OF VIRTUAL CURRENCY: -Virtual currency can be very well used in social gaming, peer to peer networks e.t.c.

Even games are developed with psychological aspect so that people surely use virtual money.

CHALLENGES AND ISSUES: -There are certain challenges and security issues in Cryptocurrency forums .Below are mentioned issues and challenges:

1. **Security threats:** -Malicious user and Hackers can break the system and know the methods of virtual currency creation strategies. They will create fake virtual currency or they will steal virtual currency by just modifying balances in their accounts.
2. **Collapse concerns in Cryptocurrency systems :** Unlimited issuing of virtual money in different Communities will cause economic problems since it is not considering demand and supply. Some companies' issues unlimited currency which is leading to inflation and it is collapsing entire virtual economic system.
3. **Impact on real monetary systems:** -Many virtual Cryptocurrency systems are connected with real monetary systems; they affect the demands and supply facilities of real world monetary system. This reduces demand of real money. Here users are exchanging virtual money with real money which may fluctuate in real world monetary system.
4. **Gold farming risks:** Gold farming is very popular in China and many other developing countries. Gold farmers are players those who play in social games and they don't have proper time and skills in gaming. These people are interested in virtual money and lose the game. People many times lose their real money and entire monetary system is disturbed.
5. **Fluctuation in virtual currency value :** According to a study, it has been observed that when the craze of certain virtual community drops, that particular currency will be devalued.
6. **Money laundering :** Money laundering is one of the hurdles that is created with virtual currency as they are exchanging virtual currency with that of real money. Sometimes they are converting this real money to some other business of their own and cheat all the people who invested in virtual currency. Once this happened in Korea.
7. **Unknown identity risks:** -Many virtual currency platforms such as social games and social networks were not authenticated. So we cannot monitor financial transactions properly.
8. **Black market for Cryptocurrency:** -When gamers want to sell their accounts sometimes they are not receiving money because of inflation created by black market.

CONCLUSION:-Cryptocurrency offers effective model of payment methods that can boost companies and operators revenues very well. It is providing alternative method of payment. No need to use real money, which is enabling users to make financial activities such as transferring purchasing, selling, and exchanging easily. These methods have wide benefit but they are not secure and they are not even controlled or regulated.

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Advance Heterocyclic Molecules Of Medicinal Interest

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ABSTRACT:-The application of heterocycles provides a useful tool for modification of solubility, lipophilicity, polarity, and hydrogen bonding capacity of biologically active agents, which results in the optimization of the properties of drugs or drug candidates. The increasing presence of various heterocycles in drugs is related to advances in synthetic methodologies, such as metal-catalyzed cross-coupling and hetero-coupling reactions, that allow rapid access to a wide variety of functionalized heterocycles. On the other hand, many heterocyclic lead compounds were isolated from natural resources, and their structures were subsequently simplified and modified by medicinal chemists.

HETEROCYCLES

The heterocyclic compounds such as succinimides etc are synthesized by help of various types of components and some metals are acts as catalysts among them. The coupling synthesis which is modified like sonogashira can be easily applied for acid chlorides and also in case of alkynes. Various heterocyclic compounds are also formed by help of processes such as cyclo addition cyclo condensation and also by help of multicomponent synthesis.

Most of the pharmaceuticals are based on heterocycles. An inspection of the structures of the top selling brand name drugs in 2007 ³¹ reveals that 8 of the top 10 and 71 of the top 100 drugs contain heterocycles. This is not surprising as heterocycles have dominated medicinal chemistry from the beginning. Consistent with their importance, many U.S. patents by pharmaceutical companies involve heterocyclic compounds. For example, a search of the patent literature from 1976 to September 2008 revealed that 1729 patents issued to Pfizer, as a representative company, contain the word "pyridine." Merck has 3504 U.S. patents containing the word pyridine. This is not peculiar to pyridine, other heterocycles in medicine; include examples of indoles, quinolines, azepines, and pyrimidine in many pharmaceutically active ingredients. Selection of these five groups is arbitrary and ignores several other types of heterocycles, but it is meant to give examples of the use of heterocycles in medicine. This classification is also an oversimplification. Many pharmaceutical compounds contain more than one type of ring system. For example, the exemplified pyridine compounds used as proton pump inhibitors also contain a benzimidazole structure. Dimebon is discussed in the section on pyridines, but it also contains the indole ring. This, too, is arbitrary and not meant to imply that the pyridine structure is more important for Alzheimer's treatment than the indole structure. The United States Adopted Names Council serves health professionals by selecting non proprietary names for new drugs based on pharmacological and/or chemical relationships. One monograph ³² organizes these new drugs by chemical structure, and much of the text involves heterocycles. There are 5-membered heterocycles, 6-membered heterocycles, 5-membered heterocycles fused to one benzene ring, 6-membered heterocycles fused to one benzene ring, bicyclic-fused heterocycles, and polycyclic-fused heterocycles.

CYCLIC IMIDES

An advance research review antimicrobial finding has also been reported for 7 member heterocomplexes Danolaur et.al. also documented information about some antimicrobial activities. anticonvoulasent, anti -becricial with such complexes containing - N(R) - (Co) -

These complexes also show water repelling hydrophobic, non ionising properties inclusive of phthalamide, maleimide, N-succinimide, Glutrimide derivatives some more complexes synthesised the N aryl dialken succinimide and piperimides, morpholines, diethyl amine has also been documented for the same activities by Danolaur et.al.

Guavara — salazar J.A et al also found that acetyl cholinesterase (ACHE) work like a big part among natural substrate hydrolysis. The ACHE also works as a neurotransmitter of the fundamental which is along with peripheral nervous system. The nine synthesized N-aryl substituted succinimide derivatives also show schematically. These also examine an electronic effects of various active sites for ACHE inhibition. Some dates like setup of protein and also by setup of ligands and also by automatic docking simulation along with algorithm like conducting the tests. These experiments were also done by help of Hammett equation, the electron withdrawing groups also show resistive activity and among ACHE test 4-nitro phenyl succinimides also show good resistive action in comparison with anticholine and derivatives of hydrogen.

Mederski W. W.K.R et al also synthesizes the Para-nitro -Para- Phenyl succinimide, maleimide and also glutarimide uses the poly -phosphoric acid compound by help of reductive method for aniline by reaction of cyclic additions. The best methods which are very simple are developed for one step synthesis of 4- nitro aryl substituted cyclic imides .

Baabu, sharma and N Maeluran also give their report and according to these scientists the pyrrolidine derivatives are also synthesized by help of benzocaines, anhydride of succinic acid among benzoic acid derivative and also benzamide by using anhydrides of acetic acid, tetrahydrofuran, pyrrolidine, acetates of sodium and also ethanolic solvent. All the derivative which are synthesized these are shortlisted against activities of antimicrobial against the strain of Aspergillus N and Aspergillus F. hinda S.B et al also get ready by help of various - aryl imide derivative by using tri -fluoro acetic acid. The mixture of succinic anhydride/Phthalic anhydride/ maleic anhydride and the substituted anilines were also condensed in the presence of trifluoro acetic acid at 65-700°C during a particular time and also cyclic imides are also seen in the reaction. Scheme 05 ajjawi A.N and Hussain S.A. also pressured citraconimides with 4 -steps process and these are connecting with benzothiazoles and sulphonamide group which are provided and selected as scheme 06. The N-Ph- citraconimic acid molecule is prepared using anhydride of citraconamic acid and also with its amine derivative. Then ph-citraconimide ph-sulphonyl chlorides is also differently benzothiazole substituted species were obtained. These prepare final compounds are also shortlisted for different bacterial strains not only for gram negative strains but also for gram positive strains along with the some fungal strains, such as candida albican. According to a new scientist Wang Y.S et al also found that the glutarimide complexes also show various cyclic imides. Many types of 4,5 disubstituted -3-sulphonyl glutrimides also ethyl α,β disubstituted acrylate esters by step wise superficial (3+3) Annulations which are probably categorized .the compound pyridine - 2-one was also used as an intermediate and this compound is used for synthesizing the products. An another compound peixoto et al also reported that a small tree that is croton pullei whose distribution was also got in Guyana, French Guyana. These are also consumed for making important oils among these oils the mostly terpenoids and phenylpropanoids. These glutarimides alkaloids are separated by Julocrotine and crotonimide A&B. the glutarimide alkaloid is volatile compound and this compound show antifungal and antibacterial activities the important oil linalool is also collected by the help of leaves and stem and this oil have terpenes 23.99 to 38.71%.The phthalimide analogues also show the better activities of therapeutics which are against immune modulators. Among these are newly formed phthalimide derivatives which are like N- alkyl phthalimide and also shown by reactions which are found good activities against

rheumatoid arthritis and ulcerative colitis, psoriasis, allergic, cancer and asthma and Crohn's health problems were treated by help of tumour necrosis factor α .

Michaliska D. et al also give ideas that the glutarimides rings also show Bigger number of pharma and biological activities. Among these the cycloheximide also acts as inhibitors for protein formation and some reactions are also stopped. Some amino glutarimide also stops the steroid genesis at various locations of aromatic complexes those were really consumed in treatment of cancer of breast. The alkaloid which is extracted and collected from the holes of *S. Drummondii* and *S. Punicea* and these also show the non believable cytotoxicity against keratin which make the tumour cells as hela and these also show resistive actions against cells of leukemia in P3Z mouse in vivo. The derivatives of glutarimides also acts as gifted agent against therapy for immunity was also very useful and some treatments are done which are preventive of GVHD among allogeneic bone marrow organ shifting and also various diseases like ulcer treatment was also done in case of monocytic cell line the thalimide also stops the dormat HIV -I replication and also if reduces the necrosis of tumour- α (TNF- α) various derivatives of glutarimides also show the properties of partial antagonist among the central nervous system (CNS).

The relation among activity of structure and modeling of molecules also study among the series of imide groups and these groups were also under examination. These things which are biologically active and also show cytotoxic activities, these also show affinity for DNA these compounds are also studied in opposite to blood neurophils which is present inside periphery.

Marulasiddaiah R et al also synthesize the N substituted cyclic imides which is a series of coumarins and aza coumarins are also test the activities of antimicrobial. The series of coumarins also get ready with the help of Pechmann cyclisation reaction by use of the series of phenols by help of Bromoethyl acetoacetate was also again undergo condensation with the help of potassium carbonate which is anhydrous and form cyclic imides as shown in scheme given below. According to Obniska J et al also synthesize the spiro succinimide series by help of aromatic rings and also by the help of some compounds which contain nitrogen. The activities like anti anticonvulsant for these series were also tested by help of electroshocks and also by help of screen of phenylene tetrazole. By this way of testing some toxic properties of neutral were also found by help of test of Rotocord (TOX) way. Among these series those compounds like N (2-methoxy phenyl) and N-(4-chloro phenyl amino)-2-aza spiro [4:5] decane 1,3 dione also show the most active hindered attack at 100mg/kg dose and also can be excepted, the compounds which are remained also the anti maximal electroshocks and some dosages of subcutaneous pentalene tetrazole which is resistant for 300mg/kg dosages.

CHALCONES

Shibata. S formed more than fifty derivatives of chalcones and these also count stereochemical phototransformation by help of nuclear magnetic resonance, ultraviolet data and also shortlisted their antitumorigenic activities among vivo and vitro activities of inhibition which is in opposite to relation of phosphates with phospholipids by the use of TPA. Among these tumors which are on skin of mouse are get started by the help of (DMBA Dimethyl benzo anthracene). These derivatives were also found for antitumour promising effect of chalcones and these are started by help of a 150 microgram dose of DMBA which is applied on the shaved backs of 2 weeks and in these months the female ICR mice was also administered TPA for seventeen weeks. The tumour first time observed in around 7th week.

For the screening test the hela cells were also used for developing the antitumour agent for the screening test. Among we can say that out of these 3 and 4 dimethyl hydroxyl chalcones

shows the maximum potency for the activities of tumourgenesis.

PYRIDINES

The pyridine ring is found in many current pharmaceuticals. It is present in some proton pump inhibitors used for reducing the amount of acid produced by the stomach. These drugs can be used to treat reflux disease, ulcers or heartburn. Omeprazole, lansoprazole, pantoprazole and rabeprazole are some of the examples.

Two thiazolidinedione compounds that contain the pyridine ring and are used for diabetes are pioglitazone and rosiglitazone. Pfizer Inc. and Medivation Inc. are co-developing dimebon, which contains both a pyridine ring and an indole ring. Dimebon is in Phase III clinical trials for Alzheimer's disease.³²

Indoles

Serotonin, which is an indole, occurs naturally in the body. In most cases of migraines and serotonin levels decrease. Many migraine medications are based on the indole structure. The indol-2-one is also present in ropinirole, which is a dopamine agonist used for Parkinson's disease.

Quinoline

One class of drugs containing the quinoline ring is the quinolone antibiotics, especially the fluoroquinolone antibiotics. The first quinolone antibacterial was discovered serendipitously in the early 1960s.⁵³ Chemists at the Sterling-Winthrop laboratories in Rensselaer, NY, isolated a by-product in their synthesis of chloroquine. The fluoroquinolones are second-generation antibacterials. Ciprofloxacin and moxifloxacin kill sensitive bacteria by stopping the production of essential proteins needed by the bacteria to survive. Moxifloxacin is used in a sterile ophthalmic solution. PF-2545920 is a quinoline-based compound that as of 2008, Pfizer had entered into phase II clinical trials for treatment of schizophrenia.^{44,45}

Azepines

Perhaps the most common drugs based on 7-membered rings are the benzodiazepines. Different benzodiazepines have been used for the treatment of seizures, insomnia, depression and anxiety.

Olanzapine is a psychotropic agent that belongs to the thienobenzodiazepine class.

Olanzapine (ZYPREXA; Eli Lilly and Company) is approved by the U.S. Food and Drug Administration (FDA) for treating the symptoms of schizophrenia and acute mixed, manic episodes and maintenance treatment of bipolar disorder. Quetiapine, a dibenzothiazepine, is a mood-stabilizing medication approved by the FDA to treat both the highs and lows of bipolar disorder.

ASTELIN, (Meda Pharmaceuticals Inc.) is an antihistamine that is used as a nasal spray and provides relief for seasonal allergies.

Nucleic acid bases cytosine, thymine and uracil contain a pyrimidine ring while adenine and guanine have a purine ring. Because the five nucleic acid bases contain the pyrimidine/purine ring, perhaps it is surprising that pyrimidines are prominent in the pharmaceutically active ingredients used in a variety of therapies including antipsychotic, cholesterol reduction, cancer, erectile dysfunction, antivirals and human immunodeficiency virus (HIV).

Nanda Kumar et al. also show the formation of derivatives of pyrimidine by help of guanidine nitrate by help of hydroxide of sodium and these undergo condensation at around 100°C for 5 hours and this procedure. The synthesized complexes also show better activities of antibacteria in opposite to E. Coli, Salmonella typhi and also Aeromonas hydrophilla by help of diffusion method.

Sangeeta V and Rajendra Prasad K.J also prepare the derivatives of pyrimidines cyclohexanone and also tetracarbazole derivatives under Japp- Klingemann situation. The derivatives of cyclohexanone were also get ready by help of cyclisation process of cyclohexanone with the help of kart reagent among acedic medium. The derivatives of pyrimidines were also get ready with the help of tetracarbazole and guanidine nitrate among acetic acid .

Rathod B.G and Barot V.M also get ready some amino pyrimidine derivatives with the help of some normal refluxing method. Among this part or by help of experiment the chalcone compounds which have substitution reacts with sodium metoxide and guanidine nitrate in methanol solution and these undergo condensation and the mixture is condensed foraround 15hrs and those form amino pyrimidine . These compounds also show some antimicrobial activities and these also show some disc dissemination method.

Mehta. A and Patel A.A also dovelop the quinolinomine series through pyrimidines. The chalcone compounds were refluxed or condensed with the help of guanidine nitrate and these reactions were done among 50% sodium hydroxide solution in alcoholic conditions and these are shown some intermediate compounds by help of anhydrous K₂CO₃ catalyst and also in tetrahydrofuran .

Joshi V.D these also synthesize some new pyrimidine derivatives and also check their activities pharmaceutically. The chalcone compounds were also synthesize by help of acetophenones with carbaldehyde of furan groups by help of Claisen Schmidt Condensation. In this process the pyrimidine derivatives were formed when chalcones reacts with urea, thiourea and guanidine hydrochloride and here catalyst is NaoH 50% among alcoholic medium

PYRIMIDINES

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Imidazole

The substituted imidazole derivatives are valuable in treatment of many systemic fungal infections. Imidazoles belong to the class ofazole antifungals, which includes ketoconazole, miconazole, voriconazole and fluconazole.⁴⁶

Benzoxazole and benzothiazole

Flunoxapofen, also known as priaxim, is a chiral non-steroidal anti- inflammatory drug. Riluzole is a drug used to treat amyotrophic lateral sclerosis.

Oxadiazole

Raltegravir is antiretroviral drug used to treat HIV infection. Butalamine is a vasodilator, Fasiplon is a nonbenzodiazepine anxiolytic drug from the imidazo pyrimidine family of drugs. "2-(oxadiazolyl)- and 2 -(thiazolyl)imidazo[1,2-a] pyrimidines as agonists and inverse agonists at benzodiazepine receptors.⁵³

The heterocyclic nucleus is one of the most important integral features of a variety of natural products and medicinal agents. He terocyclic nucleus is present as a core structural component in an array of drug categories such as antimicrobial, anti- inflammatory, analgesic, antiepileptic, antiviral, antineoplastic, and antihypertensive

antimalarial, local anaesthetic, antianxiety, antidepressant antihistaminic, antioxidant, antitubercular, anti Parkinson's, antidiabetic, antiobesity and immunomodulatory agents,etc.

According to Rahaman S.A et al the derivatives of good pyrimidine chalcone were prepared like starting material and then with the help of equal amount of chalcones and hydrochloride of guanidine the mixture in ethanol and this process is done upon water bath for around five hours and the pyrimidine derivatives which are required are formed and these are shown in scheme 38. The synthesized compounds were gone under examinations for some anti- histaminic activities. According to M. I et al also prove those ring systems of benzofuran are joined along with heterocyclic compounds and these give pharmacological, medicinal and biological activities. Various derivatives of pyrazole also acts as antitumour agents and these causes various diseases like cancer in lungs, breast and also in leukemia. According to this report the benzofuran derivatives which are synthesized by pyrazole and also by many pyrimidine complexes acts as frames of backbone and these are joined with many aromatic and rings of heterocycles and these also contain many derivatives of pyrazole, quinazoline, triazine, pyrrolidine and these acts as starting material.

Perales J.B et al also found that the synthesized groups which contain amino and diamino pyrimidine compounds contain various pathogens of Trypanosoma Bruceri. The urea which is substituted benzoyl substituted and also N -phenyl amino acid the amino pyrimidines which are carbonyl substituted were shortlisted against TBB. The compounds des - aminopyrimidines were found very good permeability in opposite to TBB and non CNS and also against HAT models of mouse.

Hussain K.F et al these were also made various amino pyrimidine series. Here some chalcone compounds were taken like reference complex and these were mounted with the help of various acetophenones which are substituted in another way and other aldehydes which are aromatic. After that some guanidine nitrate was also reacted with chalcone compounds which are taken as reference among ethanolic alkaline medium that forms the pyrimidine derivatives.

Malononitriles

Bhuiyan who explored the synthesis of aryldine compounds with the help of aromatic aldehydes and in this the equivalent nitrile groups are used with the help of Knoevenagel condensation reaction by the help of ammonium acetate by help of microwave reaction among solvent free state. The reaction operating situations are performed normally and these are environment loving processes by help of volatile solvents which give a better yield that was get with the help of conventional techniques. All the complexes which are attached as side group nitro, chloro, ether and amino groups which are taken among normal conditions of reactions. These complexes were examined for their biological activities and this process is done with the help of disc diffusion system.

Andreaw T.L et al also produce dicyanofulvene derivatives by the help of mono/dimeric cyclopentadienes and malononitrile which is catalyzed with the help of TiCl_4 and pyridine in dichloromethylene which is reacted at RT which is shown in scheme 50. The structure of crystals and cyclic voltage value for formed complexes were note down by using the calomel electrode which is taken as standard in opposite to electrode of platinum metal at around 100 mv/s rate.

Vaghasiya S.J et al also prepare some good pyrazole theino pyrimidine derivatives with the help of Gewald reaction. The activities of a antimicrobial, antituberculosis of all final complexes were shortlisted against MT37rv.

According to Shaibana H and Saljoogi A.S both research scholars develop the solvents free synthesis of malononitrile and acetonitrile derivatives with the help of Knoevenagel reaction. Some active methyl and malononitrile compounds were refluxed along with derivatives of aldehyde in the presence of a base (strong) like sodium or potassium hydroxide in ethanol at around 70°C which form final derivatives. These derived compounds were purified and

undergo analysis of the data of spectra.

Lin Q. et al also form the good malononitrile derivatives also with the help of Knoevengal reaction. The chemosensor-L was made with the help of stirring the reaction mixture of malononitrile and naphthaldehyde among aqueous medium that forms the yellow product which is shown in the scheme 53. These chemosensor L was analysed with the help of UV spectra that good sensitivity of group among aqueous medium.

According to Jaber Z.K and Pooledin, who prepared the good amino pyran carbonitrile derivatives with the help of facile synthesis. The cycloalkane of bis arylidine also react with malononitrile catalyst with the help of K_2CO_3 among alcoholic situation that will form the carbonitrile which were shown in reaction. According to Elison M.N et al taken out the electrolysis of derivatives of malononitrile Wang G. and Cheng G. also prepare various substituted arylidine malononitrile among solvent less Knoevengal Condensation and these processes were taken out among microwave conditions also by simple condensing method. The aromatic ketone and malononitrile in the presence of a catalyst such as ammonium acetate in silica gel and these were irradiated among microwave by the help of boiling in oven at various time intervals at around 250 w power level and these appears in scheme 60. By the help of heating thermally both the reactant and also the catalyst by avoiding silica gel and these are condensed among aqueous solution and these get warmed in required time and at required temperature these gives the complexes which are derived finally. The reactions which are processed provides better yield and after that we can heat the compounds here many other catalysts are used like NH_4Cl , $NaOH$, Na_2CO_3 and K_2CO_3 and also the catalyst piperidine is also used under Knoevengal condensation reaction and here the ammonium acetate also provides better yield.

Shekar R.M et al also synthesize the good spiro fused pyran analogues with the help of microwave assisted solvent less facile synthesis. The derivatives of pyran are also formed with the help of these components like ninhydrin, malononitrile and also phenyl pyrazoline. 3, 3 dione which are heated among a vessel among neutral alumina catalyst for around 2 minutes and further cyclisation can be done of these pyran compounds and these are changed into the spiro pyran derivatives which are appeared in scheme 61. And the results were distinguished with the help of spectra like NMR and IR.

Shi-F et al also design the solvent free synthesis of amino, cyano pyridine compounds which are prepared by help of microwave oven for around 10 minutes that will synthesize the derivatives of pyridines such as 2 amino 3 cyano and this preparation can be seen among scheme 62. The process of green synthesis is very environment loving less time requiring and also less solvent required.

CONCLUSION:- Heterocyclic molecules are very important scaffold for the pharmaceutical and medicinal sector and newer molecules are being synthesized in a higher number continuously. However a less no of heterocyclic molecule remain successful in newer category. This specification of heterocycles make the research interest of researchers as well as scientists

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Study on Effect of Nutritional Education and Dietary Intervention on Nutritional Knowledge of College going girls in Kanpur City

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Abstract: Extension of dietary awareness is a challenging and difficult assignment due to dietary concept and prevalent practices has been comes and transfer from generation to generation whether it is wrong form or right. Various researches revealed that highly responsible causes of malnutrition and infection are prevalence of: wrong food selection, cooking practices, unhygienic kitchen practices during preparation, serving of food and dish washing etc. with unhygienic toilet practices, apart from main cause imbalance dietary management. As WHO (2015) estimated that there are about 42 percent adolescent girls affected from anaemia in all over the world due to these reasons. So that much more interactive researches are needed on gross root level to determine it's etiology in changing scenario.

The present attempt was made for imparting nutrition intervention with 100 college going girls, aged 16 – 26 years, randomly selected from different colleges of Kanpur city. The aim of this pre - post study was first, to collect the information from respondents girls and then a 7 days dietary and nutrition education package were formulated as accordance to need to aware them. The nutritional intervention were implemented to change the wrong dietary practices in positive direction. After 7 days of intervention a post test investigation was carried out. It was found that most of the respondent girls (81%) were earned right food selection at their purchasing power and nutrient conserving cooking practices, adopted good hygienic practices and increase their knowledge at significant level.

Key words:- Dietary awareness, nutrition intervention, cooking practices, food selection .

Introduction:- India is among the countries with highest prevalence of anaemia in the world. About the nutrition education, B. Shi Laxmi (2016) has stated that Nutritional education can be defined as a planned effort made to improve nutrition and health status by bringing some positive changes in behaviour of people. Various applied nutrition programme implemented by Government of India and NGOs have been made to recover and prevent different types of malnutrition prevalent in community especially for children and adolescent girls to combat anaemia. But, there are more intensive nutrition education and participatory Intervention required to gain the knowledge of target group of community and knowledge can prevent them from health problems. The nutritional education of adolescent girls is a part of creating effective nutritional and health awareness through participatory approach. So that, to prove its potential the present attempt has been made to assess the impact of suitable nutrition education programme as dietary intervention.

Methods:- Sample and sampling technique: 100 adolescent girls age 16 – 26 years, were randomly selected from different localities of Kanpur city. They had interviewed for investigation by an approved questionnaire.

Data collection: The demographic information was collected from survey method with the help of approved questionnaire. Dietary survey and observations were carried out as pretest to investigate the prevalence of wrong dietary knowledge, attitude and practices. A content was made after assessment of area of ignorance by pretest then nutrition education of each selected respondents were scheduled at their home. After 15 days of intervention post test

was made through the same tool. A set of 10 aspects of knowledge were formed and used in pre-post investigation.

Results:-After data collection and analysis the results were revealed on different parameters, which presented here in following manner:

1. Demography of respondents: -Age wise distribution of girls is present in table No. 1 indicates that maximum girls were belonged to 15 to 20 years age groups.

Table 1 Age group of adolescent girls

Age group (years)	N= 100	Percent (%)
15 - 20	19	19
20 - 25	81	81

2. Level of Knowledge and practices of respondents girls: -Nutrition knowledge becomes necessity during adolescence to have a healthy life. 42% of the girls were aware of the general aspects of nutrition, whereas only 29% percent were able to selection of good foods and aware about the nutrients. Other (39%) respondents were showed very poor performance and wrong cooking and preparation practices. The pretest of knowledge and dietary practices were assessed by scoring, on 10 selected aspects of nutrition. The mean scores of pretest were found very poor on all selected aspects. Post test was made after 7 days dietary intervention and counselling of each respondent. The comparison of pre -post test was done for impact evaluated with 't' test. The significant impact was found on 0.001 p - value at 0.05 levels on all most all selected aspect. The use of Iron utensils in cooking has been seen in practice of very few families therefore the score gained on post test and comparison found non significant. The overall score was gained 10 in pre test that increases as 40 score in post test significantly at 0.01 levels.

Table no. 2: Impact of counselling on Status of KAP of family heads

Selected Aspects of Nutritional Awareness	(Pre-test) Mean Score (out of 5 score in each aspect)	(post-test) Mean Score (out of 5 score in each aspect)	t value
On Importance of balanced diet and nutrient deficiency diseases.	3	5	5.8593*
Importance of diversification in dietary intake.	0		8.5906*
Importance of nutrient conserving cooking practices	1	5	9.3014*
Preparation of value added compensatory diet.	0	5	9.1012*
Relation between malnutrition and infection.	0	3	2.3212**
Dietary adequacy and appropriate diets for children, in health and sickness.	0	3	2.3212**
Adoption of nutrient conserving safe pre -cooking processes and cooking methods.	1	4	5.3493*
Adoption of hygienic cooking and feeding practices for the use of safe and clean foods.	1	5	9.3014*
Maintenance of sanitation. Maintenance of personal hygiene and other utensils of feeding.	1	3	2.1113**
Use of iron utensils for vegetables cooking	3	3	1.21490***
Total score (out of 50)	10	40	5.9842*

Note: * Significant at .01 level, ** Significant at .005 level, *** Non significant

3. Learning of iron rich healthy snack product preparation by using functional ingredients:-

It was also a part of intervention package implemented among the selected college going girls during Intervention to learn the process of laddu (an Indian snack) prepared with functional ingredients mix. It was observed that maximum 89% from them showing right process and using in practices.

Conclusion:-It was concluded that the nutrition intervention through nutrition education process with each respondent girls is a great preventive approach. It showed strong impact of knowledge of girls on follow up their healthy food behaviour. In this convincing process the wrong cooking, eating practices selection of food, life style and related practices can be change at gross root level. Studies shows that these wrong practices are more responsible factors of infection and malnutrition. Therefore, it has proved that nutrition intervention with right food selection is the best preventive approaches under public health concern by motivate the girls for healthy eating practices on related aspects to combat anaemia.

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Adapting to the New Teaching Strategies during the Covid Period: A Teaching Scenario in Secondary Schools

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Abstract:-The present covid -19 pandemic has shaken the world. Various sectors have seen the changes. The education sector too has witnessed significant changes. The traditional teaching is shifted to the online mode. The doors of the academic institutions are closed for the students and the students are attending classes virtually, thanks to the advancement in technology. The necessary standard operating procedure (SOP) is issued by the Education Department for the smooth functioning of the teaching and learning process in the educational institutions. The Educational Institutions are expected to follow the norms directed by the Education Department. However, given the current situation the students have the freedom to learn from the comfort of their own homes. Since the normal classroom teaching is shifted to the online virtual classroom learning the major task before the teacher is to adapt to electronic teaching environment. The teachers are only left with the alternative to learn to operate different electronic devices and become technology -savvy in order to carry out the online teaching effectively in the given scenario. Since the lockdown, keeping teachers and students engaged has become a priority, and virtual classes have proven to be beneficial in these trying times. Teachers are the next generation of COVID warriors, fighting for the country and shaping the future.

They have been trying to explore every alternative available to gain the vast knowledge of their subject through these electronic portals to impart knowledge to their students. The study shows that the teacher is mentally and social connected to subject matters, students and family life. It also reveals that the life of the teachers during this Covid -19 Pandemic has become very much hectic and challenging but they have juggled between their personal and professional life well.

Key words: - Covid, SOP, Pandemic, Portal, Gadgets, Electronic, Virtual

I. Introduction :-The education plays a vital in our life. The student -community is the building block of the world. The academic knowledge is very much important for them in their journey towards receiving knowledge and education. Due to this covid -19 pandemic the regular classrooms are shut and the online teaching mode has come into picture. The teachers have to adapt to the various strategies to cope with this pandemic situation. Given the circumstances the Teachers' groundwork is designed in such a way that it trains future teachers for the online teaching. A positive connection is established between teachers' homework of their subject matter and their presentation. In this pandemic condition, the teacher has to prepare the learning materials retaining the quality of teaching in order to understand the topics by the students from the root level. The virus, COVID -19, has

histrionically changed the lives of people around the globe, touching all facets of life, from health care to education to the budget. The teachers face major challenges in adapting to online teaching, and at the same time maintaining at least a minimum level of communication with students and associating with the students' learning and development. The crisis provides an important opportunity for education leaders to reconsider the status quo and consider new approaches to providing quality education to millions of children. During the covid-19 Scenario the major challenges encountered by them were related to network issues, as internet connectivity in the state is generally poor. Finally, there was the issue of student cooperation, autonomy, and dependency, as well as adherence to educational policies and cultural concerns. The worth of online learning is being recognized and liked by more number of institutions gradually, since it is a cost effective way to provide knowledge to a huge quantity of students simultaneously. It can create major results by not only decreasing costs, but also by improving the performance of both, the teacher and student. Online Learning offers matching interactive support that allows students to study 24/7 and work at their own pace. It deals flexible scheduling. It is available on any site, with an internet connection with high band speed and students can attend using their gadgets like mobile, computers, tablets, etc. The online teaching improves the image of institution by using technological solutions that solve real problems.

II. Review of Literature

Oman Observer, (2020) Decision No. 26/2020 authorises course completion at colleges of applied sciences through the e-learning system during the confinement period. The Ministry of Education emphasised the importance of developing an e-learning technical infrastructure for all courses in order to ensure quality, as well as readjusting internal regulations to incorporate the semester into the academic calendar.

Alvin (2020), According to a writer for Pulse of Oman, approximately 40,000 technical college students in Oman shifted to online learning during COVID-19.

Murphy, (2020) During COVID-19, online learning and teaching provided opportunities for both academic staff and students to put their technical skills to the test while also coping with the confinement situation.

Oxford Business Group, (2020) furthermore, it has warned the Ministry of Higher Education and educational institutions to update their technical infrastructure, develop staff and students, and invest more in high-tech as a century-long requirement.

Hart et al., (2019) opportunities provided by online learning and teaching are also part of the graduate attributes, as the learner has the opportunity to develop technological communication, autonomy, problem-solving, research skills, as well as analytical and critical thinking skills.

Pei and Wu, (2019) online learning has proven to be more effective than traditional education, even in medical studies, because it has the potential to improve undergraduates' knowledge and skills. As a result, it has the potential to be used in undergraduate education.

Harris et al., (2019) The learning environment encourages both students and teachers to develop responsibility and self-discipline, as well as the most important factors for education, which are trust, honesty, fairness, respect, responsibility, courage, and academic integrity.

III. Methodology:- Around 20 teachers were interviewed to find out the strategies adopted by the teachers to cope with the present covid-19 pandemic scenario and handle the teaching and learning process across the Goa State effectively. The Goa state is divided into two districts North Goa and South Goa. Goa has a population of 1.459 million. The Goa is of the most popular tourist places among the domestic, as well as international tourists. Despite being a smallest state, it provides quality education and the literacy rate too is quite high. The researcher composed the data for analysis and interpretation.

IV. Objectives of the Study

1. To Study the actions taken by Government of Goa to support online learning process during the Covid-19 pandemic.
2. To find out the various strategies adopted by the Educational Institutions during the Covid - 19 pandemic.
3. To investigate the various online tools/platforms adopted by Educational Institutions during the Covid-19 pandemic.

V. Findings and Conclusions

1. The Government of Goa has taken the key interest in training the school teachers to carry out teaching despite the existence of the covid pandemic. First the mentor was trained to train the other school teachers. The different groups were created by the department to impart the training to them using the different apps, gadgets and tools. The teachers were trained to develop attractive audio-visual aids of their subject by using these apps. This is truly a good initiative taken by the Government of Goa.
2. Digital parity means ensuring students have equal access to technology as well as the training necessary to pilot digital tools. The Digital Equity in Education team of Education department of Goa has been developing and researching digital games and tools to engage students in learning about institution, and examining if these tools have any real life impact on students. This is when digital equity comes into picture which suggests that teachers must also change their relationship with the technology.
3. The daily schedules are prepared by the institutions to allot the periods to the teachers to teach the students in online mode. Some of the institutions first carried out the survey about the availability of the gadgets with the students and accordingly the time table was prepared to teach the students by using this electronic platform. The schools' readiness for online teaching was prominently seen and it was also found that schools are at varying levels in this journey. So let's remember that while the parents are worrying about having the right hardware and set-up at home, the school management and teachers are sorting out larger and important issues. Gradually certain loop holes have been also discovered but the teaching community is always on the look out for varied, better and the latest ways of imparting knowledge.
4. The network issue is the main and most important issue in this technological environment. All teachers feel that there should be increase in the band width of the network. Due to the poor internet connection the quality of the online teaching session is affected and there is a barrier between the teacher and students as a result of which there is no proper communication.

5. In this online mode of the teaching the students' cooperation is a must. Teachers are at times helpless and there is not control on the students as well as the technological barriers during online teaching. Teachers aren't aware whether the students are physically present for the class or simply their gadgets switched on.

6. The electronic platform used by the teachers are google meet, google classroom, zoom, webex meet, Gotomeeting etc. and electronic devices used by the teachers are smart phone, laptop, desktop etc. It is revealed that the most of the teachers are using their smart phone and google meet for online teaching and learning process. The teachers are more comfortable to use the different apps on their smart phone. They feel that the google meet is the best for online teaching. By now they are techno savy in using the google meet and smart phone. The pandemic has quickly changed the concept of traditional education within a few months. Before the pandemic, technology was considered as a prime source of entertainment and its use for educational purpose was limited.

7. Time management is very crucial factor in this world of the online teaching due to the covid -19 pandemic. Teachers and teacher educators are themselves going through a transitioning phase in their professional lives. The speedy exchange to online styles of transfer in order to retain students engaged in learning has led to expressively intensified workloads for staff as they are working to shift the teaching content into the online space particularly in many schools, the move to the online space is presenting considerable hardship as teachers struggle to adapt to what might well be the "new standard" for relatively an era of time.

The pandemic has taught lessons to the students, parents and teachers. We are adapting to new situations and new jobs, and developing survival and problem solving skills. It is learnt that all of us are indulged in lifelong learning. Keeping ourselves and the students engaged has become the priority since the arrival of the unfortunate pandemic situation and virtual classes have proved to be helpful in these difficult times. The teachers too have proved to be covid warriors who are determined to shape the future of tomorrow. It is very difficult to teach remotely rather than remote working.

The teacher has to balance the time with their subject matters for the preparation for the online class with attractive audio, video, PPT, documents, text etc. and also to live the life with the family. The family life is also a very important to each one. In such situation of covid-19 pandemic the real role of teacher has increased from folders to folders.

8. During covid - 19 pandemic, most of the teachers have followed the instructions of the management of the school. In select cases, the school managements have directed the teachers to follow the norms and conditions of the management which is against the rule of the Government.

For example, even without government's order regular classes for std. VIII and IX were started. Similarly even the regular classes were started for the students of SSC and HSSC even before the government guidelines to do so creating a competition among other schools to reopen schools.

9. During covid period different policies are issued by the department from time to time for online learning and teaching. These policies humble the work and mind of the teachers. It is revealed that providing a good network, changing policies, and an excellent technological structure are urgent solutions for online learning and teaching.

10. During the covid -19 pandemic students and teachers have developed many skills. The skills inculcated by the teachers and students are confidence, problem -solving , teamwork, spirit, time management, academic integrity, leadership, trust and ethical values.

VI. Limitations of the Study:

- i. Since the study is conducted with a small group of the teachers' community the opinions of use of New Teaching Strategies should not be generalised.
- ii. The data is collected from the select teachers of only the Goa State.

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THE IMPORTANCE OF MATHEMATICS SUBJECT IN DAILY LIFE

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Abstract-Mathematics is a universal language. Mathematics is all around us, it is everywhere we go. Mathematics plays a very important role in everyone's life, without mathematics subject you cannot move an inch, important field in this universe like science engineering and technology having the base of mathematics. Open subject we can improve our self also we can use the knowledge of mathematics for developing our nation. a solid foundation in mathematics subject and science develop and hones the skills of posing hypothesis designing experiments and controls analyzing data, recognizing patterns, seeking evidence conclusion and proof, solving problem and seeking absolute while being open to new information, by studying mathematics we not only develop more engineer and scientist but also produce more citizens who can learn and think creatively and critically no matter where career fields the workforce of tomorrow in all field will demand it. If we believe that the objective of a quality education for our children is to develop the skills associated with learning and thinking we need to do much more. New and innovative learning programs need to be implemented interesting available technology to stimulate student's creativity imagination and confidence they need more hands on and effect full learning in order to spark their curiosity and enjoyment of learning. Mathematics is at the center of our culture and its history he is often confused with that philosophy. Mathematics has number of very useful benefits to our mind if will go into its study it develop our reasoning help us to have an analytical thinking quickness our mind generate practically and also it is used can be applied in the day to day life. It is almost impossible to get through a day without using mathematics in some way, because our world is full of numbers to handle and problems to solve. Studying the mathematics in everyday life provides you with the tools to make sense of it all, making life that little bit easier.

Word famous philosopher Galileo define the importance of mathematics by his definition he define 'A language in which God has written the world.

Key Words - Mathematics, conclusion and proof, recognizing patterns, solving problem, solving problem.

Introduction-The history of mathematics is nearly as old as humanity itself. Since antiquity, mathematics has been fundamental to advances in science, engineering, and philosophy. It has evolved from simple counting, measurement and calculation, and the systematic study of the shapes and motions of physical objects, through the application of abstraction, imagination and logic, to the broad, complex and often abstract discipline we know today. Mathematics as a science commenced when first someone probably Greek proved position about anything or about something without specification of definite particular things this prepositions where first enunciated by the Greek for geometry and accordingly geometry Was the great Greek mathematical science.

After the rise of geometry countries passed away before algebra made a Really effective start despite some faint anticipations by the later Greek mathematician. The idea of the "number" concept evolving gradually over time is supported by the existence of languages which preserve the distinction between "one", "two", and "many", but not of numbers larger than two. The study of mathematics for its own sake and the use of generalized mathematical theories and proofs is the key difference between Greek mathematics and those of preceding civilizations. There is probably no need for algebra in performing bookkeeping operations, but for complex bartering operations or the calculation of compound interest, a basic knowledge of arithmetic was mandatory and knowledge of algebra was very useful.

Objectives-After learning mathematics, Knowledge and understanding are fundamental to studying mathematics and form the base from which to explore concepts and develop problem-solving skills. Through knowledge and understanding students develop mathematical reasoning to make deductions and solve problems.

- Student can able to know and demonstrate understanding of the concepts from the five branches of mathematics (number, algebra, geometry and trigonometry, statistics and probability, and discrete mathematics)
- Student can able to know use appropriate mathematical concepts and skills to solve problems in both familiar and unfamiliar situations including those in real-life contexts
- Student can select and apply general rules correctly to solve problems including those in real-life contexts.

Hypothesis-:

- 1) Cognitive reflection understood as a self-regulatory skill; working memory
- 2) Student can make evaluation of the deductive and probabilistic reasoning of students. The results confirm the interaction between these variables and their predictive power on performance in mathematics.
- 3) The study also adds novel considerations related to the function and interaction of cognitive and metacognitive components involved in mathematical performance.

Mathematics and Indian civilization: mathematics began with civilization with Harappa Mohenjo-Daro and other sides of Indus valley civilization. There found an evidence of the use of "practical mathematics". Indian mathematicians gave to the world a priceless gift - the decimal system, the decimal notation

Derives its power mainly from two key strokes of genius, the concept of place-value and the notion of zero as a digit. Any of The Indian mathematical concepts were transmitted to the Middle East, Europe, China, and led to further developments that now form the foundations of many areas of mathematics

Analysis-Through the use of mathematical investigations, students are given the opportunity to apply mathematical knowledge and problem-solving techniques to investigate a problem, generate and/or analyze information, find relationships and patterns, describe these mathematically as general rules, and justify or prove them.

The subject Mathematics is essential in many fields, including engineering [natural science](#), finance and the [social sciences](#), medicine, [Applied mathematics](#) has led to entirely new mathematical disciplines, such as statistics and [game theory](#). Mathematicians engage in [pure](#)

[mathematics](#), or mathematics for its own sake, without having any application in mind. Practical applications for what began as pure mathematics are often discovered.

In the various types of field in our life Mathematics help us like In the field of Finance

Managing finances through mathematics: -Math can be helpful for balancing your budget because you will have a good understanding of how to make sure that your costs are less than the money you have. Balancing one's bank account, for example, is an important life skill that requires math in order to subtract balances. People who know math are therefore less likely to go into debt because they did not know how much money they had versus how much money they spent.

Every basic thing we use in life consists of history. That means statistics. Taking into account the past and the future, and keeping record of what has been done. Without statistics we won't know what worked and what didn't. It helps us to find balance and structure.

Develop solving skills- Math helps us have better problem:-The present age is one of skill-development and innovations. Math helps us think analytically and have better reasoning abilities. Analytical thinking refers to the ability to think critically about the world around us. Reasoning is our ability to think logically about a situation. Analytical and reasoning skills are important because they help us solve problems and look for solutions. While it may seem farfetched to think that solving the train problem above can help you solve a problem in your life, the skills that you use in framing the problem, identifying the known and unknowns, and taking steps to solve the problem can be a very important strategy that can be applied to other problems in life. One of the essential basic thing connected with our daily life that is mobile (cell phone), Chatting on the cell phone is the way of communicating for most people nowadays. It's easy, accessible and cost effective. Everyone has a cell phone and it requires a basic knowledge of skill and math. You need to know numbers and how they work, and with today's technology you can do basically everything on your mobile (cell phone), from talking and faxing to surfing the Internet. Mathematics can also help us in maintain the physical like If you have ever tried to reduce your Body Mass Index by going on a diet, you have probably realized that counting calories was a good way to monitor your food intake. There are also several equations that you can use to calculate your body fat percentage on any given day. Obviously math can play a significant role in how someone progresses towards their weight loss goals.

Importance of topic -Mathematics encourages students to reflect upon their findings and problem-solving processes. Students are encouraged to share their thinking with teachers and peers and to examine different problem-solving strategies. Critical reflection in mathematics helps students gain insight into their strengths and weaknesses as learners and to appreciate the value of errors as powerful motivators to enhance learning and understanding. Students should be able to explain whether their results make sense in the context of the problem. He can explain the importance of their findings. Also justify the degree of accuracy of their results where appropriate. Student can suggest improvements to the method when necessary.

Conclusion:-The uses of mathematics for the layperson are essentially endless. I could probably write several more hubs on how math is used in everyday life.

The application of mathematics subject found in the education sector, nature, building, technology, industry, architecture, in research sector, machinery, in the banking sector, cartography etc. There are very interesting applications in genetics and in using mathematics in the nature. Statistical methods are used in hypothesis testing in genetics. By using

mathematics, we can create statistical descriptions of quantitative relations. When we process research data, we need arithmetical diameter, scattering, standard deviation etc.

We can develop pupils' interest in subject mathematics with the help of quality education, because mathematics is a part of our daily routine and influences the quality of our life and the quality of our Professional orientation

The knowledge of Mathematics helps the man to give exact interpretation to his ideas and conclusions. It is the numerical and calculation part of human's life and knowledge. It plays a very important role in our everyday life and it has become an indispensable factor for the progress of our present day world.

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12] The Importance of Mathematics in the development of science and Technology by Juan Luis Vazquez

Effect of Incentive Spirometry in Promotion of Respiratory Function among Children with Respiratory Infections

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BACKGROUND

Acute respiratory infections (ARIs) are a substantial cause of morbidity and mortality in young children, and it is a major public health problem in both developed and developing countries. Globally, about 4.2 million Acute Lower Respiratory Infection deaths are estimated to occur among all age group, of these 1.8 million are estimated to occur among child 1-59 months. Pneumonia killed 920 136 children under the age of 5 in 2015, accounting for 16% of all deaths of children under five years old. Asthma affects approximately 8.5% of the pediatric population in the United States., or more than 7 million children.

METHODOLOGY:-The research design selected for study was Quantitative research approach and quasi-experimental one group pre -test and post -test design which was best suited to the study. This enabled the investigator to assess the effect of incentive spirometry in promotion of respiratory function among children with respiratory infections in selected Hospitals of metropolitan city. A hospital based quasi -experimental one group pre -test and post-test design study was conducted among 30 childrens with age group of 1 to 6 years old. Non probability purposive sampling technique was used to complete the study.

RESULT:-In this study most of the children were males and were in the aged between 2- 6 years. Most of them had no previous history of respiratory tract infections. Assessment of respiratory tract infections and physiological parameters indicated good improvement on day 5 post test readings after intervention of Incentive spirometry therapy. Comparison of day 1 and day 5 readings was done by unpaired T test for physiological parameters and Wilcoxon test for respiratory tract infection parameters. Both the test showed statistical significant difference between day 1 and day 5 readings, which showed effectiveness of Incentive spirometry therapy and thus proving of research Hypothesis (H₁).

CONCLUSION:-During the study it was observed that, all the subjects were very conscious and interested to do the incentive spirometry. In this study most of the children were males and were in the aged between 2 - 6 years. Most of them had no previous history of respiratory tract infections. Assessment of respiratory tract infections and physiological parameters indicated good improvement on day 5 post test readings after intervention of Incentive spirometry therapy. Comparison of day 1 and day 5 readings was done by unpaired T test for physiological parameters and Wilcoxon test for respiratory tract infection parameters. Both the test showed statistical significant difference between day 1 and day 5 readings, which showed effectiveness of Incentive spirometry therapy and thus proving of research Hypothesis (H₁).

Keywords:- Effect, Incentive Spirometry, Children, Respiratory Infections.

BACKGROUND:- Globally, about 4.2 million Acute Lower Respiratory Infection death are estimated to occur among all age group, of these 1.8 million are estimated to occur among child 1 - 59 months. Pneumonia killed 920 136 children under the age of 5 in 2015, accounting for 16% of all deaths of children under five years old. Pneumonia affects children and families everywhere, but is most prevalent in South Asia and sub-Saharan Africa. (1)

WHO/ UNICEF , committing to child survival: A promise renewed progress report (2013), describes that acute respiratory infections (ARIs) contribute to major disease associated mortality and morbidity among children under 5 years. The existing evidence on ARI are focused on the burden of illness around urban slums had hence lack representative and reliable data resulting in under estimation of ARI prevalence. Shift in the infectious disease etiology from gram positive to gram negative organism is not well - recognized by health care providers who often under utilize novel rapid diagnostic methods and/ or irrationally use antibiotics leading to increased burden of ARI. Although a few studies have claimed efficacy and impact of vaccines (Hemophilus influenza (Hib), pneumococcal vaccines) in reducing the respiratory infections, pneumonia is the single largest killer of children under five as well as the leading infectious cause of childhood mortality. It accounts for 17 % of all under - five deaths, claiming the lives of 1.1 million children under 5 in 2012. (committing to child survival: A promise Renewed. Progress report pp. 24/ UNICEF, 2013). However, the achievement of targets such as MDG -4 and recently announced GAPPD (Global Action Plan for Pneumonia and Diarrhoea) will require sizeable decreases in child, mortality particularly from acute respiratory infections (ARI) and diarrhoea – the top two major 5 killers of under – 5 children (WHO/ UNICEF , 2013). Together, they account for 30 % of all under - 5 deaths, which amounts to roughly 2.2 million death each year due to ARI. (2)

Harry B (2011), researched a prospective cohort study to determine clinical correlates and outcome of hypoxaemia in children admitted with an acute lower respiratory tract infection in Paediatric wards of Victoria Hospital at Gambia. The samples are enrolled in a randomized trial. The result showed that cyanosis, a rapid respiratory rate, grunting, head nodding, absence of a history of fever, and no spontaneous movement during examination were significantly associated with hypoxemia.(3)

Pediatric infection journal published in (2009), stated that In India, Acute respiratory disease control programme is the standard case management of acute respiratory infection and prevention of deaths due to pneumonia is now an integral part of reproductive child health programme.(4)

Baslin R et al (2007), a randomized stratified cross-sectional study was performed to evaluate the lung capacity in spirometry used to increase patients lung function on 2250 healthy Sudanese aged 7 -86 years in 2002 -05. The results showed that pulmonary functions of the spirometry group were significantly improved as compared to those of the non -training group. The study concluded that the use of spirometry has positive effects on lung (5) .

National guideline of indian academics of paediatrics (2003) mentioned that , asthma affects approximately 8.5% of the pediatric population in the United States., or more than 7 million children. In Tamil Nadu, the overall prevalence of asthma in urban and rural children was 18% and the prevalence of diagnosed asthma was 5%. Overall 16.22% of urban and 9 % of rural children in the age of 6-12 years reported breathing difficulty.(6)

Williams BG, et al (2002), conducted study to establish a relation between deaths due to ARI and all-cause deaths in children under 5 years they show that the proportion of deaths directly attributable to ARI declines from 23% to 18% and then 15% (95% confidence limits range from +/- 2% to +/- 3%) as under -5 mortality declines from 50 to 20 and then to 10/1000 per year. Much of the variability in estimates of ARI in children is shown to be inherent in the use of verbal autopsies. This analysis suggests that throughout the world 1.9 million (95% CI 1.6-2.2 million) children died from ARI in 2000, 70% of them in Africa and southeast Asia.(7)

Methods:-In this study, a quantitative research approach was used to identify and document the aspects of situation as it occurs naturally. This enabled the investigator to assess the effect of incentive spirometry in promotion of respiratory function among children with respiratory infections in selected hospitals of metropolitan city. Quasi experimental one group pre-test post test designs.

Pre-Intervention [O1]	Intervention [X]	Post-Intervention [O2]
Assessment of physiological parameters namely <ul style="list-style-type: none"> • heart rate, • respiratory rate, • oxygen saturation, • air entry, • adventitious lung sound • cough before giving intervention. 	Intervention of Incentive spirometry	Assessment of physiological parameters namely <ul style="list-style-type: none"> • heart rate, • respiratory rate, • oxygen saturation, • air entry, • adventitious lung sound • cough after giving intervention.

Methodology is used interchangeably with the term of research design. It is known as a blueprint that investigators select to carry out their research study. The methodology dealt with research approach, research design, and quasiexperimental one group pre and post test design. By using non probability purposive sampling technique investigator selected 30 samples who fulfilled inclusive and exclusive criteria, from paediatric IPD of Hospital. It is feasible setting for data collection. Tools prepared with suggestions of experts, literature review by self structured method. Feasibility of study done by pilot study on 10% sampling selected by IPD of paediatric unit of Hospital. Validity done by experts and reliability examined on 5 samples by inter rater method and data analysis by COHEN'S KAPPA formula, data collection done in Paediatric IPD at selected hospital of metropolitan city with help of self-structured multiple option questionnaire and participatory observational check list. Data analysis done by using mean, frequency, percentage, standard deviation, paired t test, Wilcoxon test. Thus this is great experience to the investigator to form research design and develop research approach.

Results:-The findings of the study were analyzed by using frequency, percentage distribution and t test and Wilcoxon test was used to assess the effect of incentive spirometry in promotion of respiratory function among children with respiratory infections.

SECTION-I

This section deals with analysis of demographic and clinical data of Children with respiratory tract infections under study. It is analyzed and presented in form of frequency and Percentage table.

Findings in relation to the demographic variable: Age of respondents shows maximum sample 11 (36.7 %) belonged to age group of 2-4 years and 23 (76.7 %) were males. Maximum 16(53.3%) of the sample were Hindu and Place of residence, focuses 15 (50%), were residents of the urban area. Majority sample 19(63.3 %) replied non vegetarian. Pneumonia and other related information shows maximum 18(60%) of the samples there was no episode of respiratory tract infections, hospitalized previously shows that majority 20(66.7%) of the sample were not admitted previously. Duration of present hospital stay which throws lights on, maximum 16(53.3%) of the sample were hospitalized and shows etiological features for respiratory tract infections, maximum sample 21 (70 %) had bacterial type of infection all 30 (100 %) sample had cough and cold followed by 27 (90%) sample had fever. Minimum samples 11(36.7%) had nasal congestion. Treatment at present in hospitalization, most of the sample 25 (83.3 %) received treatment of Bronchodilators, whether used spirometry previously. Majority of the sample 28 (93.3 %) replied negatively

Table4.1-Distribution of Children according to their demographic data Age.
n=30

Demographicdata –Age	Frequency	Percentage
2-4years	11	36.7
4-6years	8	26.7
6-8years	4	13.3
8-10years	7	23.3
Total	30	100

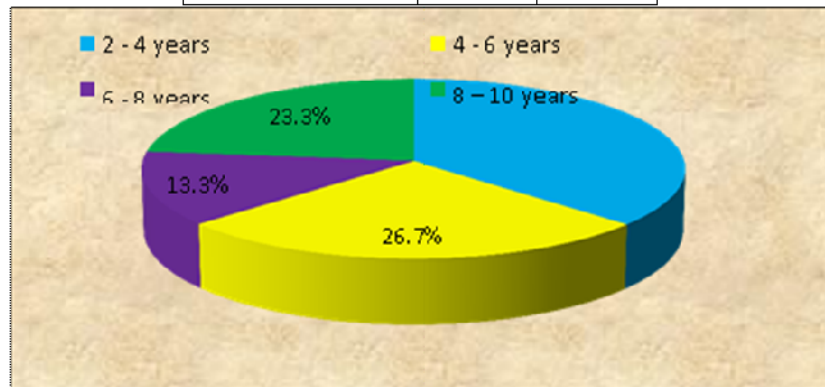
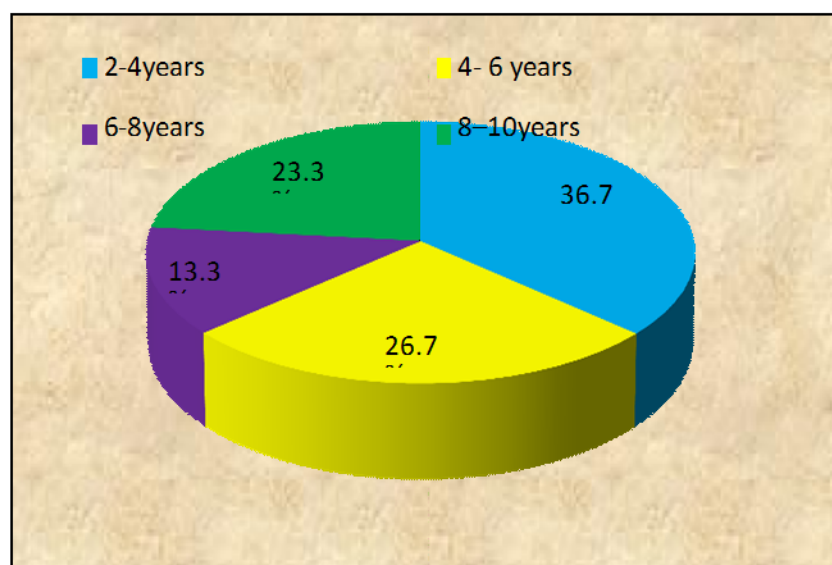


Fig.4.1:Distribution of samples according to Age

Table4.10-
DistributionofChildrenwithaccordingtotheirclinicaldatasymptomwhenchildwas
hospitalized.
n =30

Clinicaldata- washospitalized	Frequen cy	Percen tage
Coldandcough	30	100
Nasalcongestion	11	36.7
Fever	27	90.0
Runningnose	0	0
Total	30	100



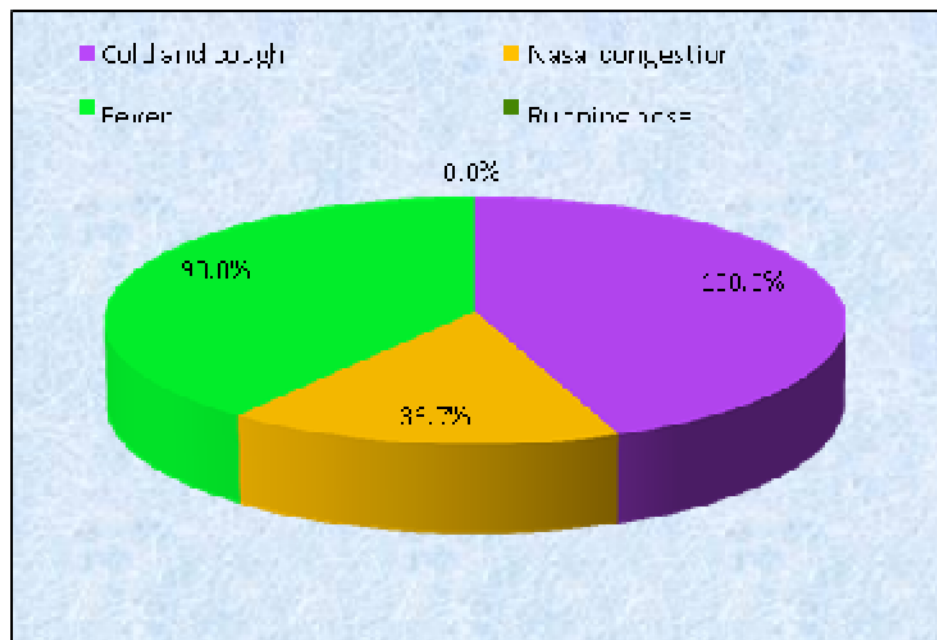


Fig.4.10: Distribution of samples according to symptom when child was hospitalized
 Table4.14-Assessment of respiratory characteristics among Children with respiratory tract infections

n =30

S r n o	Assessment	Day1 pretest		Day5 posttest	
		F	%	F	%
1	Regular	0	0	30	100
2	Tachypnea	18	60.0	0	0
3	Bradypnoea	3	10.0	0	0
4	Apnoea	0	0	0	0
5	Hyperpnoea	0	0	0	0
6	Orthopnoea	4	13.3	0	0
7	Dyspnea	5	16.7	0	0
	Total	30	100	30	100

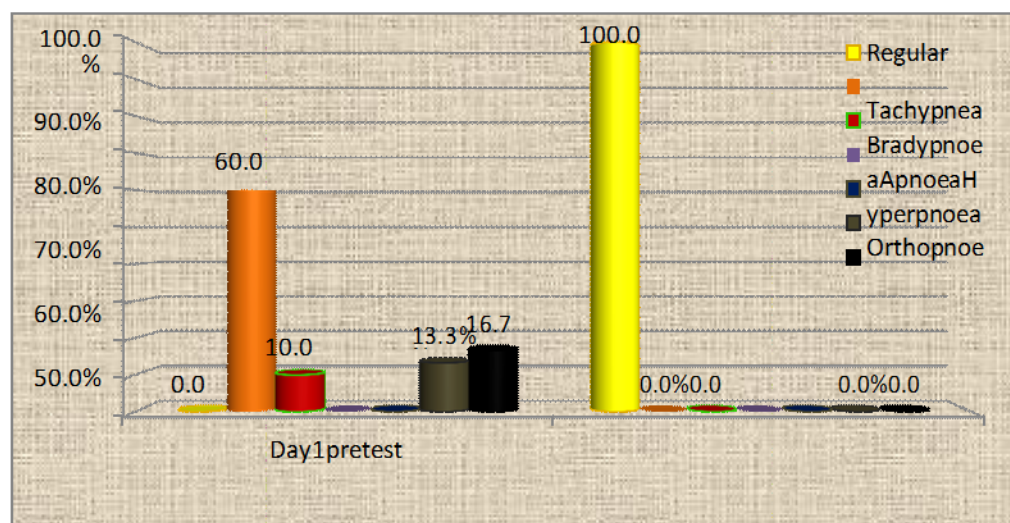


Fig.4.14Assessment of respiratory characteristics among Children.

SECTION-II

This section deals with assessment of respiratory tract infections and physiological parameters score among children with respiratory tract infections. Pulse and respiratory rate shows mean as 100.3 and 24.1 on day five. Assessment of respiratory characteristics among children with respiratory tract infections shows after incentive spirometry therapy respiration becomes regular and no other irregular respiration type is seen on day 5 post test. Day five posttest reading showed all 30(100%) sample were there in normal range of oxygen saturation and showing bilaterally equal air entry. This showed drastic improvement in oxygen saturation levels of children. Assessment of adventitious lung sound among children with respiratory tract infections shows after Incentive spirometry therapy lung sound becomes normal and there is no unnatural adventitious lung sound observed in children on day five posttest. Nil samples were there in no cough category on day one pretest which shows drastic shift to no signs of cough as 100% on day five post test.

Table 4.13 - Assessment of physiological parameters heart rate and respiratory rate among Children with respiratory tract infections n =30

Sr	Assessment of physiological parameters pulse and respiration	Day1 pre	Day5 posttest
No		Test mean	Mean
1	Pulse rate	100.9	100.3
2	Respiratory rate	27.0	24.1

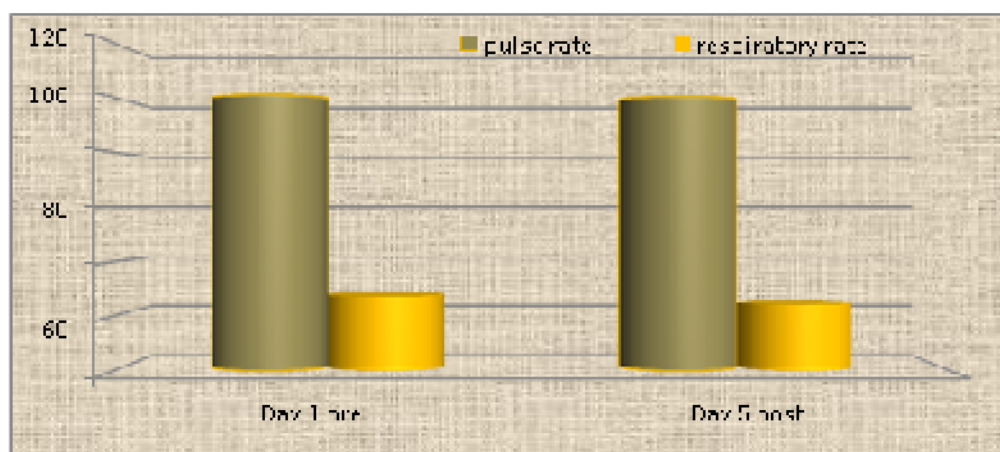


Fig.4.13 Assessment of physiological parameters heart rate and respiration

Table 4.17 - Assessment of Adventitious lung sound among Children with respiratory tract infections n =30

Sr no	Assessment	Day1 pretest		Day5 posttest	
		Mean		Mean	
		F	%	F	%
1	Normal	0	0	30	100
2	Rales	8	26.7	0	0
3	Ronchi	5	16.7	0	0
4	Wheeze	5	16.7	0	0
5	Cracklesound	8	26.7	0	0
6	Grunting	4	13.3	0	0
	Total	30	100	30	100

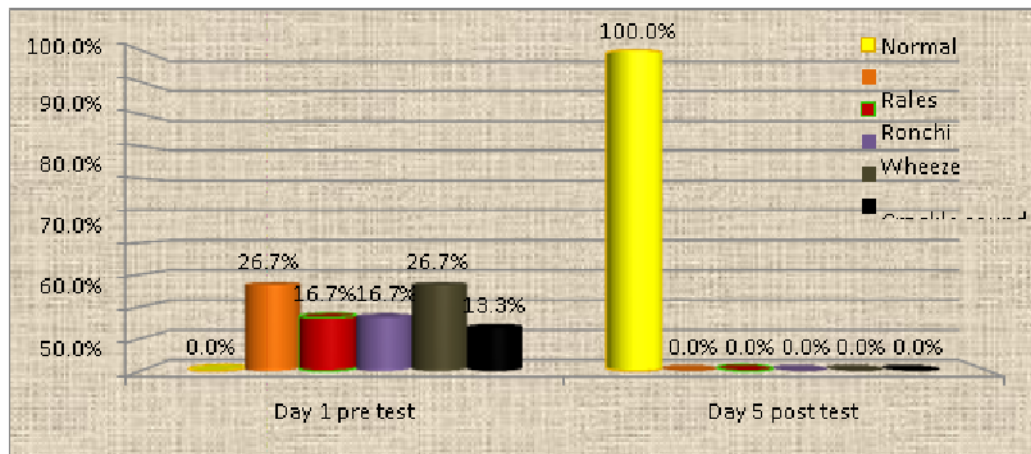


Fig.4.17 Assessment of Adventitious lung sound among Children

SECTION-III

This section deals with evaluation of the effectiveness of incentive spirometry among Children with respiratory tract infections in selected hospitals. 1. The calculated t' value is greater than the table t' value 2.05 at 0.05 level shows that there is a statistical significant difference in the mean of pre and post- test physiological parameters respiratory rate of the sample at 0.05 significant levels. Support the 99 effectiveness of incentive spirometry in the improvement of physiological parameters score among children. 2. The calculated z' value for oxygen saturation -5.11, air entry -5.29, adventitious lung sound -4.81 and Cough -4.89 which is statistically more than 1.96, hence significant. This proves that there is a significant difference in before and after intervention of Incentive spirometry for all comparison results suggests that application of Incentive spirometry is effective in improvement of respiratory function among children with respiratory infections. Both the test showed statistical significant difference between day 1 and day 5 readings, which showed effectiveness of Incentive spirometer therapy and thus proving of research Hypothesis (H1).

Table 4.19–Comparison of pre and post mean physiological parameters pulse and respiratory rates $n=30$

Physiologic parameters	Mean	S.D.	M.D.	SEM	t	P
Comparison				D	value	value
Pulse rate	Day1 pre	100.87	16.71	0.60	1.18	0.617
	Day5 post	100.27	13.64			
Respiratory Rate	Day1 pre	27.00	9.34	2.93	1.08	0.011
	Day5 post	24.07	4.47			

df=29, level of significance is 0.05 forttable value of 2.05

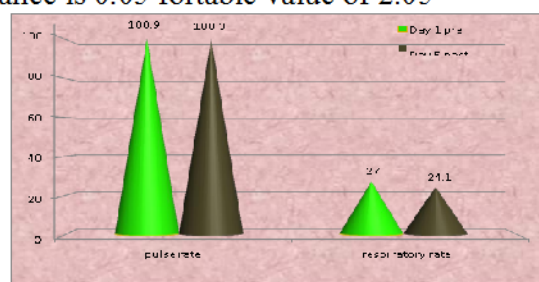


Table Fig.4.19 Comparison of physiological parameters pulse and respiration

4.20-Effectiveness of Incentive spirometry by comparing pretest day 1 and post test day 5 scores of respiratory tract infection parameters n= 30

Sr No	Respiratory tract infection parameters		Mean	W value	Z value	P Value
1	Oxygen saturation	Day 1 pretest	2.2	0	5.11	0.00
		Day 5 posttest	1.0			
2	Air entry	Day 1 pretest	1.9	0	5.29	0.00
		Day 5 posttest	1.0			
3	Adventitious Lung sound	Day 1 pretest	3.8	0	4.81	0.00
		Day 5 posttest	1.0			
4	Cough	Day 1 pretest	3.1	0	4.89	0.00
		Day 5 posttest	1.0			

Level of significance is 0.05 for z table value of 1.96

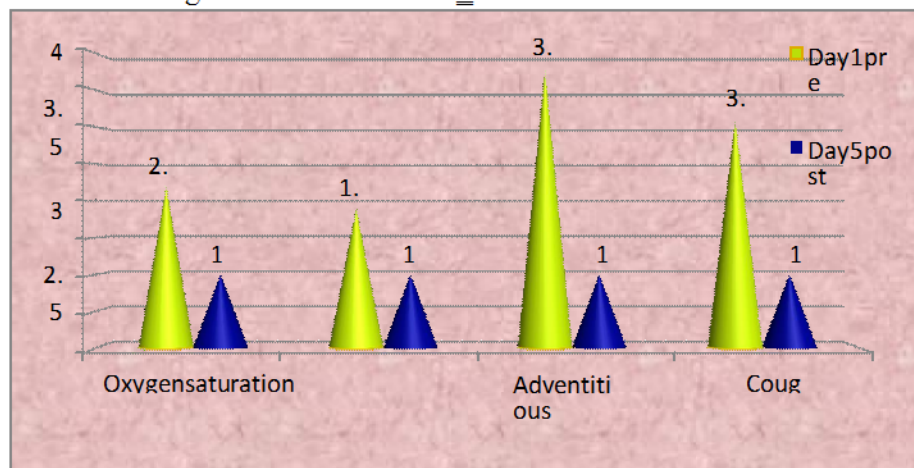


Fig.4.20 Comparison respiratory tract infection parameters

CONCLUSION:-During the study it was observed that, all the subjects were very conscious and interested to do the incentive spirometry. In this study most of the children were males and were in the aged between 2- 6 years. Most of them had no previous history of respiratory tract infections. Assessment of respiratory tract infections and physiological parameters indicated good improvement on day 5 post test readings after intervention of Incentive spirometry therapy. Comparison of day 1 and day 5 readings was done by unpaired T test for physiological parameters and Wilcoxon test for respiratory tract infection parameters. Both the test showed statistical significant difference between day 1 and day 5 readings, which showed effectiveness of Incentive spirometry therapy and thus proving of research Hypothesis (H1). This study provide guidance to the improve nurse practioner , nurse educator, nurse researcher and also nurse administrator to use incentive spirometry in their practice to improve the respiratory functions in children.

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SYSTEMATIC REVIEW ON MOBILE PHONE USAGE PATTERN & IT'S HEALTH EFFECTS ON STUDENTS

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ABSTARCT:-The public's growing usage of mobile phones has been accompanied by slew of contradicting studies concerning potential health consequences of exposure to electromagnetic fields (EMF) by phone users & station neighbours. Given vast number of mobile phone users, even little negative health impacts might have huge public health repercussions. Current state of knowledge on biological & medical impacts of cellular phone exposure is reviewed in this article. However, there are still certain gaps in this information that need to be addressed. Wi-Fi devices in mobile phones play important role in transferring information & data in order to display photos, audios, & videos, as well as transfer applications from mobile phones that produce radio waves. These waves generated by mobile devices are radiofrequency waves, & numerous studies in this field have shown that they have detrimental impact on young people's eyesight & hearing, as well as influence on nervous system caused by using phone for lengthy periods of time during day. These waves might also create greater sadness or psychological stress in youngsters & young users of mobile phones, according to these findings & studies. Furthermore, even though many studies have not proven it, it can harm brain cells & may have produced brain tumour.

KEY WORDS - Mobile Phones, Health Issue, Student Health, Review.

INTRODUCTION:-Smart Phones, despite being relatively new human invention, have become inextricable part of human life. Smart Phone is device that combines variety of sophisticated features. It allows users to keep all of their photos, memories, personal information, correspondence, health, & financial information in one location. People are spending increasing amount of time on social media, internet browsin g, e-mail, photography, personal texting, & other similar activities. People's physical & psychological well -being has been harmed as result of their constant use of Smart Phones, which has caused them to have aches & pains, lose their needed number of hou rs of sleep, become enraged & fight over minor issues, & so on.[1] urgency with which adults use mobile near young children may increase their attraction to experience of using it, as many adults allow them to hold it for play or fun, increasing likelihood that child will continue to use mobile during their growth & development & until they reach age of majority. Because as children get older, they use their phones for longer periods of time. prevalence of mobile phone use among children aged 15 - 19 years in North America ranges from 42 percent to 52 percent in 2002, & 90 percent in United Kingdom & Nordic countries. In 2007, it was 79.1 percent in Swedish children aged 7 to 14. In five nations, including Japan, Indonesia, India, Chile, & Egypt, alarming data from research published by Global system for mobile communication (GSM) revealed that children who use mobile phones are too young (7 -8) years. Since 2006, World Health Organization has emphasised importance of doing multiple studies to demonstrate influence of radio-frequency radiation on children. Goal of study is to see if there is any evidence of influence of mobile phone use on various elements of children's & teenagers' health. In India, we have similar situation with individuals from both rural & urb an regions, literate & illiterate, & of virtually all ages, which are now reliant on Smart Phones. Many studies have shown that smart phones emit specific types of rays (magnetic web) that are highly hazardous

to our eyes, & world is continuing to conduct research to prove whether smart phones are harmful to human health. Number of people utilising mobile phone in their daily activities has steadily grown. usage of mobile phone is now required for many occupations. Visual stress & musculoskeletal problem are two of health hazards associated with Visual Display activities. [2]

Mobile phone's Evidence-based Effects

Eye health

Long-term usage of mobile phone can affect eye's visual system in variety of ways, including causing eye tumours owing to increased eye temperature caused by electromagnetic radiation exposure, as well as increasing risk of cataract illness later on. In study of 450 Indian children under age of 15 in paediatric department of teaching hospital for tertiary care, Bansal & Mahajan (2018) discovered that more than third of them (35.7 percent) had ocular symptoms such as eye strain & eye watering.

Issue with your ears

Because radiation emitted from mobile phone may cause damage to sensitive parts of inner ear, people who use phones for 2-3 hours day & for period of 3-5 years may experience auditory disturbances when using phone for period of 20 minutes continuously & for longer periods, as well as people who use phones including children for 2-3 hours day & for period of 3-5 years may experience auditory disturbances. [3]

Effects on nervous system

In terms of neurology, microwave radiation released by mobile phones via Wi-Fi devices mostly impacts head area. In research conducted by Cerutti R, et al (2016), it was discovered that excessive usage of mobile devices exposes teenagers to negative consequences such as headache episodes & other somatic issues. Another study released in 2015 found link between headache & usage of cell phones among Twainish youngsters. Jo Fowler & Jan Noyes have discovered that youngsters aged 11 to 14 years in south west of England are at danger of muscular skeletal issues as result of cell phone use.

Psychiatric consequences

In recent research done in South Korea by Seong -Soo Cha & Bo -Kyung Seo, it was shown that risk group (heavy mobile users) had greater tiredness & sadness than regular user group, with these findings showing significant difference. However, study conducted on sample of Japanese young people aged 15 to 19 years found that using mobile phone for social networking services & having two-hour or longer chat with others is substantially connected to high risk of depression. Some research suggest link between mobile phone use & stress, but others refute this since relationship between two is difficult to analyse & summarise. Some studies have found that using mobile device increases stress, while others have found reverse. Average age of respondents in study of high school students was 11.97 years. Explanation for this might be that children go through variety of biological & psychological changes on daily basis throughout their lives. Two recent studies, one by Elhai, et al & other by Nassehi, et al, investigated link between anxiety & usage of mobile phones. They discovered that there is strong link between anxiety & use of mobile phones. [4]

Brian Tumors

Several medical studies have been conducted over last two decades with goal of assessing health risks associated with use of mobile phones, with some researchers suggesting that using mobile phone for long periods of time increases risk of developing brain tumours, particularly on sides of head, but these investigations did not result in overall increase in risk of cancer. It was shown that when brain tissues are exposed to radio frequency radiation generated by mobile phones for durations of 50 minutes or longer, levels of glucose metabolism are elevated. sample of mobile phone users from children & teens aged 7 to 19 years was used in multi-centre research, which indicated statistically significant risk of

acquiring brain tumour among frequent users (one call weekly & at least for six months). There was also insufficient data on long-term effects of mobile phones on brain, & it was discovered that total period from initial usage of phone to diagnosis of tumour was only five years, implying that additional study is needed to obtain more reliable results. Children are more susceptible to brain tumours than adults, which might be due to fact that children's skulls are smaller & lighter, & their brain tissues have high conductivity. As result, all of these variables contribute to reduction of radiation absorption in brain. [5]

The following are some of health effects of using smart phone constantly & for extended length of time:

The biological effects of these fields are known to differ depending on frequency & intensity of exposure. Number of cycles per second that energy wave oscillates is known as frequency. Amount of power emitted (measured in watts) by energy source & distance between individual & source determine intensity. Distinct parts of electromagnetic spectrum may have different effects on biological systems. However, we presently lack adequate scientific evidence to assess entire range of possible health risks associated with human exposure to most of nonionizing radiation spectrum, including RF.

Genotoxic effect:

For two years, rats were exposed to 1.6 GHz iridium wireless communication signal in far field. There was no indication of increased genotoxicity in rats chronically exposed to 1.6 GHz compared to sham-exposed & cage controls when bone marrow smears were evaluated for degree of genotoxicity. So yet, no study has shown that RF exposure without thermal effects causes genetic mutations or chromosomal abnormalities in mammalian cells, implying that RF cannot cause cancers. This is in contrast to findings of another research, which suggest that electromagnetic radiation's genotoxic impact is induced by non-thermal route. Although humans & animals both have many of same genes, activities of those genes may differ, & some of same cancer forms may be governed by distinct genes in people & animals. As result, certain malignancies that manifest in animals do not manifest in people, & vice versa. [6]

Effects on fertility: -Evidence suggests that mobile phone EMR has effect on human sperm motility. Long-term EMR exposure may cause behavioural or structural alterations in male germ cells, in addition to acute negative effects of EMR on sperm motility. These impacts may be noticed later in life, & they should be looked at more thoroughly. In study on effect of GSM equipment on sperm, it was discovered that duration of exposure to GSM phone waves is related to percentage of sperm cells with aberrant morphology. It was also shown that use of mobile phones is linked to drop in proportion of sperm cells in essential progressive motility in sperm.

Cancer

Because head is area of body that is exposed to most microwave radiation, numerous epidemiological studies have been done in various countries to establish if there is causal link between mobile phones & cancer. Majority of this research are focused on brain tumours, although there are also studies on salivary gland cancer, intraocular melanoma, & cancers of hemopoietic & lymphatic tissues. Some of these research discovered direct link between mobile phone usage & increased cancer risk, with risk increasing as latency & length of mobile phone use rises. Transgenic mice were exposed to pulsed 900 MHz (RF) radiation at whole-body specific absorption rate (SAR) of 0.5, 1.4, or 4.0 W/kg for 18-month carcinogenicity study. Results showed that RF radiation had no effect on incidence of any neoplastic or non-neoplastic lesion under conditions used, & thus study does not provide evidence that RF radiation has carcinogenic potential. 1. Acoustic neuroma can induce unilateral deafness, which may drive people to stop using their phones (and so lower their risks). Alternatively, deafness might lead to discovery of otherwise undiagnosed tumour,

resulting in exaggeratedly elevated risks. Our research team was first to discover continuous pattern of link between wireless phones & glioma & acoustic neuroma, but not with meningioma. For usage of mobile phones & ipsilateral glioma & acoustic neuroma, meta-analysis of all published research in this field using suitable latency time of at least 10 years supported this conclusion, while no significant connection was observed for meningioma. [7]

Effect on physical health - Excessive use of smartphones has always had detrimental impact on human existence. Excessive & persistent smartphone use has raised risk of MSDs, neck discomfort, shoulder pain, & low back pain, among other things. Musculoskeletal disorder (MSD) is term used to describe group of minor physical impairments. This word refers to group of ailments that affect muscles, bones, & joints. Severity of MSD might differ. Pain & suffering might make it difficult to go about your daily routine. MSDs are quite prevalent, & your risk rises as you get older. Early detection is crucial for reducing discomfort & perhaps preventing additional physiological harm. Forceful or repeated motions, as well as poor working posture, can develop MSDs in shoulders, arms, elbows, wrists, hands, & back. Tenderness aches & pains, tingling, stiffness, & swelling are some of symptoms. [8]

Visual Stress - Many people who struggle to read suffer from visual stress, which is phrase used to describe visual discomfort & perceptual abnormalities in written text. Prolonged Smart Phone use can cause dry eyes, painful eyes, edoema, & potentially severe conjunctiva lesions & other eye disorders, which are known as ophthalmic diseases.

Mental health effect –

Smart Phone Addiction-

Smart Phone Addiction is hazardous psychological impact that may be produced by using Smart Phone for extended period of time, comparable to consuming narcotics for extended period of time. When people are hooked to smart phones, they exhibit variety of behaviours, such as being constantly distracted by text or social media, checking their phones every 10 minutes, feeling unhappy & anxious when they are separated from their phones, & so on. Nomophobia, or dread of being without mobile phone, is term used to describe smart phone addiction. Nomophobia is frequently caused by excessive use of internet, sometimes known as online addiction condition. [9]

Other consequences include:

Lifestyle disease - It is typical to observe individuals, both male & female, spending more time on their smartphones, whether it is for internet, social media, Face book, gaming, or other purposes. This has impact on digestion, heart rate, & breathing rate. In terms of quality & time, smart phone has become new adversary to our sleep or leisure.

Problems with posture - There are variety of disorders that can be caused by incorrect postures while using smart phone for extended period of time. Long periods of time spent looking at your phone with your neck bent & arms fixed offer severe health danger. Short term consequences include pain, muscular spasms, & restlessness. Permanent or chronic illnesses may develop in long run. Cervical spondylitis, golfer's elbow, chronic dry eye syndrome, & stiffness in hands, neck, & back are just few of illnesses that can develop as result of poor phone posture. When one is absorbed in their favourite activities or chatting, traditional head down & neck bent stance should be avoided.

Tumours such as cancer & others: Several large-scale studies have discovered doubling of incidence of some brain tumours after 10 or more years of daily mobile phone use of roughly half hour. According to research, there may be relationship between cell phone use & parotid gland tumours (a salivary gland in region normally highly exposed to radiation during phone use). [10]

Children:- There is presently limited evidence on mobile phone use & health implications in children, including cancer risk. Major changes in brain development occur after second year of life, which might indicate difference in electromagnetic sensitivity between children &

adults. As result, Health Council sees no need to advise parents to limit their children's usage of cell phones. Studies on health effects of electromagnetic fields, particularly in low - frequency range, are available, with number of these studies revealing link between exposure to this sort of field & prevalence of infantile leukaemia in highest exposure category. Ninety women with simple pregnancies aged 18 -33 years & 30 full -term healthy newborn children were enrolled in research conducted in Egypt. During pregnancy & after birth, expectant mothers were exposed to EMF produced by mobile phones while in phone -dialling mode for 10 minutes. Primary results were foetal & neonatal HR & COP measurements. Before & after using cell phone, there was statistically significant rise in foetal & neonatal H R, as well as statistically significant decrease in stroke volume & COP. With increasing gestational age, all of these changes become less pronounced. [11]

Suggestions

- **Cut off Internet access after data allowance has been reached** - optimum approach is to re strict Internet access for teens. When data has reached its limit, people can modify settings & impose limitation.
- **Socialize without Smart Phones** - Encourage your family or friends to pile their phones in middle of table during dinner, & anyone touches or grabs their phone is responsible for paying for table.
- **Personal growth** - Developing "random" strategy is greatest approach to limit addiction. Device owner may set aside time for personal development, such as working out, learning, reading, or socialising (not on Face book, twitter, whatsapp & instagram etc). [12]
- When on phone, keep phone away from your body.
- Mobile phones should not be carried in pockets of your loved ones.
- Invest in phone with low SAR. Use corded headset or speakerphone mode when on phone. [13]

CONCLUSION:-Smartphones are not only beneficial to people at all times, but they may also be dangerous. world is still researching whether smart phones are hazardous to human health; numerous studies have shown that smart phones emit specific types of rays (magnetic waves) that are damaging to our eyes, but government has not enacted any rules or regulations to prevent excessive usage of smart phones. It is difficult undertaking since smart phones are not covered by BIS Standards (in India), thus pe ople are unaware of how much & how to use them. Previous research has found that extended exposure to electromagnetic radiation generated by mobile devices can cause harm to visual system & sensitive portions of ear, as well as frequent headaches, lethargy , & even depression, not to mention danger of brain tumours. Nonetheless, increased risk of mobile phone use & brain tumour, limited to heavy mobile phone use, very early life exposure, or rare subtypes of brain tumours, may be compatible with stable incidence trends at this time, necessitating further monitoring of brain tumour incidence rate time trends, particularly during childhood. Some animal & in vitro research give some evidence in support of causal link, but genotoxicity testing, both in vivo & in vitro, are still equivocal.

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Acetone Gas Sensing Studies of SnO₂ Thin Films Annealed at Different Temperatures

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Abstract:-Thin films of Tin oxide (SnO₂) were prepared by spray pyrolysis method. The as-prepared films were further annealed at 300°C, 400°C and 500°C to study the effect of annealing on the physical as well as gas sensing properties of the thin films. Gas sensing performance of annealed SnO₂ thin films was studied for different gases having different concentrations at working temperature of 200°C. Significantly, gas response changes for SnO₂ samples annealed at different temperatures, which is discussed herein.

Keywords: - Acetone Gas, Thin Film, Annealing, SnO₂

Introduction:-Monitoring and controlling the toxic gases has become a serious topic not only in industries but also in day to day life. These toxic gases are used either as process gases or generated as byproducts from vehicles, industries, etc. In concern to this, detecting the harmful gases is of prime importance and hence, research in developing gas sensors is at its forefront these days. The semiconductor metal oxide gas sensors like SnO₂, ZnO, WO₃ etc. have been studied due to their range of conducting variability and their strong response to reducing as well as oxidizing gases [1-3]. A variety of techniques have been used to deposit tin oxide (SnO₂) thin films. These include spray pyrolysis [4], ultrasonic spray pyrolysis [5], chemical vapor deposition [6], activated reactive evaporation [7], ion-beam assisted deposition [8], sputtering [9] and sol-gel [10] methods. Among these techniques, spray pyrolysis has proved to be simple, reproducible and inexpensive, as well as suitable for large area applications. Besides the simple experimental arrangement, high growth rate and mass production capability for large area coatings make them useful for industrial as well as solar cell applications. In addition, spray pyrolysis opens up the possibility to control the film morphology and particle size in the nm range. As demonstrated [11], spray pyrolysis is a versatile technique for deposition of metal oxides. Up to now, many researchers have prepared tin dioxide using chemical spray pyrolysis. For example, it has grown tin dioxide thin films [12] by spray pyrolysis on Si substrate and reported evolution of the crystallographic orientation of the film with variation of the pyrolysis temperature. It is reported [13] that the crystalline sizes in the films could be controlled over a nm range by varying the film thickness, deposition method and post-deposition annealing temperature. Therefore, in the present paper, we prepared SnO₂ thin films on the thoroughly cleaned glass substrates. The so prepared thin film samples were then heated in muffle furnace for 2 hours to allow maximum oxidation. These samples were further annealed at different temperatures (viz. 300°C, 400°C and 500°C). The gas response of the samples were studied and discussed.

Experimental:-Analytical grade chemicals were used in the project. The dihydrate of tin (II) dichloride (SnCl₂·2H₂O) (99.8%, Aldrich) was liquifying in a several of solvents. Water and alcohols appeared to be the most popular solvents. Alcoholic solvents were chosen because

they have lower surface tension and viscosity, leading to the formation of thin spray droplets as well as successful removal from the deposition chamber during the vapour phase [19]. $\text{SnCl}_2 \cdot \text{H}_2\text{O}$ (0.1 M) was liquify in distilled water to the necessary concentration in this study. To make the solution clearer, a few drops of HCl were applied. Using air as a gas flow and a glass nozzle with a 0.1 mm bore diameter, a $\text{SnCl}_2 \cdot \text{H}_2\text{O}$ (0.1 M) starting material was dispersed over a heated glass substrate, resulting in very fine droplets touching the substrate. The glass substrate was held at a constant temperature of 250°C . The spray rate was held at 5 mL/min using the air compressor regulator. Spray nozzle and substrate distance kept at 20 cm apart. The films were placed onto heater for 30 minutes at the temperature used to construct the films after the deposition reaction was done to allow enough time and temperature for recrystallization. As a result, well-adherent, whitish-colored, and uniform SnO_2 thin films were developed. The thin film samples were examined by XRD (Model -D8 Advance, Make-Bruker AXS GmbH, Berlin, Germany) using $\text{CuK}\alpha$ radiation having wavelength 1.5402 \AA . Surface morphology of the samples was analyzed by using FESEM (Model -S4800 Type II, Make-Hitachi HiTechnologies Corporation, Tokyo, Japan) and Elemental composition of the films by energy dispersive spectrophotometer (Model -XFLASH5030 Detector, Make-Bruker Nano GmbH, Berlin, Germany). The film resistance was measured in air and in the target gas atmosphere over the same range of operating temperature (i.e. from 50°C to 350°C).

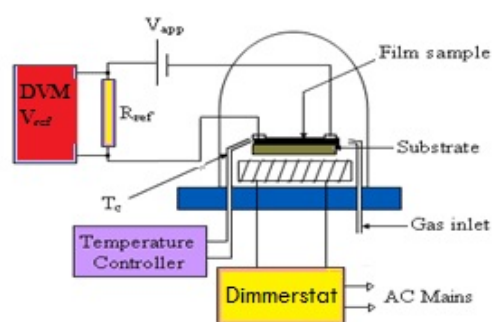


Figure Block diagram of static gas sensing system.

Result and discussion: -The gas response studies was carried out by exposing the annealed SnO_2 thin film samples surface to various gases such as acetone, CO_2 and ethanol. For each gas exposure, the change in the resistivity was observed at different operating temperatures i.e., from 50°C to 350°C . Good gas response was obtained for the samples annealed at 400°C , which were further considered for further measurements with these gases at different concentrations.

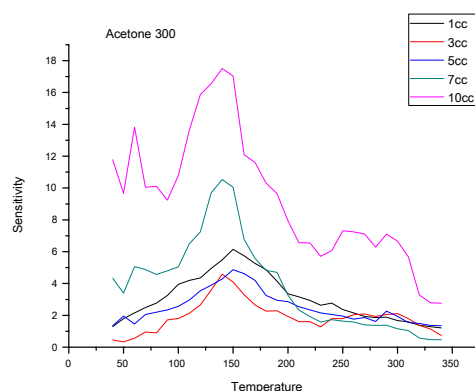


Figure2 Gas response of SnO_2 film samples annealed at 400°C (Acetone for example).

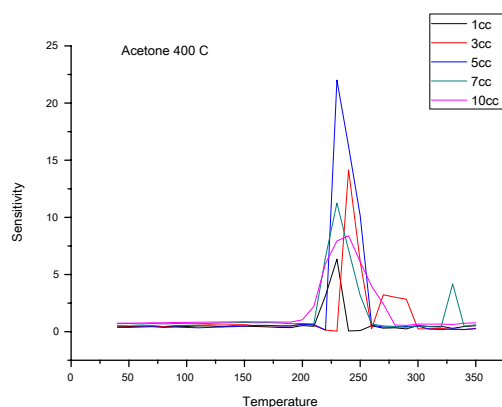


Figure 3 Gas response of SnO₂ film samples annealed at 400°C (Acetone for example).

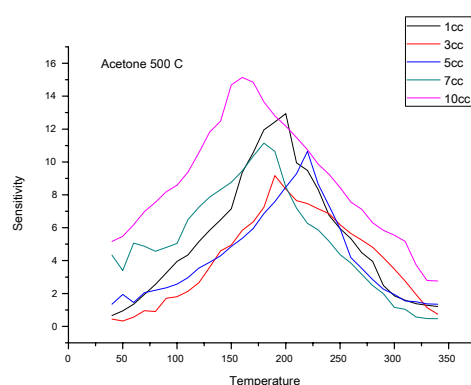


Figure 3 Gas response of SnO₂ film samples annealed at 500°C (Acetone for example).

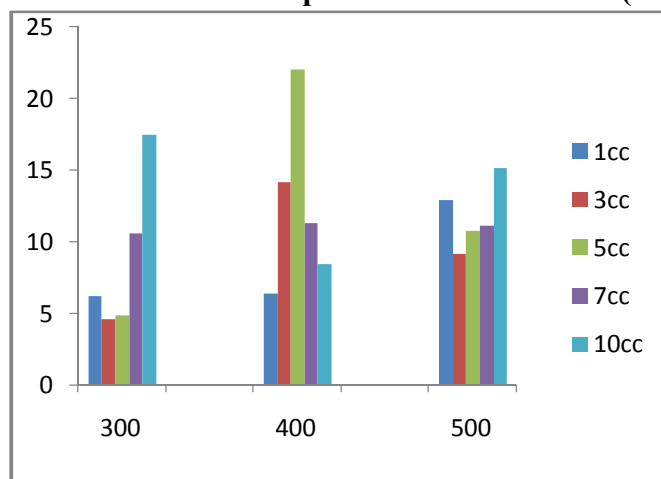


Figure 4: Histogram of the Acetone gas response for different annealed SnO₂ Thin Films

The histogram of the annealed SnO₂ samples at 300°C, 400°C and 500°C for acetone gas at different concentrations, respectively. This indicates that annealing SnO₂ has a strong effect on the gas response properties, which indirectly depends on the oxygen contents, stoichiometry and the morphological evolution of the sample with annealing.

Conclusion:-The thin film samples of tin oxide were prepared using the Spray Pyrolysis technique. SnO₂ annealed at 400°C showed good gas response towards 5 cc acetone and moreover good sensor response to all other gases, too. Hence, one can obtain the necessary

gas response of a particular gas using a single material and by just manipulating its physical properties with controlled annealing.

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A STUDY ON LATEST MODUS OPERANDI OF CYBER CRIMINALS ATTACKING ON INNOCENT VICTIMS USING VISHING (VOICE PHISHING) TECHNIQUES

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Abstract:-In today's world, almost everybody is dependent on the internet through their laptops, and even smart -phones. In the present lockdown situation due to COVID -19 pandemic, internet has become a source of survival. Infact people are using internet for their daily processes like jobs - working from home, social interactions, online education classes and above all, all the money transactions through e-Wallets (credit cards, debit cards, etc.) for buying a simple order from a bakery shop to a big commodity. The people using internet for money transactions or sharing any information are majority those who have recently started using it. In this time of complete crackdown of economy, where people are jobless, sitting ideal at home are misusing the ignorant people and further adding to the list of cybercrimes. In this paper design algorithm to improve the existing security of the online transactions we propose to include the location details of the person who initiates the transaction. The key advantage of using the location service is that we will match the location from where the transaction is initiated and the current actual location of the account holder and if the location matches only then we will allow the bank to continue the transaction otherwise the concerned security officials can be informed so that the preventive methods can be taken to prevent the further fraud.

Keywords:-VRS (Voice response system), OTP (One Time Pin), SMS (Short Message Service), VoIP (Voice over Internet Protocol)

Introduction:-Uses intimidating phone calls, VRS (Voice Response System), voicemail messages, VoIP calls to convince victims to provide personal information and to steal from the victim. Smishing may be also phishing scam conducted via Short Message Service (SMS). Guileful phishers send text messages that seem from trustworthy senders, like banks and on-line retailers. Such text messages usually contain URLs or links that trick recipients into visiting websites that transfer viruses and different sorts of malware onto the victim's mobile device. The reason why smishing attacks square measure growing in quality is as a result of SMS senders aren't documented on the far side phone numbers. Criminals generally have access to credit information, personnel documents, business secrets, password lists, virtual money, and account information. Some of the stolen information can be used to blackmail and sell stolen information to the victim himself. A very commonly occurring crime these days is sharing OTP through wake identity through VoIP calls and VRS (Voice response system).

How does work Vishing, Smishing& Phishing

The cybercriminal starts by researching their victims. This would possibly embody causing phishing emails, get contact detail from shopping malls there people write into entry, comments or suggestion registers etc. somebody can respond and supply their phone number or the criminal uses specialised software to call to multiple victims using phone number that has same area code as victims and cybercriminals grasp that individuals a lot of seemingly to answer calls from numbers that have an local area code.

Now that the cybercriminal has somebody on the phone, their next move is to charm to the victim's human instincts of trust, fear, greed, and want to assist. Counting on the vishing

theme, the criminal could use all or simply one in every of these social engineering techniques to convert the victim that they're doing the proper factor. The cybercriminal could invite checking account data, MasterCard details, and eWallet, electronic cash account and address or raise the victim to require action by transferring funds, emailing confidential work-related documents.

The law-breaking doesn't stop here currently that the cybercriminal has this data, they'll proceed to commit additional crimes as an example, the cybercriminal could drain the victim's checking account, commit fraud, and use the victim's MasterCard details to form unauthorized purchases, so email the victim's colleagues in hopes of tricking somebody into forsaking confidential work data.

History of Phishing: -The term phishing and its idea are often derived back to the 90s through America on-line (AOL). a bunch of hackers referred to as themselves as wares community and impersonated as AOL staff. This cluster is additionally referred to as the primary "phishers." They collected login credentials and private info from AOL users.

Vishing	Smishing	Phishing
Uses intimidating phone calls, VRS (Voice Response System), voicemail messages to convince victims to provide personal information and to steal from the victim.	Uses text messages to steal information and commit further cybercrimes.	Uses a range of attack methods including emails, fake websites, and text messages to steal from victims. Smishing and vishing are two types of phishing.

Review of Literature

(1) JavadPourqasem, Sina Karimi and SA Edalatpanah (2012)

In this paper authors studied the basic VOIP features, including the Implementation Issues, Implementation and the various protocols required in the implementation of VoIP. They have discussed the some factors that should be considered in implementing VOIP. The future work could be a detailed study on the Protocol Architecture of VOIP.

(2) Nicholas Chavez and Gisela Bichler (2019)

The authors say cyber theft is a costly crime, impacting those who are most vulnerable. Quelling the coming wave of cybercrime might necessitate exploration of new avenues of research such as examining offender's perspectives. With this goal in mind this paper sought to find out how the hacker community defends itself. Using the SCP framework, authors found that removing targets was the most common technique. Results also showed that 90% of all advice given could be used by those with little computer knowledge.

(3) RachnaBuch, Dhatri Ganda, Pooja Kalola, NiraliBorad (2017)

In this paper authors told about need of cyber security is mentioned and some of the impacts of the cybercrime. Cyber security is to produce interference against the crime, whereas crime is that cluster of activities made by the people by creating disturbance in network, stealing others important and private data, documents, hack bank details and accounts and transferring money to their own

(4)Ankit Kumar Jain, B.B Gupta(2017) In this paper authors design rule based framework for detection of smishing messages in Mobile environment author implement the rule based data mining classification approach in the detection of smishing messages.

(5) Jason R. C. Nurse (2018)

The author explain this paper cybercrime is one of the most prevalent and has the ability to impact people psychologically, financially, and even physically. This paper reflected on many of the crimes that cybercriminals engage in today and the reasons why these are often quite successful, from social engineering and online harassment to hacking and ransomware

attacks. A salient purpose is that cybercriminals are unit prepared, willing, and have a robust history in exploiting several human psychological desires and weaknesses.

(6)Balsing Rajput (2018)

The authors explore cybercrime modus operandi can be classified into three types as technological vulnerabilities, Weaknesses in Human mind and lacunas in the processes. The interpretation in this way covers all the methods and ways of the crime. People-Process-Technology framework perspective provides holistic perspective for classifying and understanding the modus operandi of Cyber economic crimes. All the three components of people-process and technology frameworks are equally responsible for crime. This perspective should be considered for deciding for prevention strategy.

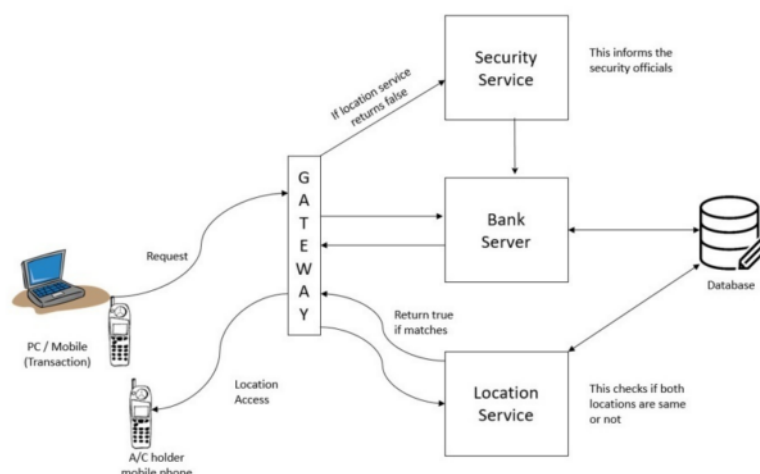
Research Methodology :- Study was done by observing and gathering information, of how cybercrime occur through latest modus operandi of cyber criminals and also forgery is being done in our society. Studying various cases, where the innocent and unaware citizens are getting victimised.

Limitation of Study

- The research study is confined to the region which is a geographical limitation on the study while collection data.
- Collection of data depends on described records of victims.

Conclusions

I am proposed algorithm, flowchart and dramatically in my research paper for secure transaction and helps to investigator to identify cybercriminals location. I am using location based proposal if cybercriminal steal user bank details and try to transfer money through online transaction and send to request related bank, mostly bank use OTP (ONE TIME PIN) for client. In this algorithm first of all bank check before generate OTP then client registered mobile location sending and receiving request location both are same if location are different then request not generate for OTP and stop transaction, ask to client request generated by you or not then verify other credential.



ALGORITHM

1. User to start the transaction enters the login credentials and request the server to log into his/her account.

2. The request reaches the GATEWAY and server asks for the location from which the request has been made and also the location of the registered mobile number along with that phone.

a) For location of device which requested transaction.

i. If the GPS of the device from which the transaction is initiated is not ON, then until the user does not switch on the GPS of that device the transaction is kept in hold mode at the server.

- If the user does not start GPS in a time of a time, 't' then the transaction gets suspended from the server and user now has to start from step 1 again.

b) For location of the registered device along with that account.

if the GPS of the device with registered mobile number is initiated is not ON, then until the user does not switch on the GPS of that device the transaction is kept in hold mode at the server.

- If the user does not start GPS in a time of a time, 't' then the transaction gets suspended from the server and user now has to start from step 1 again.

2. The location of both these are stored in different micro-service.

3. At this step the server has both the locations and we use another micro-service to compare how close both these locations are.

4. A threshold, "T" is decided and:

- a. If the distance between the two locations is less than T.
 - i. The user is given the access of the account.
- b. Otherwise
 - i. Necessary steps taken against the fraudulent transaction.

The solution that we are proposing aims at improving the security of the bank transactions done by the user keeping in view the major financial frauds done by the criminals against genuine account holder of the bank.

Overview:- To improve the existing security of the online transactions we propose to include the location details of the person who initiates the transaction. The key advantage of using the location service is that we will match the location from where the transaction is initiated and the current actual location of the account holder and if the location matches only then we will allow the bank to continue the transaction otherwise the concerned security officials can be informed so that the preventive methods can be taken to prevent the further fraud.

Prerequisite:- Whenever a person wants to make an online bank transaction, he/she has to make the GPS of that device on otherwise the transaction will not proceed ahead.

How our solution will help?

1. Let us suppose a transaction has been initiated by a user and it reaches the gateway.
2. Since the transaction has just been initiated so the gateway will redirect this transaction to the Location Service.
3. The Location Service interacts with the database of the bank and find out the details of the account holder on which the transaction has been asked to be processed by the user.

4. Once location service has all the details of the account holder, it sends the request through the Gateway to the mobile of the original account holder to access his/her location at that particular moment.
5. Now, if the GPS service of the account holder's mobile is OFF, it will be asked to make it ON.
6. If the account holder does not switch ON the GPS in a limited amount of time then the transaction will be considered as inappropriate and will be cancelled there and then preventing any further false transaction.
7. Once the account holder switches ON the GPS, its location is sent to the GATEWAY which redirects it to the Location Service which initially has asked for this location.
8. Now, Location Service has both locations, one of the actual account holder and other of the user from whom the transaction has been initiated.
The both Locations achieved are now compared and a result true/false according to the match is sent to the Location Service.
9. If the result from Location Service is true, which means the location of the two matches completely and the transaction is safe to go ahead.
10. From here the transaction is sent to Bank Server since the user who attempted the transaction is verified.
11. But, if the result from the Location Service is false, then the transaction is immediately suspended considering it as a fraud.
12. If the result is false security server send request to bank server with coordinates where request has generated and confirmed for another user credential from account holder through different sources such as telephonic etc.
13. Not only this, but the details of that false transaction including the location coordinates are shared with the security service of the bank which can decide what kind of action needs to be taken against the fraud user.

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Ultra-Wide Band Antenna Application for Ultra Smart Retail Market

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ABSTRACT:- Retail is about to get a lot smarter. Smart Retail efforts based on ultra-wideband (UWB) technology may improve consumer experience while expanding the retail environment. In the wake global pandemic, a remarkable change with respect to security, contactless and social distancing are the key practices to be followed in the public gathering place. One the unavoidable public gathering places are the super markets and shopping centers. The study proposes a design of antenna for UWB applications composed of hexagonal monopole antennas.

Keywords:- Ultra-Wide Band, Ultra Smart, Smart Shopping, Retail Market, HFSS

1. INTRODUCTION

A notable shift brought about by the 2020 coronavirus pandemic was in retail [1, 2, 3]. A study found that during the epidemic, customers in Europe's three largest e-commerce regions increased their online buying by up to 80% [4]. Retailers face substantial risks from e-commerce and the fear of viral spread. To make consumers feel secure in the "new normal," stores must modify their offers while maintaining the vital aspect of "physical retail therapy". Post-COVID shopping must be faster, simpler, and less crowded [5]. Consumers want a shopping experience that is free of queues, human interaction, and often handled surfaces. Nestle utilized RFID to fully automate their Easy Deli self-service shops in Finland [6]. The items are placed at the self-service checkout, where the RFID tags are scanned and rung up. After payment, the tags are deactivated and the consumer exits [7]. Amazon's "simply walk out" technology is also globalizing [8]. Amazon has totally eliminated queues, checkouts, and registers by utilizing powerful machine learning, computer vision, and AI [9]. Shoppers open their Amazon Go apps and begin buying. Everything the consumer picks up is instantly put to their virtual cart and charged to their Amazon account. Even though most purchasing is done online, click-and-collect services are still popular. With 275 million weekly consumers, Walmart excels in omni-channel commerce. The Walmart mobile app uses geolocation to notify shops when a client is about to pick up their orders [10]. The order gathering procedure is started in advance, making the handoff significantly faster.

The paper focus on theoretical review about smart shopping applications using UWB antennas, the paper also proposes a design of hexagonal monopole antenna with metamaterial using HFSS. The design of antenna, bandwidth and radiation pattern is discussed. The structure of the paper covers the introduction of the topic, background and theoretical review about the UWB shopping applications with further

2. BACKGROUND

How does UWB technology fit into the digital wireless technology jigsaw, and what does it offer? IEEE 802.15.4z UWB is a very accurate wireless range and sensing technology. Range-finding is done by measuring time-of-flight and angle-of-arrival between two UWB-enabled devices [11]. Radio-wise; UWB operates outside the crowded ISM band (2.4 GHz). It can comfortably coexist with other communication frequencies because it works between 6.5 and 9 GHz. It can also distinguish multipath signals generated by adjacent objects due to its 2 ns pulse length [12].

Its added protection against conventional relay station assaults, when an attacker claims to be closer to a payment terminal but is actually farther away, makes it stand out among other RF technologies [13]. Cryptography, random number generation, and other methods to avoid these attacks are explicitly described in the physical layer (PHY) circuit used to send and

receive data packets. With these features, the technology may significantly improve smart retail operations. A group of industry leaders, including NXP, founded the FiRa Consortium to promote and set standards for UWB technology [14]. By promoting interoperable UWB technology, the industry group hopes to promote wider adoption.

2.1. Secure & Contactless Entry/ Payment

Secure access methods now require users to input a code on a keypad, scan a palm print, or touch a badge on a reader to unlock a door. Correctly configured UWB opens the self-service shop door automatically and without touch as the client approaches. It can follow a shopper's approach, immediately verify security credentials, and allow them through for easy and safe entrance and departure [15]. Various settings may be changed to make the setup more efficient and avoid unnecessary opening and shutting. Not opening the door if the individual turns away from it or stands too close to it. Because UWB technology understands who is arriving and exiting a door [16]. So, the lock and unlock operations occur in reaction to motions and positions. The ability to safely pay for products without taking the phone out of the bag or pocket is a major benefit of 360-degree UWB POS systems [17]. To avoid the problems of physical keys and other access methods, easily available UWB-enabled devices such as mobile phones will become the key. Near-field communications (NFC) is an interoperable contactless technology that may be used to supplement battery power [18].

2.2. Positioning

Satellite-based GPS systems are widely used for travel and outdoor navigation. This can be difficult to achieve while inside a building or a densely populated location. Indoor GPS-like location is now possible using UWB technology [19]. This precision location to within 10 cm, even in congested, multipath signal settings, makes huge places like shopping malls, department shops, and grocery stores easier to traverse [20]. A shopper might use UWB to find a free parking space, an item on a shelf, or even a nearby free toilet. Two UWB-enabled devices may also exchange range and location data, allowing two pals with smartphones to pinpoint one other.

Predictive analytics might be used instead of computer vision to detect long checkout queues or inefficient shop layouts and stock placement [21]. Advertising displays may show personalized information and offers depending on nearby consumers, or even play a medley of their favorite tunes based on the users' data sharing preferences. Venues can tailor suggestions and ads during events [22].

2.3. Ecosystem of UWB Smart Retail

Contextual changes are urgently required in the retail business, which is constantly changing. Rather than a danger, entrepreneurs will see this as an opportunity to improve consumer offers, streamline processes, and engage customers in new and interesting ways [23].

More merchants are recognizing the need for help and direction to deploy Smart Retail solutions as smoothly and effectively as feasible. UWB solutions, for example, might assist reduce in-store shopper friction [24]. Today's Smart Retail solutions are generally hardware-dependent and tethered to a permanent location, making them less flexible and seamless [25]. As a result of UWB technology's unmatched precision and security when measuring distance to a target or calculating location, today's retail applications may become simpler and more consumer-friendly. Hopefully, it will also change how consumers purchase and pay for things in ways the business hasn't yet thought.

3. SHOPPING SYSTEMS

The proposed system is to design a hexagonal monopole antenna an application solution towards smart shopping. The purpose of this task is to design an antenna in Ansys HFSS software using Metamaterial and test a system based on UWB technology that is capable of tracking customers' movements within stores and transmitting the tracking data to a cloud server.

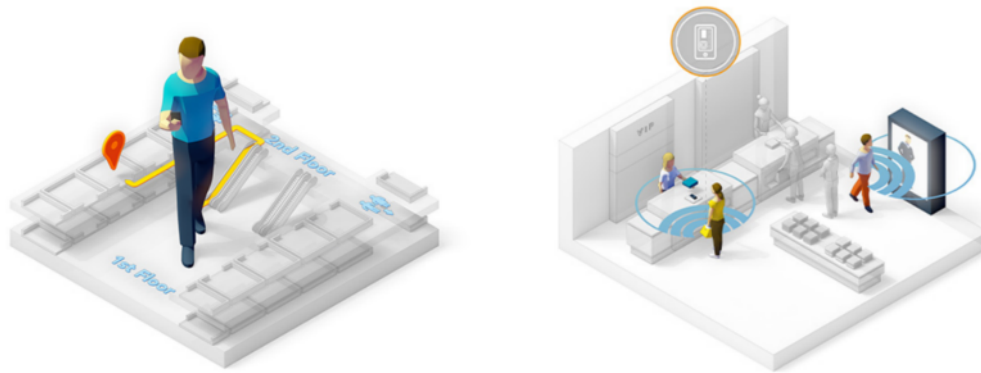


Figure 2: (A - B) Smart Shopping Application

Properly processed and stored data may be utilized to get valuable insight into consumer behaviour. UWB technology enables for indoor localization precision of 10cm and gives great autonomy for battery -powered tags [26]. The low-cost decaWAVE UWB radio module DWM1000 (IEEE802.15.4-2011 UWB compatible) has spawned a slew of European firms developing high-tech tracking solutions. This solution is readily incorporated in retail. With the appropriate placement of UWB antennas and tags on shopping carts and trolleys, it is feasible to track most consumers in real time [27]. We can obtain relevant information and indexes from reconstructing covered routes, average walking time, and halt time. These statistics tell us a little about how customers interact with the environment, which areas are the most popular, if they have trouble locating what they need, and what marketing, communication, and space design tactics work best. The system was created to gather and process this data.

4. HFSS TOOL

The design engineer has significant problems due to antenna miniaturization, restricted channel bandwidth, decreased design time, and antenna interaction with other components. HFSS overcomes these obstacles automatically, accurately, and efficiently, making it the best tool for antenna modelling. HFSS can examine fundamental performance parameters such as return loss, input impedance, gain, directivity, and a variety of polarization properties [28]. The ability to superimpose the three-dimensional far-field pattern on the antenna geometry provides the designer with important information and a clear link between the antenna and the resulting radiation pattern. Additionally, HFSS provides electric and magnetic field visualization in both the near - and far -fields, enabling design insight that is not easily obtained from measurement [29]. This knowledge enables the engineer to decide which elements of the antenna's shape are critical to its performance. When used in conjunction with Optimetrics™, HFSS enables engineers to parametrically sweep design variations in order to investigate the antenna's design space, utilizing optimization techniques such as Quasi Newton, Pattern Search, Sequential Nonlinear Programming (SNLP), Mixed Integer SNLP, and genetic algorithms. This advanced degree of analysis, which may offer design sensitivities and information on overall statistical performance and manufacturing yields, enables the engineer to confidently go to production and market.

Automatic adaptive meshing has the following advantages [30, 31]:

- The mesh size is precise and appropriate for efficient simulations, resulting in highly accurate results.
- Using this method, the mesh is consistently 'tuned' to the antenna's electrical activity.
- You do not need to be an expert at meshing, and you may concentrate on design rather than simulation setup.

- You can rapidly and affordably explore design alternatives, reducing the need for prototypes.
- Fewer prototypes, or none at all, result in significant time and cost savings associated with hardware development and testing.
- Comprehensive study of the design and its electromagnetic behaviour, which is not feasible using the standard build and test methodology.

5. ANTENNA DESIGN

The proposed Antenna's form, as well as its parameter, are depicted in the diagrams. The antenna design requires for a standard FR-4 epoxy substrate with a thickness of 1.6 mm and a permittivity of 4.4, making it cost-effective and simple to build. The three most essential things to consider while designing microstrip antennas are as follows: Resonance frequency (fr): The resonance frequency of the antenna should be carefully chosen. UWB communication systems have a frequency range of 3.1GHz to 10.6GHz. As a result, the antenna must be able to operate within this range. The resonance frequency of 5.5 GHz was chosen for the design. The dielectric constant (ϵ_r) of the substrate is: The dielectric material for our design was FR4 epoxy, which has a dielectric constant of 4.4. A substrate with a high dielectric constant was utilized to reduce the antenna's size.

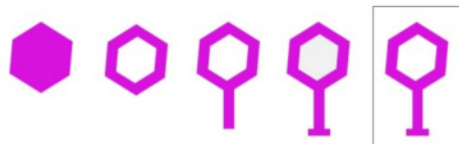


Figure 3: Geometry of Hexagonal Antenna

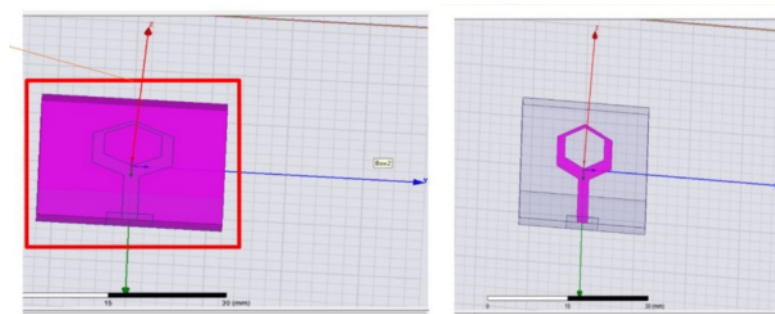


Figure 4: (a) Hexagonal Antenna Design (b) Hexagonal Antenna With FR4 - Epoxy Substrate

The picture illustrates the geometry of the proposed dual-band hexagonal monopole antenna fed by a Coplanar Waveguide (CPW). Hexagonal antenna prototypes were developed, constructed, and tested with a dielectric constant of 4.4 and a thickness of 1.6 mm. The suggested Antenna was modelled using HFSS.

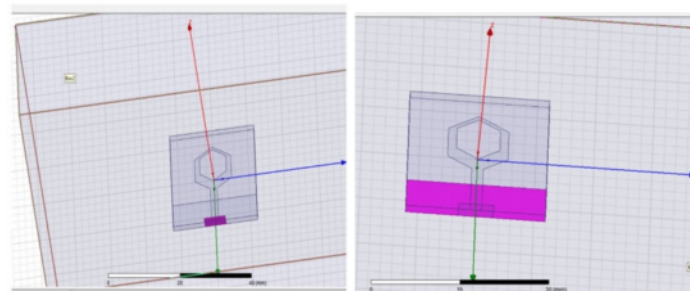


Figure 5: (a) Wave Port Antenna Connector (b) Rectangular base in the ground of Antenna

This article discusses the construct a hexagonal monopole antenna. A hexagonal monopole has a hexagonal shape with a "side=10mm". The antenna strip measures 23mm in length, with a 3mm gap between the ground planes and the antenna strip. All monopole antennas are etched on a 25mm, 24mm, or 1.6mm thick FR-4 epoxy substrate. The antenna is modelled using HFSS, and the realistic results are obtained via vector network analyzer testing.

6. CONCLUSION

UWB is intended to dramatically improve the user experience with home entertainment goods like as TVs, computers, and audio equipment. UWB supports wireless connections up to 110 Mbit/s, making it ideal for linking TVs to DVD players, PVRs, and home audio systems. UWB can wirelessly broadcast multiple high-definition videos from a set-top box to a television monitor at a data rate of 110 Mbit/sec. Other UWB-enabled home entertainment items include gaming consoles, MP3 players, PDAs, and PCs. UWB fulfils the low-power needs of portable gadgets, such as MP3 players and PDAs, and is a low-cost solution. Demand for UWB technology in consumer devices is rising due to the requirement for more precise location services and secure system access. It is an ideal solution for developing a safe and smart shopping solution which can be adapted during and post covid era. The future scope of the paper to optimize the frequency to improve the bandwidth and reduce the error noise.

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A STUDY TO DETERMINE THE EFFECT OF SOCIAL SUPPORT DURING LABOR AMONG MOTHERS AT SELECTED HOSPITALS OF INDORE

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ABSTRACT

BACKGROUND: - It is often suggested that psychological and social support and health education for women at labor for delivering a low -birth-weight infant can improve the outcomes of pregnancy, but the evidence is inconclusive. Continuous labor support offers multiple benefits for mothers and infants. The type of caregiver that is the best support person in labor has not been identified.

OBJECTIVE: - The main objective of the study is to provide support to a pregnant woman while giving birth to a child, so that the mother and infant both may be benefitted and to determine the behavior response, and to find out the labor outcomes.

METHODS - The study was done in the year 2010 -2011. A quasi -experimental research design was adopted. Purposive sampling technique was used adopted. The sample comprised of 60 parturient mothers, 30 each in control & experimental group. Observational checklist, modified multidimensional scale of perceived social support, & observed labor record were administered. The data obtained were analyzed using both descriptive & inferential statistics in terms of frequencies, percentage, mean, median standard deviation & 't' value.

RESULTS:-Findings revealed that the computed 't' value showed the significant difference between the labor outcome scores of the control and experimental group ($t_{58} = 9.17$, $p \leq 0.001$ level). And experimental group had a better labor outcome.

DISCUSSION: Experimental group had better labor outcome & having a supportive labor companion can make a major difference to both the experience & outcome of labor & birth.

CONCLUSION: Social support made positive effect on labor & safe childbirth was fruitful for the parturient mothers, babies, & for the social supporters & the researcher.

IMPLICATION FOR PRACTICE: The findings of the study have implications for nursing practice, nursing education, nursing administration & nursing research.

KEYWORDS:-Social support, effect, labor outcome, behavioral response

INTRODUCTION

Pregnancy is the gestational process comprising the growth & development with a woman of a new individual from conception through the embryonic & fetal periods to birthing environments. However, an increasing amount of social science & midwifery research has explored the issue of social support for child bearing woman & the role that the maternity services might play in offering or facilitating rather than undermining such support to women. (Bowers, B 2002). It is often suggested that psychological and social support and health education for women at labor for delivering a low-birth-weight infant can improve the outcomes of pregnancy, but the evidence is inconclusive. Continuous labor support offers multiple benefits for mothers and infants. The type of caregiver that is the best support person in labor has not been identified.

In global level the social support during labor has given the following benefits to mothers. 50% reduction in cesarean rates, 25% shorter labor, 60% reduction in epidural requests, 40% Reduction in oxytocin (pitocin) use, 30% reduction in analgesia use, 40% reduction in forceps delivery.

In local level through NRHM, new innovations have been started for reducing maternal Mortality & Morbidity by providing antenatal care, intranatal care, and postnatal care. Child

birth should be conducted only by a SBA (Skilled Birth Attender) and allowing husband or any family member as social supporter with mother so that mother and child are benefitted. The investigator noticed that a large number of women in labor room were struggling with severity of labor pain without receiving any help for their comfort. This would increase the anxiety and decrease the progress of labor. Hence there is a need for providing social support during labor; mother can be benefitted with better outcomes. Complications and maternal mortality can be reduced. Mother can be supported physically mentally and spiritually. The investigator found that the mothers who are in labor were very comfortable with labor partner than the one who had no labor partner. Hence the investigator was motivated to compare the effects of labor partner between the mothers who had labor partner and those who do not.

REVIEW LITERATURE

Fredericks.S&Weston. J, (2010) conducted a study on Support during pregnancy for women at increased risk of low birth weight babies. The Review of 17 randomized controlled trials, involving 12,264 women, found that women who received additional support during pregnancy were less likely to be admitted to the hospital for pregnancy complications and to have a caesarean birth. However, the additional support did not reduce the likelihood of giving birth too early or that the baby was smaller than expected.

Haobijam.Jodibala, Sharma Usha, David Sudesh (2010) conducted a study to assess the family support and its effect on outcome of pregnancy in terms of maternal and neonatal health. An exploratory research approach was adopted for the study. The mean percentage score of informational support was 91.08% followed by emotional support of 51.01 (90.75%), social support of 29.31(73.27%) and financial support of 27.90 (87.18%). 75% of the mothers had good outcome of maternal health. Social support serves as an environmental mediator and influences a woman's experiences and the outcome of pregnancy.

Kashanian M, Javadi F, Haghighi MM. (2010) conducted a study to evaluate the effect of continuous support provided by midwives during labor on the duration of the different stages of labor and the rate of cesarean delivery. Mean duration of the active phase of labor (167.9+/-76.3 vs. 247.7+/-101 min, $P<0.001$), second stage of labor (34.9+/-25.4 vs. 55.3+/-33.7 min, $P=0.003$), and the number of cesarean deliveries (4 vs. 12, $P=0.026$) were significantly lower in the intervention group compared with the control group. Continuous support provided by midwives during labor may reduce the duration of labor and the number of cesarean deliveries. This model of support should be available to all women

Cheryl, A. Corbett and Lynn Clark Callister (2009) conducted a study to assess the effect of Nursing Support during Labor. Findings were consistent with those of a previous study and suggest that, regardless of the pain management used; nurses supporting childbearing women must not only be competent but also use a high degree of interpersonal skills in providing nursing care.

Marie Berg and Carina Sparud -Lundin (2009) conducted a study on Experiences of professional support during pregnancy and childbirth – a qualitative study of women with type 1 diabetes. Clarity in terms of defining responsibilities is necessary during pregnancy and childbirth, both among care providers and between the woman and the care provider. Furthermore, a decision must be made concerning how to delegate, transfer or share diabetes responsibility during labour between the care providers and the parents-to-be.

Kathryn D. Scott, Phyllis H. Klaus & Marshall H. Klaus, (2009) conducted a study on the Obstetrical and Postpartum Benefits of Continuous Support during Childbirth. Later postpartum benefits include decreased symptoms of depression, improved self-esteem, exclusive breastfeeding, and increased sensitivity of the mother to her child's needs. The results of these 12 trials strongly suggest that doula support is an essential component of

childbirth. A thorough reorganization of current birth practices is in order to ensure that every woman has access to continuous emotional and physical support during labor³⁶.

Morhason-Bello IO, Adedokun BO & Ojengbede OA (2009) Social support during childbirth as a catalyst for early breastfeeding initiation for first-time Nigerian mothers. After Cox regression analysis was used to adjust for possible confounders, the outcome still showed a significant hazard ratio of 207.8 (95%CI 49.2, 878.0; $p < 0.01$) among women who were supported by a companion. Use of companions during labour is associated with earlier time to breastfeeding initiation among first-time mothers in Nigeria²¹.

Klein. R. P, Nancy Fohrell Gist, Joanne Nicholson & Kay Standley (2007) conducted a Study of Father and Nurse Support during Labor. Support behaviors directed to the woman during childbirth are documented, along with the identity of the providers in this study of 40 primiparous women. The data showed husbands were an important source of support. Of special interest was amount of touching. Fathers were 5 times as likely to touch their wives as were nurses to touch their patients. Mothers' postpartum reports centered on the husbands' behavior, indicating that the most helpful thing was the husbands' presence.

METHODOLOGY

A quasi-experimental study was done to determine the effect of social support during labor among mothers at selected hospitals of Indore. The study was done in the year 2010-2011. A quasi-experimental research design was adopted, (nonequivalent control group after only design). Purposive sampling technique was used adopted. The sample comprised of 60 parturient mothers, 30 each in control & experimental group. All the mothers were explained about the study and written consent was taken from every mother dually signed. Ethical approval and clearance was taken from the Institutional review board. Permission letter for data collection was also taken from Christian Mission Hospital Indore M.P. As this was the centre recommended for research.

Sampling:-Convenient sampling technique was used to select the sample because of the limited amount of time and availability of the subjects according to the sampling criteria. The study participants were selected based on the inclusion and exclusion. The sample size was 60. (30) in control group and (30) in experimental group.

Inclusion criteria:-All mothers with labor pain admitted in labor room with 3cm dilatation. The study is delimited to mothers in first stage of labor. Mothers who are willing to participate in the study.

Data collection:-Investigator obtained written permission from the institution and then informed the Head of the Obstetric department. The data were collected on 16th January to 28th February 2011. The purpose of the study was explained to the mothers and the attendants. Written consent was taken. The data were collected from parturient mothers and the social supporter. Socio demographic data were collected by interview schedule. Behavioral response was assessed by checklist; labor outcome assessed by questionnaire and perceived social support assessed by multidimensional scale. The mothers and the social supporter were thanked for their cooperation.

DATA ANALYSIS AND INTERPRETATION

The investigator has decided to use descriptive and inferential statistics on the basis of the objectives and hypothesis of the study. The data were plotted on master sheet and then computed. The dispersion of the experimental group score ($SD \pm 1.303$) is higher than the dispersion score of the control group I ($SD \pm 1.206$) and the computed 't' value shows that there is a significant difference between the labor outcome scores of the control and experimental group ($t_{58} = 9.17$, $p < 0.001$ level). The results suggest that there is a statistically significant difference between the underlying distributions of the labor outcome of control and experimental group.

Table: 1**(N=30+30)**

Group	Mean scores	Standard deviation	Mean difference	df	't' value
Control	9.17	±1.206	2.43	58	9.17***
Experimental	11.60	±1.303			

$p < 0.05^*$; $p < 0.01^{**}$; $p < 0.001^{***}$ df = degree of freedom

Data presented in table no. 1 shows that the mean score of the experimental group (11.60) is higher than the control group (9.17). The dispersion of the experimental group score (SD ± 1.303) is higher than the dispersion score of the control group I (SD ± 1.206) and the computed 't' value shows that there is a significant difference between the labour outcome scores of the control and experimental group ($t_{58} = 9.17$, $p < 0.001$ level). The results suggest that there is a statistically significant difference between the underlying distributions of the labor outcome of control and experimental group.

Table 2**(N = 30 + 30)**

S.No.	Experimental group		Control group	
	Frequency	Percentage%	Frequency	Percentage%
Good	21	85	3	5
Average	9	15	27	95
Poor	0	0	0	0

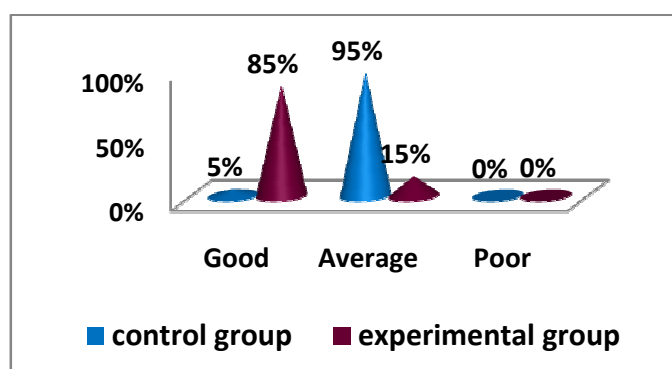


Figure 1 –Bar diagram showing the labour outcome in control and experimental group mothers

RESULTS AND DISCUSSIONS :- The results suggest that there is a statistically significant difference between the underlying distributions of the labour outcome of control and experimental group. It can be stated that as the experimental group mothers have a better outcome than the control group mothers. Findings of the study showed that majority of mothers, 24 (80%) of them belonged to the age group of 21 – 30 years and 17 (56.7%) had an average monthly income of Rs. 4001 – 6000 /month. Majority 27 (90%) belonged to joint family and most of them 23 (76.7%) were from Hindu religion. 15 (50%) of mothers had secondary school education. All 30 (100%) of them were housewives. Regarding the parity of mothers, 18 (60%) were primigravida.

Findings of the study showed social supporters had a 100% adequate score, outcome of delivery was 55.56% in the experimental group. The mean score of the experimental group (11.60) is higher than the control group (9.17). There is a significant difference between the labor outcome scores of the control and experimental group. The experimental group mother has a better outcome than the control group mothers.

CONCLUSION:- After the detailed analysis, this study leads to the following conclusions. The majority of experimental group mothers had good labor outcome and none of them had poor outcome. There was a significant difference in the labor outcome between the control and experimental mother.

RECOMMENDATION

1. A similar study may be replicated for a longer period and a larger scale.
2. A future study can be done to assess the effect of social support on outcome of labour since pregnancy to labour.
3. A similar study can be done in different setting.

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CYBER SECURITY - THE EMERGING ACTIONS TO PREVENT CYBER CRIMES IN TODAY'S DIGITAL WORLD

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ABSTRACT:-In early 1970's & 1980's, internet was not known to common peoples due to the less development of tools & technologies. As the days passed, peoples slowly knows the different developed internet tools & technologies & then in the beginning of 2000 century & onwards, with the development of Information Technology & revolution in internet, today peoples are more & more depends on digital data access through various IT technologies or applications in digital world to fulfill their regular life needs. Now, Internet plays a vital role to connect the peoples from all over the world. Digital data is a data that can be in the electronic form & also represents other forms of data using specific machine language system. It is information stored on a computer system for future use & that can be access from anywhere through internet. Digital data can be beneficial in various forms as it helps to improve online execution, save cost & time, also provides quality output as per your needs. Apart from these benefits, security (Cyber Crimes) is the major challenge for Digital data in Digital World. Cybercrime is the use of a computer as an instrument or tool to further illegal ends, such as data frauds, stealing identities of others, violating privacy etc. To overcome Cyber Crimes, Cyber Security is the emerging Actions to Prevent Cyber Crimes in Digital World for securing digital data. Cyber security is the technique of protecting computers, networks, programs and data from unauthorized access or attacks or threats that are aimed for exploitation. In this paper, we will focus on different cybercrimes on digital data & their prevention cyber security techniques for digital data in digital world.

KEYWORDS:-Internet, Digital Data, Cyber Crimes, Cyber Security, Digital World.

INTRODUCTION:-The development of computers and the expansion of the Internet tools & technologies made likely the accomplishment of large developments in all areas. Unfortunately, computers and the Internet have furthermore gives a new natural environment for computer crimes. Cybercrime (Computer Crime) is basically characterized as committing a breaching of digital data through the use of a computer or the Internet in digital world. Internet is a string of connections of computers that are attached together for

the purpose of digital data communication in all over the digital world. Unfortunately, this connectivity furthermore permits lawless individuals to broadcast digital data with other lawless individuals and with their victims through different attacks in digital world.

There are many advantages of using digital data as follows:

1. It can help you make informed decisions and improve online performance as per your needs.
2. Digital data is always clear & accurate.
3. Digital data allows you to save money & time on offline view.
4. Using digital data allows you to reach more customers automatically in all over the digital world.

Security in Computing: -Computing has become very crucial part of everyday life. So in computing individuals as well as groups and organizations are always think about digital data security, it is a term widely used today and its meaning is heavily dependent on its context, even in computing, the security area is found in various different security key terms. All these terms are interrelated and we will consider them the something. Security in computing involves several areas that sometimes are controversial by the literature. It's requires precise and formalized procedures to preventing all types of cybercrimes on digital data in digital world.

Security Services: -Security Services are planned by a protocol layer of communicating open systems. It safeguards essential and satisfactory security of systems and transmission of data. Security services are mainly divided into six principles are as Authentication, Access Control, Data Confidentiality, Data Integrity, Non-Repudiation and Availability.

Cyber Security: -Cyber security is the techniques of protecting network systems and digital data from intruders or attacks or threats that are aimed for breaching of data. Major areas covered in cyber security are as Application Security, Information Security, Disaster recovery, Network Security, System Security and Server Security.

REVIEW OF LITERATURE:

(RAGHAVAN & PARTHIBAN, 2014) , the research paper mainly explains the concept of cybercrime with their different types and also examines the growing case of cybercrimes.

(Alghamdi, I, 2020) , the research paper mainly discusses the various forms of cybercrimes worldwide and why there is a rapid growth in such types of activities and also recommends various measures and recommendations to reduce the program harmness.

(Reddy & Reddy, 2014) , this research paper mainly focuses on challenges faced by cyber security on the new technologies and also focuses on the different security ways. **(Deepa, 2014)**, this research paper mainly explains the cyber security with their challenges and also discusses the methods of attacks & avoidance with legal framework on security.

OBJECTIVES:

1. To understand the different levels of security, Authenticity, privacy, data integrity & data confidentiality in Digital World.
2. To find & categorized out different types of Cybercrimes in Digital World.
3. To ascertain the effectiveness use of cyber security as emerging actions for preventing the

Cybercrimes in Digital World.

RESEARCH METHODOLOGY:-This paper has been written on the basis of secondary data. The secondary data is simply the analysis of pre-existing data in a different ways or to answers the different questions than originally intended. Secondary data are collected through the existing research in the related field, journals, books & internet. Secondary data is a data/information that is collected by someone other user than the primary user.

SCOPE OF THE STUDY:-This paper gives the clear ideas of different levels of security, Authenticity, privacy, data integrity & data confidentiality services of security . This paper explains the different types of cybercrimes & security attacks present in Digital World. It also explains the cyber security techniques as the emerging Actions to Prevent Cyber Crimes in Digital World for securing digital data.

DISCUSSIONS:-Digital World is a world which includes all types of digital data. The digital data is of various forms like images, audios, videos, Numbers and Texts in an electronic form. This digital data can be utilized in a variety of ways as per the user requirements. Digital world faces one of the biggest problem is the cybercrime. Cybercrime is a crime that directly attacks on digital data.

The top five cybercrimes that affecting businesses and individuals are as follows:

1. Phishing Scams: - Phishing emails are messages from someone you know or a business that you trust. They are designed to trick peoples into giving up personal data or clicking on a malicious link that download s malware applications (RAGHAVAN & PARTHIBAN, 2014).

2. Website Spoofing: -Website spoofing is when a website is designed to look like an original one and deceive you into believing it is a legal site. This is done to gain your confidence, get access to your systems, steal data, steal money, or spread malware applications. Website spoofing works by replicating a legal websites with a big company's logo, branding, user interface, and even domain name in an attempt to trick users into entering their credential data like usernames and passwords. Spoofed websites are generally used in conjunction with an email that links to the illegal websites.

3. Ransomware :-Ransomware works when attackers steal something of great value of information and demand payment in exchange for its returns. For most businesses, this involves the encryption of business data. When ransomware activate its role, businesses come to a standstill, and employees cannot do their daily routine jobs.

4.Malware:-Malware is "malicious software" purposely designed to access to or damage a computer data and information. In the case of ransomware, it's designed to hold your data hostage, but that isn't the only case. There can be multiple objectives for malware – data, influence, money, information – but the result is always the same – a time consuming work. The types of malware as Viruses, Trojans, Worms, Ransomware, Botnets.

5. IOT Hacking: - The Internet of Things is a new world that has opened insights into our daily routine lives and our business processes to the World Wide Web. Whether we like it or not, all of these internet-connected object entities are collecting and exchanging data and information. As we know, data is more valuable and for that reason, hackers will look to exploit or damage any devices or tools that aggregate it.

The countermeasures for above Cybercrimes are as follows:

- To avoid **Phishing Scams cybercrime** always filter the emails for phishing threats, Update the client-side operating systems with their different system applications.
- To avoid **Website Spoofing cybercrime** always filter the incoming packets that appear to come from an internal IP address and Filter the outgoing packets.
- To avoid **Ransomware cybercrime** always use antivirus and anti-spam solutions.
- To avoid **Malware cybercrime** always use Anti-virus software on user machines and Disable scripts when previewing or viewing you e-mails.
- To avoid **IOT hacking cybercrime** always use a dedicated network infrastructure. Use a password generator to secure all types of devices with unique password s(Reddy & Reddy, 2014).

Security is the major concern in today's digital world for securing any types of digital data.

The security services are mainly divided into six principles are as follows:

- **Authentication:** The authentication service assures authorizations of communication. The message receiver should be sure that the arrived message is from the original source which it entitles to be. This principle ensures that the before carrying out any transaction the identities of both the entities is authenticated.
 - **Access Control:** This principle controls which type of users or resources should be able to access data or resources up to what extent.
 - **Data Confidentiality:** This principle specifies that only the sender and the intended receiver should be able to access the content of the message.
 - **Data Integrity:** This principle assures that the digital data received is exactly as sent by an authorized entity with also no changes.
 - **Non-Repudiation:** This principle ensures that either of the parties involved in communication do not deny sending or receiving data.
 - **Availability:** This principle states that information/resources should be available to the authorized parties at all the times.
- The common cybercrime attacks & threats with their countermeasures are shown in below figure 1

(Alghamdi, I, 2020):

- Finding a way into the network:
 - Firewalls
- Exploiting software bugs, buffer overflows:
 - Intrusion Detection Systems
- Denial of Service:
 - Ingress filtering, IDS
- TCP hijacking:
 - IPSec
- Packet sniffing:
 - Encryption (SSH, SSL, HTTPS)
- Social problems:
 - Education

Figure 1: Common Cybercrime Attacks & Threats with their Countermeasures

FINDINGS:-This study is found that today so many things we are doing through digitally to complete our tasks and needs. This digital world includes various types of digital data

and we can use that digital data as per our needs. The biggest problem for this digital world is cybercrimes from all over the world. So, from this study it is found that always used Hypertext Transfer Protocol (HTTP) with security that comes from Secure Socket Layer (SSL) Protocol for prevention of cybercrimes. Also, it is found that always use that digital data which consists of six principles/services of security and follow above suggested countermeasures for prevention of cybercrimes. For security & safety of any digital data in digital world always use that URL's starting with HTTPS is shown in below figure 2:



Figure 2: HTTP Protocol with SSL Certificate

RECOMMENDATION:-Backup your all documents and change credential data and information on a regular day to day basis. Run your system checks often and keep your system & antivirus software up-to-date. Use proper cyber security guidelines while working with the various E-Learning Platform systems. Also, follow & implement top seven cyber safety actions for securing your credentials data are shown in below figure 3 (Deepa, 2014):



Figure 3: Top Seven Cyber-Safety Actions

CONCLUSION:-Cybercrimes and Cyber security awareness is more important now in our all over the global level. Cyber Crimes & Attacks to personal credential information are increasing and identities are getting stolen every -day in Digital World. Making individuals aware of this is the first step. The second step is giving individuals the tools and technologies knowledge that they need to protect their personal credential information themselves from cybercrimes. Also, implement above countermeasures for preventing of cybercrimes to give security for our digital data in digital world. It is conclude that follow above six principles of security to give more security to our digital data. Finally, Focusing more on the cyber security area in higher education curriculum is a key factor for the safety of our world in future. We are now aware that this is an issue; it is our moral responsibility to make our world aware as well.

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Data Mining In Assistive Technology for Learning Disabilities

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Abstract

To analyze the large dataset in Assistive Technology in order to generate new information. To process the raw data into useful information. Assistive Technology has helped individuals with disable to perform functions that might otherwise be difficult or impossible. To determine the various software and hardware which are fulfilling the needs of people with learning disabilities? ICT has played a significant role by providing the opportunity to disable students and bridging the gap between the disable and others. The aim of this paper is to study the current scenario of assistive technology facilities available and used by the students in the Vasai – Virar area Mumbai India.

Keywords

Data Mining, Learning Disability, Assistive Software, Assistive Hardware.

Introduction

Data mining is the process of extracting the fruitful information from the huge database. In recent years there is huge increase in the assistive technology data set. Assistive technology plays a crucial role in the life of disable. Assistive technology covers an array of device, which are helpful for the students with disability to carry out day to day activities. ICT have become the most suitable tool, in the field of education, to enhance independence and equal opportunities for all. ICTs enable disabled students to provide access to the curriculum and support learning and help disabled trainers and promote their skills. ICT is providing opportunities and making life easier for students with disabilities by introducing them to innovations in quick succession. Students with disabilities are now able to communicate with each other and learn through tools of Assistive Technology (AT) and Information and Communication Technologies (ICTs). (*ICTs and Assistive Technology in Education*, n.d.).

Learning Disability (LD)

Learning Disability is a disorder that affects the ability to understand the information and to learn the concepts. A learning disability is defined by the Department of Health as a “significant reduced ability to understand new or complex information, to learn new skills (impaired intelligence), with a reduced ability to cope independently (impaired social functioning), which started before adulthood”. There are three main types of learning disabilities 1. Reading disabilities (dyslexia), 2. Writing disabilities (dysgraphia) 3. Math disabilities (dyscalculia). In children learning disability is a neurological defect which cause problem for sending, receiving and processing data. Below are few characteristics of the children's with disabilities:

- short attention span,
- poor memory,
- difficulty following directions,
- inability to discriminate between/among letters, numerals, or sounds,
- poor reading and/or writing ability,
- eye-hand coordination problems; poorly coordinated,
- difficulties with sequencing, and/or
- disorganization and other sensory difficulties. (*Symptoms of Learning Disabilities – Learning Disabilities Association of America*, n.d.)

Dyslexia

Dyslexia is a type of reading disorder in which the student fails to recognize and comprehend written words. It's a condition that makes it challenging to understand text or speech.

Dyslexia is a severe impairment in the ability to read, despite normal intelligence, normal opportunities to read, and an adequate home environment. Although the precise organic cause of dyslexia is unknown, it is generally thought that this problem results from difficulties with phonological awareness—a lack of understanding of the rules that govern the correspondence between specific sounds and certain letters that make up words.

Dysgraphia

Dysgraphia is a condition which makes it hard to write. Some people with dysgraphia struggle spoken language to hold a writing utensil comfortably while others lack the spatial awareness needed to produce legible text. (“The Top 5 Most Common Learning Disabilities & Their Symptoms,” 2020).

Dyscalculia

Dyscalculia refers to specific learning disorder that affects child ability to grow in the region of math. Due to which they are unable to perform numeric operations. It can be associated with attention deficit hyperactivity disorder (ADHD) -- up to 60% of people who have ADHD also have a learning disorder, like dyscalculia.(Miller, n.d.) . As Mathematics has large building block, children with dyscalculia can fall behind and struggle to catch up for years.

ADHD

Attention-Deficit/Hyperactivity Disorder (ADHD) is disorder which makes it difficult for a child to concentrate and control his activity; which leads to misbehaviour, mood swing, disturbing other students in class room, unable to sit still.

Dyspraxia

Dyspraxia is a brain -based motor disorder. It affects fine and gross motor skills, motor planning, and coordination. (*Dyspraxia*, 2019). Child with this disorder may seem to have poor hand-eye coordination, abnormal postures, lack of confidence, poor learning new skills.

Literature Review

Assistive Software and Hardware has increased the scope for students with learning disability. The list of the assistive software and hardware is huge. As the technology advances, day by day students with LD are able to interact with very effective and efficient system. Especially in this paper I am focusing on the three main types of disability i.e. dyslexia (reading), dysgraphia (writing) and math disabilities (dyscalculia); and assistive software and hardware required for the same.

The information gathered for this research was from both primary and the secondary sources. The primary source data was collected by questionnaire using Google form, and the secondary source data was gathered through Journals, Publications, Websites, and Articles.

Assistive Software and Hardware

Assistive technology (AT) includes broad range of assistive software and hardware tools. When students with learning disability get access to such kind of technology it makes them more productive and informative and most importantly it facilitate independence. The figure below demonstrate the assistive software and hardware used by students with LD. which has made much more difference in their special life and giving them opportunity to stand like a normal person.

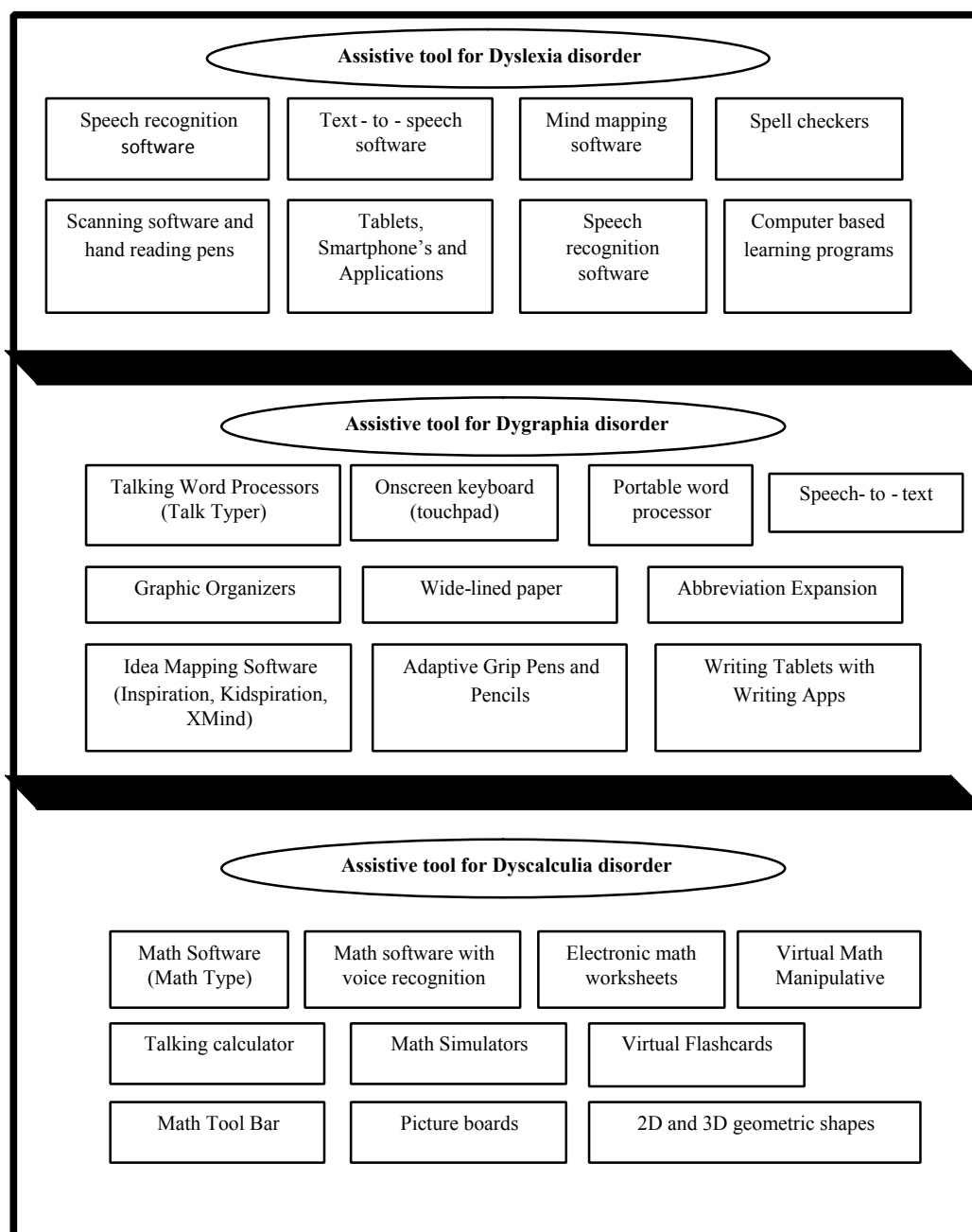
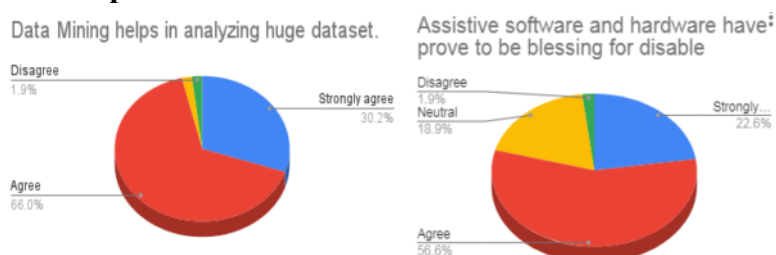


Figure: Assistive Technology for Learning Disabilities

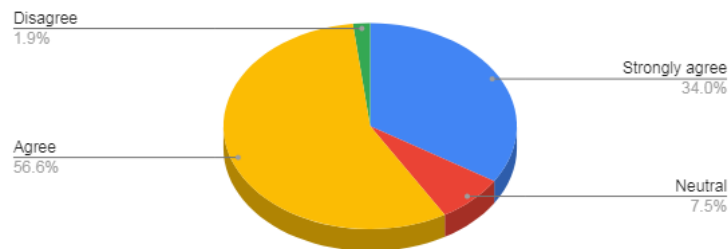
Limitations

The data analysis of most frequently used software and hardware by the students with learning disabled (LD) was done on the basis of the responses given by 53 respondents from Special Schools for LD, Junior Colleges, Degree Colleges, Private educational institutes; This research was done on the limited number of population basically in the Mumbai - (Vasai – Virar) region. Although this research has some limitation it has reached its aim.

Data Analysis and Interpretation

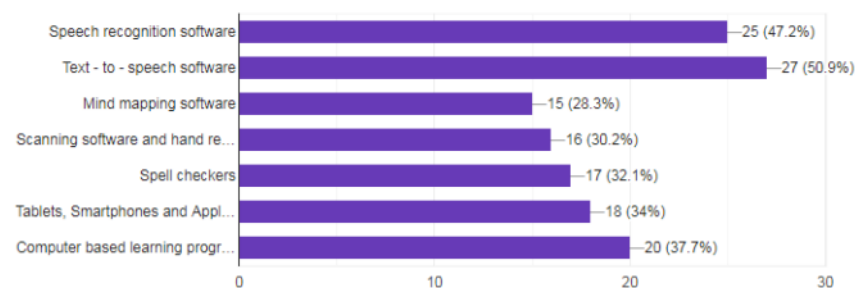


ICT has played an important role in providing opportunities and making life easier for students with learning disabilities.



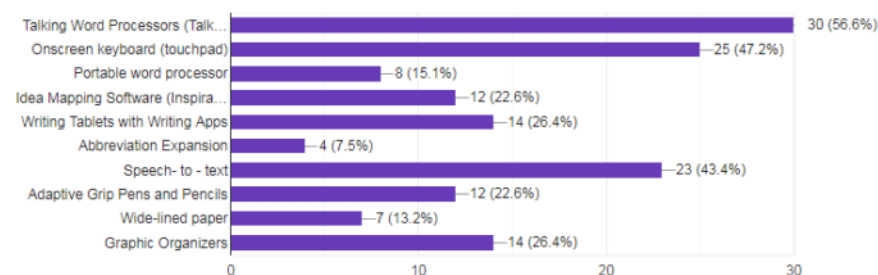
which are the best and most frequently used assistive technology for dyslexia(reading)disorder

53 responses



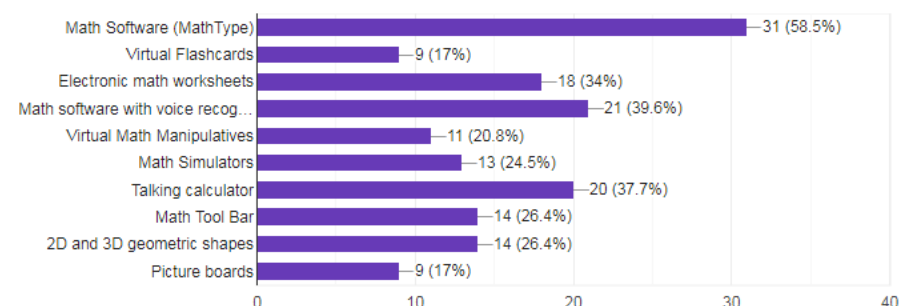
which are the best and most frequently used assistive technology for dysgraphia(writing) disorder

53 responses



which are the best and most frequently used assistive technology for dyscalculia(math) disorder

53 responses



Conclusion:-Assistive technology for learning disabilities has played a major role in enhancing the student's performance; and ensuring effective evaluation. Disability is just the word; Assistive technology is going with the same spirit of "Where there is a will there's a way" (George Herbert). Through this research it was concluded that in spite of numerous

assistive software and hardware available; only few of these are frequently used like Speech - to - text, Text -to - speech, Math software. It was observed that 79.2 % population agree that the assistive technology have proved to be a blessing for disable; the remaining 1.9% disagree, and 18.9% are neutral, it might be due to lack of knowledge or the training provided for the educators or they might be less tech-savvy. Analysing how majority for the population will be benefited by increased awareness and training programs for the special educators will be my future scope of study.

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Author: Ms. Vani Chakraborty

WIPO Technology Trends 2021- Assistive Technology

World Intellectual Property Organization

Assistive Technology for Students with Learning Disabilities

Author: LDAOeng

STUDY ON PREVALENCE OF MENSTRUAL PROBLEMS AMONG ADOLESCENT GIRLS IN SELECTED AREAS

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ABSTRACT-

BACKGROUND:- Adolescence could be a amount of life with specific health and biological process desires and rights. it's additionally a time to develop skills, learn to manage emotions and relationships, and acquire attributes and talents that may be vital for enjoying the adolescent years and forward adult roles. Both the characteristics of a personal (e.g. gender) and external factors (e.g. imbalanced nutrition, Associate in Nursing abusive environment) influence these changes. Menarche is that the incidence of a primary catamenial amount within the feminine adolescent. Period is that the monthly shedding of the purposeful layer of the female internal reproductive organ mucosa lining that happens once biological process isn't followed by fertilization. The typical age of onset of start 12 years. However, information on experiences of period and its impact on health standing, quality of life, and social integration among ladies in developing countries is scanty. Dysmenorrhea, for example is a common problem, about 50 -75% of young girls complain of this. There are many ongoing menstrual problems among school going students.

METHODS:- An evaluative cross sectional study was conducted to estimate the prevalence of menstrual problems among school going students in the age group of 12 -18 years. 511 adolescent girls of randomly selected government schools in Chennai, Tamil Nadu, were studied by a pretest semi structured questionnaire.

RESULTS:- Mean age of menarche is 12.2. out of 511 students 159 have >7 days of menstrual duration and 59% had 3 -7 days of duration. Out of 511 students 352 have normal menstrual cycles (50.1%), 31% have menorrhagia. Majority of the school girls (84.8%) has one or other menstrual problems. 33% of girls suffer from dysmenorrhea. Among 511 participants 31.6% reported that menstrual problems affect their daily life activities. 7.2 % all day in rest and 4% attend the class after taking medication but not participating in any outdoor activities.

CONCLUSION:- Different problems related to the menstruation are present in many selected samples for the study and due to those problems, they have effect on academic performance and other extra-curricular activities.

Keywords: - Adolescent, Dysmenorrhea, menstrual disorders

INTRODUCTION:- Adolescence could be a amount of life with specific health and biological process desires and rights. it's additionally a time to develop skills, learn to manage emotions and relationships, and acquire attributes and talents that may be vital for enjoying the adolescent years and forward adult roles. Both the characteristics of a personal (e.g. gender) and external factors (e.g. imbalanced nutrition, Associate in Nursing abusive environment) influence these changes. Menarche is that the incidence of a primary catamenial amount within the feminine adolescent. Period is that the monthly shedding of the purposeful layer of the female internal reproductive organ mucosa lining that happens once biological process isn't followed by fertilization. The typical age of onset of start 12 years. However, information on experiences of period and its impact on health standing, quality of

life, and social integration among ladies in developing countries is scanty. Dysmenorrhea, for example is a common problem, about 50-75% of young girls complain of this. There are many ongoing menstrual problems among school going students.

Menstrual pathology may be a common grievance amongst adolescent women. AN Australian cross-sectional study showed that roughly twenty fifth of women had important discharge pathology poignant life activities and leading to faculty absence. Discharge cycles will be irregular and periods will be significant (menorrhagia) and/or painful (dysmenorrhea). Serious pathology is rare and discharge cycles do improve with age.

Attitudes to menstrual discharge are poorly understood. ladies often report anxiety, fear, anger, confusion, shame, disgust, even depression throughout their 1st menstrual experiences. Additionally, prolongation of cultural menstrual taboos, messages, like catamenia as a shameful and dirty state of affairs or as one thing daunting, might have direct or indirect negative inferences on the beliefs of ladies at start and thus on their future menstrual discharge experiences.

Menstrual disorders area unit a standard presentation by late adolescence; seventy fifth of ladies' expertise some issues related to menstruum together with delayed, irregular, painful, and significant catamenial harm, that area unit the leading reasons for the doctor workplace visits by adolescents. catamenial patterns are influenced by variety of host and environmental factors. However, few studies in Asian country have delineated the life-style factors related to varied oscillation patterns. we tend to thus surveyed the present changes within the age of start in Asian country adolescents. we tend to conjointly evaluated general menstruum patterns, the incidence of common catamenial disorders. Traditionally, the age at start has step by step faded by regarding four months in each 10-year interval. a number of these catamenial characteristics, like irregularity within the oscillation, expelling pain and discomfort, pain and discomfort at the time of catamenial discharge, and a significant catamenial discharge, might have an effect on the final and/or generative health of a lady.

OBJECTIVE

To study the prevalence of menstrual problems among adolescent school girls in Chennai, Tamil Nadu.

METHODS:- Qualitative ,evaluative cross sectional study was conducted.

Study population:- Randomly selected high school students from selected schools in Chennai, Tamil Nadu.

Study period: over a period of 20 days.

Sample size: -A total of 511 students were studied with the help of pretested semi structured questionnaire.

Inclusive criteria:- Students of age in between 12 - 18, those who were willing to take part in the study were included.

Prior consent is received from the faculty government and students collaborating in the study. Confidentiality of the contributors have been ensured.

RESULTS:- Age at menarche ranges from 9 years to 14 years. Among 511 students 247, majority girls age at menarche was 12 years, whereas 1.6% (least) of student's menarche age

was 9 years. 23 members at the age of 10, 47 at the age of 11 and 170 at the age of 13. out of 511 samples 59% experience the

AGE	FREQUENCY	%
9	8	1.6
10	23	4.5
11	47	9.2
12	247	48.4
13	170	33.2
14	16	3.1

Table 1: Distribution according to age of menarche.

DURATION OF MENSTRUATION (DAYS)	FREQUENCY	PERCENTAGE
>7 days	159	31 %
3 – 7 days	301	59 %
<3 days	51	10 %

Table 2: Distribution of girls according to duration of menstrual cycle.

Duration of menstruation as 3 -7 days ,31% (159) experience more than 7 days and few (51) said it as less than 3 days. About 169 (33%) of student's complaint about experiencing dysmenorrhea during menstruation, 21.4% had breathlessness/fatigue, where 77 students had nil complaints during periods. 65 out of 511 said they don't take any medicine and attend classes but they don't participate in any other activities, whereas majority 61.4% had no interference with any activities.

PROBLEMS	FREQUENCY	%
Pre-menstrual symptoms	67	13
Breathlessness/fatigue	109	21.4
Headache/joint pain, constipation	69	13.6
Dysmenorrhea	169	33
Breast tenderness	20	3.9
Nil	77	15.2

Table 3: distribution of problems during menstruation

INTERFERENCE WITH DAILY ACTIVITIES	FREQUENCY	%
Unable to attend classes	75	14.7
In rest all day	37	7.2
Take medicine, attend classes and no participation in other activities	21	3.9
No medicine intake but attend classes with no other activities outside class	65	12.8
No interference with any activities	313	61.4

Table 4: distribution of interference with daily activities during menstrual time

CONCLUSION:- among 511 samples from selected schools of Chennai, Tamil Nadu most of them were experiencing menstrual problems like dysmenorrhea, breathless ness during the menstrual period and few more problems. Due to these issues they were less likely to attend classes willingly and because of this, their academic outcome may be affected.

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Education's response to the COVID-19 pandemic: Building a sustainable and democratic future

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Abstract:-A global and holistic approach to education – that addresses students ‘ learning , social and emotional needs – is crucial , especially in times of crisis . School clousers related to the current COVID-19 pandemic mean t hat students from diverse backgrounds who are more at risk of increased vulnerability are less likely to receive the support and extra services they need, and the gap between students that experience additional barriers and that do not might widen. Closures can also have considerable effects on students’ sense of belonging to schools and their feelings of self-worth – these are keys for inclusion in education.

The current coronavirus (COVID -19) pandemic is having a profound impact, not only on people’s health, but also on how they learn, work and live. Among the most important challenges created by COVID-19 is how to adapt a system of education built around physical schools. At its peak, more than 188 countries, encompassing around 91% of enrolled learners worldwide, closed their schools to try to contain the spread of the virus. School closures have a very real impact on all students, but especially on the most vulnerable ones who are more likely to face additional barriers. Children and youth from low -income and single -parent families; immigrant, refugee, ethnic minority and Indigenous backgrounds; with diverse gender identities and sexual orientations; and those with special education needs suffer by being deprived of physical learning opportunities, social and emotional support available in schools and extra services such as school meals.

Introduction

A long time into the COVID-19 pandemic, close to half the world’s students are still affected by partial or full school closures and over 100 million additional children will fall below the minimum proficiency level in reading as a result of the health crisis. Prioritizing education recovery is crucial to avoid a generational catastrophe as highlighted in a high-level ministerial meeting in March 2021.

India is supporting countries in their efforts to mitigate the impact of school closures, address learning losses and adapt education systems, particularly for vulnerable and disadvantaged communities.

To mobilize and support learning continuity, India has established the Global Education Coalition which today counts 160 members working around three central themes: Gender, connectivity and teachers.

The most effective tool in keeping student’s retention and maintaining to learning has been online courses. Near about all the educational institutes have adjusted their programs in response to the spread of the Corona virus.

A large no. of institutes have ban on campus cl asses as many staff members and students were found COVID – 19 positive. While the majority of schools around the country integrate

some form of online education into their course work moving all programs online may prove challenging.

Apart from this, some have strong online systems. School course creators should work closely with IT departments to ensure that their programs are supported online.

Objectives

The main objectives of this is to discuss about the everlasting the affects of COVID 19 on the educational system .TheCoronavirus crisis forcing and other educational institutes to confront the long standing challenges in education such as skyrocketing tuition costs and perceptions of elitism and some of the resulting changes could be permanent .

Over the long term, schools might shift many classes online have fewer opportunities to establish a relationship between national and local communities. The pandemic is spreading up changes in a tremendous way “ , says Bert Van der Zwaan , Former rector of Utrecht University in the Netherlands and author of Higher Education in 2040: A Global Approach (2017) . As schools face major changes , their financial outlook is becoming dire . Revenues are plummeting as students remain home or rethink future plans.

The results and the impact of Coronavirus on school education

Schools and educational institutes are places where the students live and study in close sitting with each other. They are also in buzzing cultural hubs ignoring to which caste, religion or country they belong to .

Recently, the foundations of this unique ecosystem have been impacted significantly by the rapid spread of the coronavirus outbreak, creating uncertainty regarding the implications for school education .

Over the past few weeks, education officials have been forced to cancel classes and close the doors to campuses across the world in response to the growing coronavirus outbreak. In addition, most of the educational institutions have switched classes to online learningCOVID-19 has affected a large number of students across states, class, caste, gender and region. The shutting down of schools and the decision of shifting traditional classrooms to digital platforms is not only increasing learning inequality among children, but also pushing a large number of children out of school due to the digital divide. Other than learning, the absence of schooling would also have a long -lasting effect on the health and nutrition of children. The role of the budget in the current situation as well as beyond the pandemic is very crucial to ensure inclusive education for all.

In this context, CBGA in collaboration with CRY has prepared a policy brief. It highlights some of the issues associated with school closures which need immediate attention. It also suggests some short-term policy measures that can be implemented in the coming Union and State budgets. However, the overall direction of allocations should not only be limited to addressing issues arising from the pandemic but should go beyond. Hence, the policy brief has also put forward a set of long -term measures that the government should implement in the due course of time.

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Limnological Investigation of Water Quality of Traditional Water Resources in Nagaur, Rajasthan, India Using Palmer Algal Genus Index

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Abstract:- The research was carried out to investigate the water quality of some natural and man-made surface water reservoir that harvest rainwater and store for 6 to 8 months. Urban pond with village small ponds for their management, human inference and check its safety for human uses with limnological investigation. Research area was urban natural and historical Jhada Talab that was destroyed overtime and left with waste water. The other three sampling sites were village man-made small ponds that are called Nadis nearby Nagaur city, Nagaur Rajasthan. The algal samples were collected in the month of March 2021 selected from all surface water bodies. Limnological investigation includes physico-chemical parameters (APHA, 2017) and Palmer pollution (Palmer, 1969) index algal genera from all four sites. And in results it was shown with both physicochemical parameters and planktonic analysis that urban pond is ruined by lack of awareness of sustainability and village ponds are the best examples of sustainable development and management. In conclusion there is a need to sustain more water reservoir and spread awareness about water quality and conservation of traditional water resources. Water quality assessment study of this area will help limnological research and micro-aquatic investigation in future.

Keywords- LIMNOLOGICAL INVESTIGATION, JHADA TALAB, WATER QUALITY, PALMER INDEX

INTRODUCTION- Limnology is the study of inland water bodies importantly rivers, ponds, lakes, wetlands and ground water including their biological, physico-chemical and hydro biological aspects. In India, there are more man-made fresh water bodies than natural ones, particularly in arid region of Rajasthan, to cater the needs of water for drinking, domestic and agricultural uses. Our dependency on fresh water resources has accelerated due to rapid world population growth and economic development that results deterioration in quantity and quality of fresh water in many areas of the world (Schleich et al., 2009). Water scarcity limits the development of agriculture and holdback improvement in sanitation and health that make hard life of women who have to travel long distance to fetch the water.

Phytoplankton are microscopic photosynthetic plants and crucial to the aquatic ecosystem because they are primary producer and play a important role in recycling of matter. therefore biological and chemical parameters are important to monitor pollution. (Basavarajappa et al 2014). Algae are considered as a rapid bio-indicator and used for assessment of water quality as it has short life, fast response to pollutants furthermore easy to quantify. (Plafkin et al., 1989). Bio-indicator algal genus indicate the environmental conditions effectively and

due to their moderate tolerance to fluctuation of micro aquatic ecosystem environments (Akbulut, 2003)(Çelekli&Külköylüoğlu, 2007) (Demir,2014). The qualitative samples and community measurements of algae are beneficial in order to monitor the aquatic ecosystems. Majority of the inter-annual differences in temporal dynamics of algae, from oligotrophic to hyper-eutrophic lakes, can be caused by ecological factors, morphometry and climate. The phytoplankton composition not only demonstrates the current situation of the waters but also the previous situations of aquatic ecosystem. Phytoplankton demonstrates water quality through changes in its community composition, and distribution, and proportion of sensitive species (Gharib et. al., 2011)

STUDY AREA-Nagaur district is located almost in the middle of the state of Rajasthan and the limnological study is overlooked here. This desert part of state is nearly rain less, and Annual rainfall is highly variable and scanty. The provincial rulers and heads of state along with craftspeople and inhabitants ingeniously set-up talabs and village ponds for conventional rainwater collection systems to provide comfort for wildlife, domestic uses and water supplies for humans and livestock. First sampling rainfed water body was natural and historical Jhadatalab that is situated in Nagaur city and other 3 sampling areas were small ponds at nearby villages and are called Nadi. These were Imarti Nadi, Chimrani village (POND A), Chimrani village nadi (POND B) and Bungri Mata Mandir, Kharnal village nadi (POND C) at the distance of approximate 10 km, 13 km and 17 km from Nagaur respectively. Most villages in western Rajasthan save water in the small ponds and this water fulfills the need for nearly 6 to 10 months for drinking purpose. Its uses are monitored by village community with



FIG.1. NAGAUR (BLUE IN MAP) FIG.2 JHADA TALAB (NAGAUR) AND CHIMRANI VILLAGE NADI

MATERIAL AND METHODS-Sample collection and analysis-sampling was done in month of March 2021 for both physiochemical and algal investigation. Therefore water samples were collected from all the sampling sites using wide mouth glass stopper bottles. The physicochemical parameters were analyzed. PH, TDS, Fluoride Nitrate, Chloride, total alkalinity and total hardness were determined in monsoon by following standard method of A.P.H.A (Baird & Bridgewater 2017). PH was measured by digital PH meter. TDS was

measured by turbidity meter. Titrimetric method was used to analyze total alkalinity; total hardness and chloride. Fluoride and nitrate were analyzed by ion selective electrode and spectrophotometric method.

For algal investigation estimation, a portion of samples was preserved in 4% formalin that was observed later under a research microscope that had magnification of 150 and 600x. Identification has been done with standard key, research publication and relevant monograph like Prescott. (Prescott, 1976). In ongoing study Palmer, (1969) Algal Genus Pollution Index were used to find out the water quality of sampling fresh water sites. Table of most pollution tolerant genera following Palmer's index were calculated for all sampling stations. A pollution index factor was assigned to each genus by determining the relative number of total points scored by each alga. The water qualities of all sampling sites were analyzed based on their Palmer index. The aim of this study is to find out the water quality by the presence of algal genus.

Results and discussion-To check the drinking water quality of sampling sites both physicochemical and algae were analyzed and all the results of physicochemical parameters are presented in table 1.2 with Indian standard of drinking water by Bureau of Indian standard. (IS: 10500; B.I.S 2012). pH was resulted between minimum 8.12 to maximum 9.16 at whereas the standard range of pH is 6.5 to 8.5. TDS was found in the range from 110 – 1300mg/l and the acceptable limit for TDS is 500mg/l. Total alkalinity and total hardness was observed between 27 – 220mg/l and 31-550mg/l for these. Maximum acceptable limit is 200mg/l for both following B.I.S. standard respectively. Chloride and fluoride were reported in the range from 20 – 410mg/l and, 0.12 – 1.23mg/l. The standard acceptable limit is 250mg/l for chloride and 1.0mg/l for fluoride. Nitrate was found in the range of 4 – 69mg/l, and its highest acceptable value is 550mg/l accordingly B.I.S. Magnesium and calcium were observed in the range between 20 – 98mg/l and 20 – 84mg/l and accordingly B.I.S. the acceptable limit for calcium and magnesium are 75 and 30. All physicochemical parameters results except pH were found maximum at Jhadatalab and were reported minimum at pond B. physicochemical parameters of village ponds didn't show much variation among them.

Palmer, (1969) Algal Genus Pollution Index was employed to study the water quality of sampling sites that is presented in table no.2. The total score of Algal Genus Pollution Index of Jada and Nadi A B C were 22, 6, 9 and 7 respectively. Maximum pollution indexed genera were reported at Jhadatalab found higher than 20 that indicate the confirmed organic pollution. Photomicrographs of reported indexed genus for pollution are presented in plate -1.

Conclusion-Considering all the water parameters and pollution index it was clearly shown that the Jhadatalab was highly polluted than village surface water storage bodies. The surface water quality of Jhadatalab is being affected from waste water contamination and ignorance whereas Nadi's water is pure and usable for drinking water purpose and it is result of proper management of village community. Water quality assessment study of this area will help limnological research and micro-aquatic investigation in future.

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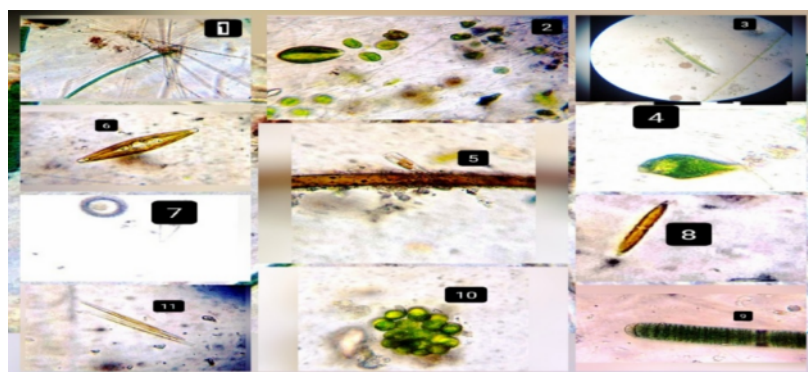
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PLATE1- PHOTOMICROGRAPHS-PALMER POLLUTION INDEX GENERA FOUND AT SAMPLING SITES



1. Ankistrodesmus 2. Chlamydomonas 3. Closterium 4. Euglena 5. Gomphonema 6. Navicula 7. Cyclotella 8. Nitzschia 9. Oscillatoria 10. Pandorina 11. Synedra

TABLE-1. PHYSICO-CHEMICAL PARAMETERS RESULTS OF SAMPLING SITES WITH ACCEPTABLE LIMIT(B.I.S)

Physicochemical PARAMETERS	UNIT	Jhadatalab	Nadi A	Nadi B	Nadi C	IS:DRINKING WATER ACCEPTABLE LIMIT
pH		8.12	8.28	9.16	8.78	6.5 -8.5
TDS	mg/l	1300	131	110	116	500
TOTAL ALKALINITY	mg/l	223	55	37	42	200
TOTAL HARDNESS	mg/l	530	38	31	44	200
CHLORIDE	mg/l	410	20	20	30	250
FLUROIDE	mg/l	1.23	0.144	0.124	0.132	1.0
NITRATE	mg/l	69	8	4	6	45
CALSIUM	mg/l	98	21	10	20	75
MEGNISIUM	mg/l	84	20	20	20	30

TABLE-2:PALMER POLLUTION INDEX ALGAL GENERA FOUND AT SAMPLING SITES

ALGAL GENERA	Index value	JADA TALAB	NADI A	NADI B	NADI C
<i>Ankistrodesmus</i>	2	√			
<i>Chlamydomanas</i>	4		√		√
<i>Closterium</i>	1	√		√	
<i>Cyclotella</i>	1	√			
<i>Euglena</i>	5	√			
<i>Gymphonema</i>	1	√			
<i>Ossilitoria</i>	5	√		√	
<i>Navicula</i>	3	√		√	√
<i>Nitzschia</i>	3	√			
<i>Pandorina</i>	1	√			
<i>Synedra</i>	2		√		
Palmer index total		22	6	9	7

A thorough research on Python Data Visualization

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Abstract - With the advent of the digital age, data moved from being rare, costly, and difficult to locate and gather to being plentiful and inexpensive, but very complex to process and comprehend and interpret. That's when the idea of big data came into being, which refers to credible quantities of information that are so large that they are difficult to collect, store, interpret, and analyse using conventional computing programmes. All of this information, on the other hand, is only as excellent as what we, as people and companies, can create out of it. Terabytes of data lying in a data centre, underutilised, is a source of frustration and stress. It has the potential to become digital gold if properly handled. Big data is often coupled with machine learning to provide predictive analytics that may be used in conjunction with other analytics techniques to reveal the true worth of the information. The raw information may be difficult to discern, which is where data visualisation comes into play. Taking raw data and transforming it into charts, images, and videos which explain the numeric values and allow us to gain insights from it is known as data visualisation. By altering the way we make sense of information, we can produce wealth out of it, discover new patterns, and identify trends, data visualisation is known as data discovery. To illustrate this point, consider the following basic example: how can we construct a narrative to tell the boss from hundreds of rows data in an Excel spreadsheet. One simple approach is to make a chart, such as a pie chart or bar chart, using that exact same data, as seen below. With a visual representation, we can begin to analyse and integrate it into our company, providing meaning and purpose to the raw data that was originally collected in the business, tourism industry, and other fields. By offering clear and actionable insights into their programmes, data visualisation really empowers travel managers and reporting users.

Keywords: Data Visualization, Decision making, Artificial Intelligence, machine learning, Data Science

1. Introduction

Data visualisation is frequently the first step in any type of data analysis work, whether it's simple data analysis, statistical analysis, or machine learning analysis, because visualising data often gives you an intuitive understanding of the data and helps you see patterns that would otherwise be difficult to see. Python is one of the finest, and the reason is that it is a general-purpose language that is relatively simple to use and understand, as well as having numerous libraries for scientific computing and data research, such as Matplotlib. Matplotlib is not the only excellent visualisation library for Python, but it is one of the most popular, and there are other libraries that are built on Matplotlib, so learning Matplotlib will help us learn and understand other libraries, such as Seaborn.

2. Simple Visualization

I've used jupyter notebook and a few additional Python libraries in this example, as well as anaconda to install them. Once we launch the Jupyter notebook section, we should see a browser window pop up with the Jupyter notebook interface. Now, if we want to keep track of our work, the first thing we should do is create a new folder on our desktop, call it 'DataVisualization,' and put all of our data into a notebook file here. Two data files named sample data.csv and countries.csv are used for demonstration and are located in the

'DataVisualization' folder that we just created. After that, return to the Jupyter notebook interface and navigate to desktop and then the 'DataVisualization' folder that you just created. To create a new jupyter notebook file, simply find the new button on the right and click Python 3. We now have a notebook called data visualisation with Python that we can check by going to desktop and then to the folder that we just created and looking for a file called 'DataVisualizationWithPython' with the extension ipynb. It's critical that this notebook file is in the same folder as the data file, countries.csv, and the other one. Once everything is set up correctly in the first cell, import pandas as pd, which indicates we want to import a module named pandas as pd or give it a nickname, which will be pd. We can run the cell by clicking this button, and now pandas is imported as pd. We'll use pandas to import and use data from our CSV files, and we'll need to import another module for that, so just right "from matplotlib import pyplot as plt," which means import the pyplot module from the matplotlib package and then call it plt. Let's execute this cell, and now that pyplot has been imported, we'll utilise pyplot from matplotlib to create our charts.

As an example, let's look at x equals 1 2 3 which is a list of three elements and y equals 1 4 and 9 which is a list of nine elements, and to plot this set of data, we can simply write plt dot plot X comma Y which plots the elements of the list X on the x-axis and the elements of the list Y on the y-axis. We can then display this graph by calling the plt.show. When we run the cell, we should get a graph that looks like this. We can see that the values of X are 1, 2, and 3, as anticipated, and the values of Y are 1, 4, and 9, which is also expected. The title of this graph may be added by writing plt.title('tests plots') immediately after the plot statement but before the display statement, and we can also add an X label and a y label by writing plt.xlabel("x") and plt.ylabel("y"). Let us refer to the Xlabel as X and the Ylabel as Y. In this case, we'll refer to it as Ylabel Y, and when we run this cell, we notice that there's a title called test plot, the X label is named X, and the Y and Z labels are both labelled Y. For example, what if we wanted to draw several lines in this area? To accomplish this task, we'll construct another list, which we'll name Z, and it will include the numbers 10, 5, and 0. Now, to plot X and Z on top of x and y, you can simply right-click plt.plot(x, y) and choose Y & Z from the drop-down menu. When we run this cell, we should see these two lines. The blue and orange lines represent x and y data, and the blue and orange lines represent z data, respectively, so plt.plot(x, z) plots the data on the x and y axes, but it's a little difficult to tell which line represents which data at the moment, so let's add a legend statement after the y level statement by writing plt.legend(x, z) (["this is y", "this is z"]). So keep in mind that this legend function accepts a list as an input, and when you execute this, you should get a legend that states that the blue line represents 'this is y' and the orange line represents 'this is z', respectively.

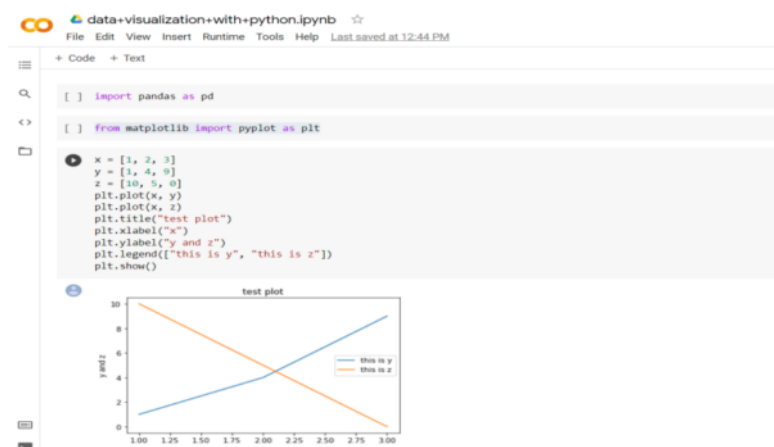


Fig1. Simple Visualization

3. Reading from CSV file

To load data from a CSV file, we can just write sample and the score data equals d or pandas that read CSV (by the way, I just hit tab here to perform autocomplete) and then parenthesis sample underscore data dot CSV "sample data = pd.read_csv('sample_data.csv')" to do this. Make sure that the notebook file 'DataVisualizationWithPython' is located in the same folder as the data files before running this cell. As soon as we execute this cell, the pandas module, which we refer to as pd, loads the sample_data.csv file into memory and assigns it to this variable named sample data. It is possible to see what is contained within this variable simply by writing the variable name in this new cell and then running this cell; we should see something like this. As you can see, this data is divided into three columns: column A, column B, and column C; and five rows; and we see a plethora of values contained within this table. We can verify that this set of data is identical to the original data by opening up the original data file, sample_data.csv, in Excel or any other spreadsheet application, and we should see exactly the same data in columns A and B and C with five rows containing a collection of values as we did in the original data file.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	country	year	population												
2	Afghanistan	1952	8425333												
3	Afghanistan	1957	9240934												
4	Afghanistan	1962	10267083												
5	Afghanistan	1967	11537966												
6	Afghanistan	1972	13079460												
7	Afghanistan	1977	14880372												
8	Afghanistan	1982	12881816												
9	Afghanistan	1987	13867957												
10	Afghanistan	1992	16317921												
11	Afghanistan	1997	22227415												
12	Afghanistan	2002	25268405												
13	Afghanistan	2007	31889923												
14	Albania	1952	1282697												
15	Albania	1957	1476505												
16	Albania	1962	1728137												
17	Albania	1967	1984060												
18	Albania	1972	2263554												
19	Albania	1977	2509048												
20	Albania	1982	2780097												

Fig2. countries.csv file

	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	column_a	column_b	column_c											
2	1	1	10											
3	2	4	8											
4	3	9	6											
5	4	16	4											
6	5	25	2											
7														
8														

Fig3. Sample_data.csv file

In Jupyter notebook, the only difference that we might notice is that these numbers zero, one, two, three, and four are just indices for the rows, and we can check what type this variable is by writing "type(sample_data)" and when you run this cell, it says that this is pandas.core.frame.DataFrame, which is exactly what we want. So this is a data frame type that is defined by the pandas module, and the data frame type is used to store information that is similar to a table, such as this piece of information. What if we wanted to plot data from this data frame, for example, the values of column A on the x-axis and the values of column C on the y-axis? This is a problem. What we need to do is be able to get data from a particular column, which we can accomplish by writing sample_data.column_c for retrieving data from column C in our database. The series type provided by the pandas module is used to hold a series of values, for example, the numbers 10 8 6 4 and 2 in the example above. If we wanted to get a particular value from this series, we could do so by writing sample_data.column_c.iloc[1] and this would receive the second value of the series, for example, 8. In other words, if we wish to plot column A on the x-axis and column B on the y-axis, we may do so by writing plt.plot(sample_data.column_a, sample_data.column_b, 'o'); similarly, we can display it by writing plt.show(sample_data.column_a, sample_data.column_b, 'o'); (). To see how it appears, on the x-axis, we have the numbers 1 2 3 4 and 5, and on the y-axis, we have the numbers 1 4 9 16 and 25, as anticipated if we add a column C to this data with the command "plt.plot(sample_data.column_a, sample_data.column_c)". To illustrate, let's utilise column a as the x-axis once again, with the sample_data.column_c. Once the cell has been executed, we can see that there are two lines here, exactly as there were previously. In order to make this graph a little easier to read, we can include titles and a legend. By the way, in this plot function, you can use the third argument to change the appearance of a plot; for example, if you give it the string 'o' in a string as the argument in the first line for column B, and then run the cell, the plot will become dots rather than just a line.

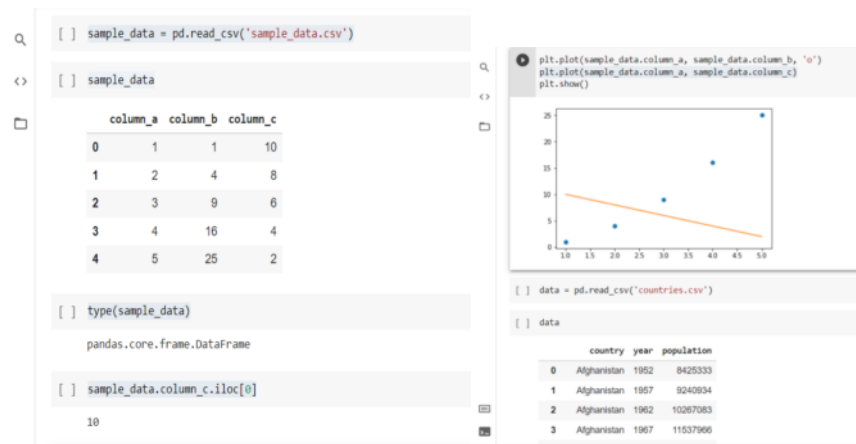


Fig4. Loading from CSV Data

Fig5. Visualization from CSV Data

4. More Visualization options in Python

Although there is much more we can do, and more information about it can be found in the official documentation, let's go on and do a more thorough study using an actual data set. Now, for the sake of this study, we will be utilising the data file countries.csv. If we open it, we should find this data, which includes a number of nations and a number of years, with data spanning from 1952 to 2007 for every five years and population for each year for each country. We can see that there are a large number of rows in this data, as we can see in the image above. To import the data, we'll write pd or pandas that read CSV parenthesis single quotes or double quotes countries.csv, which, by the way, is a string with single quotes

countries.csv in it, exactly as we did previously. When expressing a string in Python, we have the option of using either double quotations or single quotes. Put it into a new variable named data, and when we execute the cell, the data is put into data. Let's call this data.

Consequently, after we enter data into this new cell and execute the programme, we should be able to view this data in a data frame. Now, let's assume that the kind of study we're looking for here is a comparison of the population girls in the United States and China. When it comes to conducting this analysis, the first step is to isolate the data for the United States and China. We can do this for the United States by writing `us = data[data.country == 'United States']` there and then running this cell. We can do the same for China by writing `china = data[data.country == 'China']` there and running this cell. The data for the United States is currently included only inside the US. As a result, we have a part of data where the value of the series is true, and that is the data for which we can see the results here, and we just assign that chunk of data to the variable named us. We do the same thing for China, and when we run this, we should only see the data for China and nothing else. By comparing these two variables, we will be able to compare the population growth of the United States and China. So, let's start with the United States population. When you run this cell, you will see that the United States dollar is plotted on the x-axis and the United States population is plotted on the y-axis, but you will also see this scientific notation thing $1e8$ because the numbers are so large. So, let's divide the entire population into eight numbers. The number then increases to more than 300 million by 2007. There are two lines that we can see. As a result, we can see that China's population started out much larger than the United States' population in 1952, and it appears to be growing at a faster rate as well. Now, what if we wanted to compare the percentage of girls from the first year of our data, which is 1952, rather than the absolute number of girls from the first year that we have in our data? There are many different approaches that may be used to accomplish this. The first row we see here represents the population for the first year, or the population in 1952. This method is not the only method to show the relative girls in population, but I chose it here because it's fairly simple to implement in any case. To show everything in percentage amounts so that we can see that the first year is shown as 100 percent and from 1952 to 2007 which is the last year we have the population grew by 90 percent. We can see that China's population grew much faster than the population of the United States, even when measured in percentage terms. The population of the United States increased by 90 percent between 1952 and 2007, while the population of China increased by more than 120 percent during the same period.

```
[ ] data[data.country == 'United States']
```

	country	year	population
1608	United States	1952	157553000
1609	United States	1957	171984000
1610	United States	1962	186538000
1611	United States	1967	198712000
1612	United States	1972	209896000
1613	United States	1977	220239000
1614	United States	1982	232187835
1615	United States	1987	242803533
1616	United States	1992	256894189
1617	United States	1997	272911760
1618	United States	2002	287675526
1619	United States	2007	301139947

```
[ ] us = data[data.country == 'United States']
```

```
[ ] china = data[data.country == 'China']
```

Fig6. Loading from CSV Data

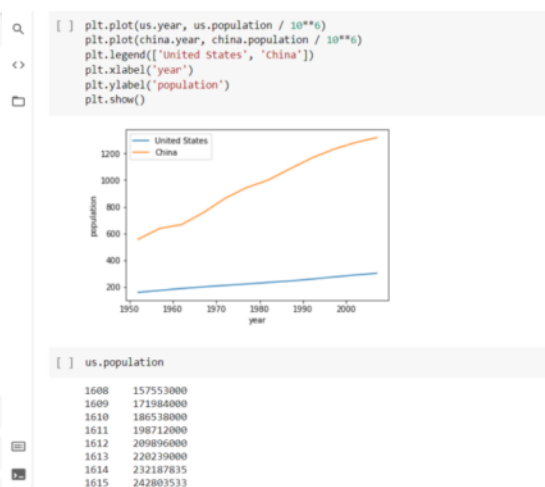


Fig7. Visualization from CSV

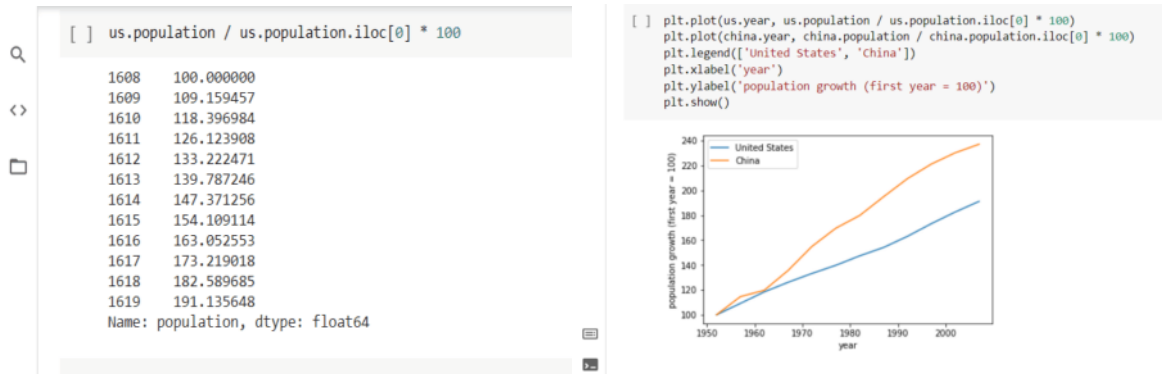


Fig4. Visualization Data in % fromat

Fig4. Visualization from CSV Data

5. Conclusion:

It is quite obvious from the article that for Data Visualization into the Business Data, Python provides its enriched tools and libraries for producing meaningful insights. Thus the demonstration described in the article serves as a proof for the same and also demonstrates with example the different way of showcasing the data.

6. Future Scope:

Although this article does not explain all the different formats of Visualization for example the Visualization op tion output in the video format. A separate research can be done to produce the Visualization results in the video format which actually could be more appealing than the image and the charts received as an output.

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IN SMART CITIES, IOT EXPLORATION, KNOWLEDGE EXPANSION, AND DEVELOPMENT

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ABSTRACT:-The Internet of Things (IoT) is a system that connects various objects & technologies without requiring human interaction. This makes it possible to build smart (or smarter) cities all over the planet. Internet of things has accelerated development of smart city systems for sustainable living, enhanced comfort, & productivity for people by hosting various technologies & permitting interactions between them. Internet of Things for Smart Cities spans several disciplines & relies on a variety of underlying systems to function. As a result, technology & equipment enable us to be wiser & make many parts of smart cities more accessible & relevant. The purpose of this article is to offer a comprehensive overview of smart city idea, as well as its various applications, benefits, & advantages. In addition, majority of conceivable IoT technologies are reviewed, as well as their ability to integrate into & apply to many aspects of smart cities. Another important topic in this article is possible use of smart cities in future in terms of technology development. Essential components that make up IoT based Smart City landscape are discussed first, followed by technology that allow these domains to exist in terms of architectures, networking technologies, & Artificial Algorithms employed in IoT based Smart City systems. After that, there is a look at most common techniques & applications in several Smart City areas. Finally, problems that IoT systems for smart cities face, as well as mitigating strategies.

KEY WORDS- IoT, Smart cities, Knowledge, Development, Privacy.

INTRODUCTION:- Substructures & services have been required to meet needs of residents due to fast increase in population density inside metropolitan areas. As a result, there has been a remarkable rise of digital devices, such as sensors, actuators, smart phones, & smart appliances, which lead to huge commercial objectives of Internet of Things (IoT), because it is feasible to interface & communicate amongst all devices over Internet. [1] Combining these digital gadgets was difficult, if not impossible, in the past. Similarly, obtaining their knowledge is critical for day-to-day activity management & long-term growth planning in a city. Some public transportation data, such as real-time location & usage, parking space occupancy, traffic jams, & other data, such as weather conditions, air & noise pollution status, water contamination, energy consumption, & so on, should be collected on a regular basis. To that purpose, several technologies have been used to handle unique characteristics of each application. Technologies required span a wide variety of levels & layers, from physical to data & application layers. To attain greater efficiency in smart grid communications, one of these systems, presented in, examined a two-way relay network with orthogonal frequency division multiple accesses. IoT is generally described as a real item that is widely scattered & has limited storage & processing capabilities, with a goal of improving reliability, performance, & security of smart cities & their infrastructure. On this foundation, current article conducts survey of IoT-based smart city data. [2] Perception layer, network layer, & application layer are three levels that make up Internet of Things. Perception layer consists of collection of Internet-enabled devices that can perceive, detect, gather, & exchange data with other devices through Internet communication networks. Perception layer devices include radio frequency identification devices (RFID), cameras, sensors, & global positioning systems (GPS). Network layer's job is to forward data from perception layer to application layer within limits of device capabilities, network limitations, & application constraints. IoT systems employ a combination

of short-range network communication protocols like Bluetooth & Zig Bee to send data from perception devices to nearby gateway according to communication parties' capabilities. WiFi, 2G, 3G, 4G, & Power Line Communication (PLC) are examples of internet technologies that transport data over vast distances depending on application. Because apps seek to build smart homes, smart cities, power system monitoring, demand -side energy management, distributed power storage coordination, & renewable energy generator integration, information is collected & processed at application layer. As a result, we may develop more effective electricity distribution & management techniques.[4]

It is difficult to define Smart City; in fact, cities claim to be 'smart' based on a variety of criteria, such as implementing novel e-governance schemes, developing social learning ventures & community engagement programmes, focusing on sustainable living, & using information & communication technologies for innovation. In this paper, we describe Smart Cities as a use of various information & communication technologies with a goal of improving city's population's living experience. This includes application of these technologies in all of previously mentioned areas, such as government, transportation, housing, business, sustainable living, social learning, community involvement, & opportunity provision. In an ideal world, concept of smart city extends beyond traditionally defined limits of conventional city's administrative & social structures by allowing interaction between them, allowing it to function more cohesively & effectively. When opposed to typical city environment, smart cities have numerous benefits (in terms of value):[5]

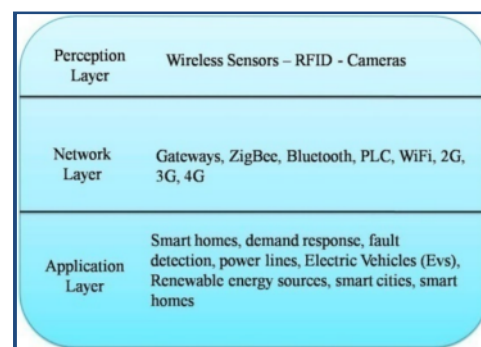


Figure-1-IOT Layers Motivations

As a result of present growth of digital technology, smart cities are growing smarter than in past. Smart cities are made up of a variety of electronic devices that are used in numerous applications, such as cameras in surveillance system, sensors in transportation system, & so on. Additionally, use of individual mobile equipment can be disseminated. As a result, taking into consideration diverse environment, different words such as object characteristics, participants, motives, & security regulations will be investigated, presenting some of main aspects of possible smart cities in 2021. Devices in IoT context can be grouped based on their geographical location & analysed using analysing systems. With certain active initiatives including monitoring of each bicycle, car, parking lot, & so on, sensor services for obtaining particular data are being used. Many service domain applications have used IoT substructure to simplify operations in areas.[6] Such as air & noise pollution control, vehicle movement, & surveillance & supervision systems. Internet's advancements have created substructure that allows large number of people to connect with one another. Following developments on Internet, it may become easier to set up appropriate interlinks between items. Number of interconnected items was considerably more than population in 2011. Internet of Things (IoT) allows for interconnection between diverse things. As a result, IoT enhances cities & has impact on various aspects of human life by delivering cost-effective

municipal services, boosting public transportation, decreasing traffic congestion, & keeping residents safe & healthy.

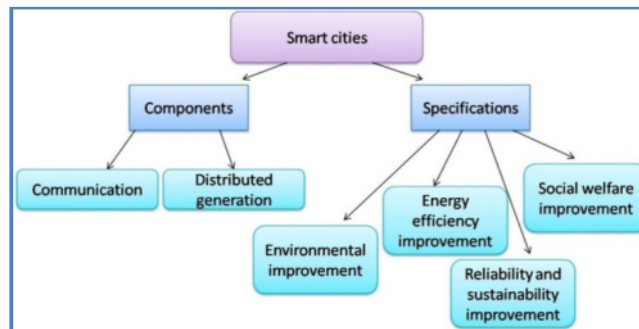


Figure 2: most important features of smart cities.

Components of Smart Cities

A smart city is made up of number of components, as shown in diagram. First step in smart city application is data collecting; second is data transmission/reception; third is data storage; & fourth step is data analysis. Data gathering is application-dependent, & it has been major driver of sensor development in variety of fields. Second element is data interchange, which entails sending data from data collecting equipment to cloud for storage & processing. This goal has been accomplished in variety of ways. Many smart city initiatives include city-wide Wi-Fi networks, 4G & 5G technologies, as well as various forms of local networks that can transmit data on local or global level. Third step is cloud storage, where various storage techniques are utilised to store & organise data so that it may be used in fourth stage, data analysis. Data analysis is process of extracting patterns & inferences from acquired data in order to aid decision-making. Simple analysis, such as fundamental decision making & aggregation, may be sufficient in some cases. Cloud's availability enables for not just heterogeneous data gathering/storage & processing, but also real-time analysis using statistical approaches as well as machine & Deep Learning algorithms for more complicated decision making. [7]

SMART CITIES & INTERNET OF THINGS

The internet of things (IoT) is at core of smart city efforts; it is enabling technology that has enabled ubiquitous digitalization, giving rise to notion of smart cities. Internet of things refers to widespread connecting of objects to internet, which allows them to communicate data to cloud & perhaps receive instructions for executing activities. IoT entails gathering of data & use of data analytics to extract information to aid decision-making & policy-making. More than 75 billion gadgets are expected to be connected to internet by 2025, spurring even more application development. IoT allows sensors in smart cities to gather & communicate data on status of city to central cloud, which is subsequently mined or processed for pattern extraction & decision-making. [8]

Internet of Things (IoT) Architectures for Smart Cities

Through utilisation of cloud services, Internet of Things combines data sensing, transmission/reception, processing, & storage processes. General IoT design, based on technology, consists of five levels, each of which operates on information from preceding layer. It also depicts three distinct designs for IoT systems. Sensing layer, also known as Perception layer, is made up of sensors that can collect data on physical quantities of interest in any application, as well as actuators that may operate on physical objects, such as RFID readers for reading RFID tags & other similar devices. Through wireless network technologies such as Wi-Fi, cellular internet, Zigbee, & Bluetooth, data read by sensing layer is sent on to Middleware layer via networking layer. Middleware layer offers general interface between sensing layer hardware & Application layer, which uses data to provide users with services through different APIs & database management services. Business layer is connected

to application layer & is used to create plans & policies that aid in overall management of system. [9]

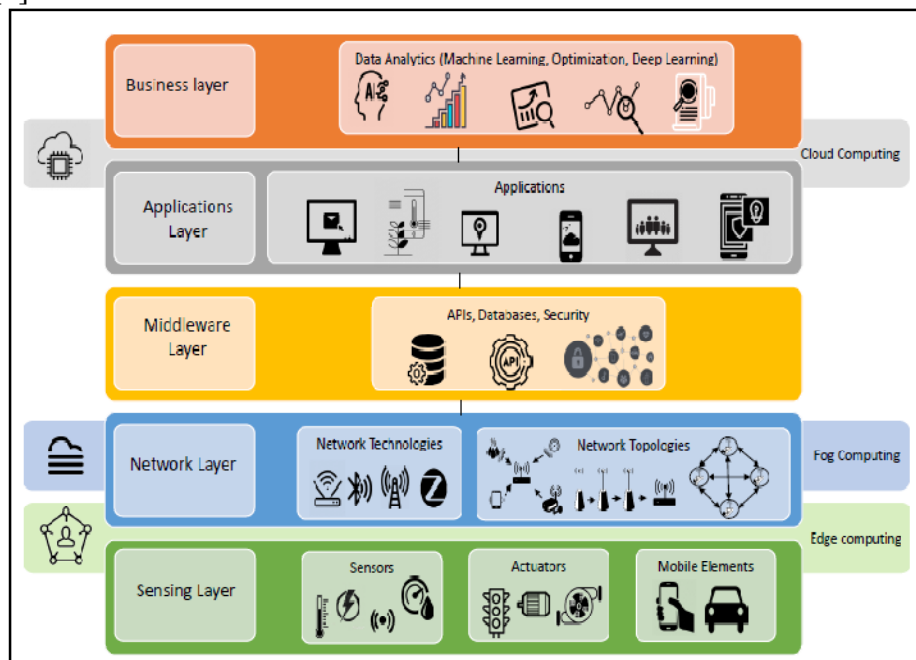


Figure 3: Internet of Things Architecture.

Smart Cities' IoT Challenges

All parts of our life will be digitized thanks to Internet of Things. This digitization process for smart cities necessitates multiplication of sensing nodes in every area of city's operating mechanism. With such large application scope, developing & deploying IoT systems in smart cities presents tremendous problems that must be considered. Problems that IoT system designers encounter while making deployments in smart city applications are discussed in this section. Technological problems that pertain to IoT use in smart cities have been attention of academics in this study. [10]

Technologies for Sensing

Smart city technologies rely heavily on sensing. Sensors offer knowledge & data needed to develop smart city technologies. Due to diverse nature of Smart City projects & their many components, variety of sensors is employed as part of these initiatives. Authors have created framework for comparing IoT sensors & have compiled list of sensors they discovered in use for Internet of Things. We've based our research on their findings in order to conduct study of smart city sensing technologies. Ambient, motion, electric, biosensors, identification, presence, hydraulic, & chemical sensors are among sensors used in Internet of Things. Sensors are important component of smart city IoT systems because they enable for interaction between smart city systems & city residents, as well as development of new services. One thing to keep in mind is that many sensors have numerous uses, as we've seen. Different physical quantities must be measured in each application, which necessitates use of variety of sensors. Smart houses have been discovered to employ ambient, motion, electric, identification, location, chemical, & hydraulic sensors. Dealing with diverse sensors, each of which may have distinct output data kinds, is problem that must be dealt with when working with several types of sensors, as stated in difficulties.



Figure 4: IoT Smart City Sensing Technologies.

Technologies for Networking

The internet of things in smart cities is based on aggregation of data collected by individual sensor devices strategically distributed across smart city. Systems that can utilise these measurements separately have been around for long time & have helped automate minor projects. 'Smart' in smart city, on other hand, derives from combined use of data from these separate sensing devices to make complicated judgments while providing services to people. Utilisation of this data in group allows for broader analysis than at individual level, allowing for identification of long-term patterns & provision of useful information to support services. Number of IoT devices in use now is several times that of world's population. Wireless technologies must be utilised to enable these devices to share data since physical connections would be too expensive (anywhere they may be used) & would not meet mobility requirements that are typical of many smart city applications. Internet has allowed computers, cell phones, & other electronic devices all over world to communicate with one another, allowing for immediate data transfer. However, internet may not be only communication mechanism for IoT because many applications lack edge devices that can connect to internet. Application might be made up of local network of sensing devices that can exchange data & transfer data to central node, hub, or gateway using multi-hop communication protocol. Gateway may be permanently installed & connected to internet, sending any monitored data to cloud for processing or usage. It's also conceivable that devices inside application utilise variety of protocols, with central node able to interact with all of them; popular example of this architecture is smart home, where manufacturers create proprietary gadgets. [11]

SMART CITY IOT APPLICATIONS IN ACTION:-The Internet of Things (IoT) connects many disparate objects. As result, all existing objects must be linked to Internet in

order to provide ease of access. Reason for this is because smart cities contain sensor networks, & connecting intelligent equipment to internet is required to remotely monitor their treatment, such as power usage monitoring to reduce electricity consumption, light control, & air conditioner management. To achieve this goal, sensors may be placed in numerous areas to collect & analyse data for better use. Shows some of most common IoT applications for smart cities.

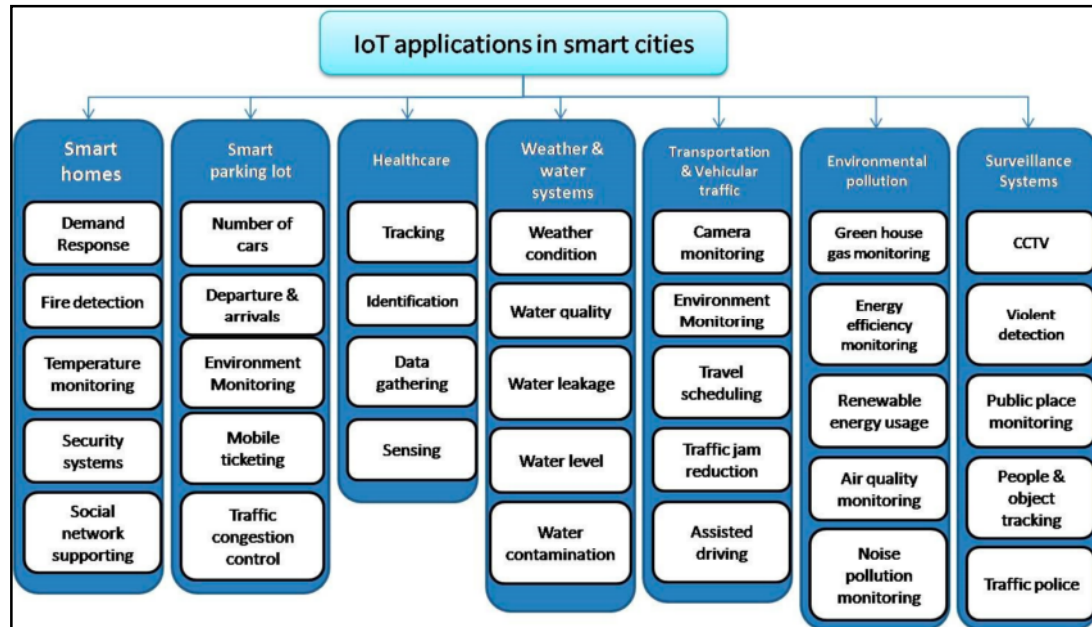


Figure 5:-Internet of Things' major uses.

Houses with Smart Technology

Smart houses may be monitored by analysing data generated by different sensors. Consumers can be warned if pollution levels exceed permissible limit using DR techniques, or customers can be warned if pollution levels exceed acceptable limit using pollution monitoring. Smart homes & products, such as smart TVs, home security systems, lighting management, fire detection, & temperature monitoring, are all made possible by IoT technology. Sensors in these appliances monitor conditions & surroundings & send surveillance data to central controller at home, allowing homeowner to continually watch & manage home from outside & make best choice possible in any situation. These surveillance data help forecast future occurrences so that they may be prepared ahead of time by collecting accurate measurements to avoid losing convenience, security, comfort, & high quality of life. Through NAN, smart residences in neighbourhood may be linked to establish smart community. Houses can exchange surveillance data such as exterior camera footage to locate accident or report occurrences to police station. Other smart community uses include healthcare, resource management, & social networking assistance. Concept encompasses not only neighbourly connections, but also expansion & development of full smart city that can monitor & manage all actions in smart city. [12]

Parking Garages That Are Smart

Smart parking allows for tracking of individual automobiles' arrival & departure timings all across city. As result, these parking lots must be designed to accommodate amount of cars in each location. Furthermore, new parking lots where there are more automobiles must be constructed. As result, data from smart parking lots may benefit both customers & merchant's indaily lives of smart cities. This service uses road sensors & sophisticated displays to direct cars to finest parking spots in town. Finding parking spot sooner is one of service's advantages, which implies fewer CO emissions from automobiles, reduced traffic congestion, & happy residents. It may be included into IoT systems in cities. Furthermore, short-range

communication technologies such as RFID&NFC may be used to do electronic parking permit verification, allowing for enhanced citizen services. [13]

Healthcare

In field of healthcare, IoT technologies provide several benefits in smart cities. Some of these applications include tracking of people&things, such as patients, personnel,& ambulances, as well as automatic data collection&sensing. Patients' status in clinic or hospital is tracked in terms of persons&objective tracking in order to offer better&faster workflow in hospital. Ambulances, blood products,&various organs for transplantation are all tracked online to ensure their availability. In terms of patient identification, patients are identified in database to reduce chance of receiving incorrect medicines, dosages, or treatments. Goal of staff authentication is to enhance employee conduct when it comes to patients. In terms of data collecting&sensing, it aids in reduction of data processing time&prevention of human mistakes. Sensor devices are used to diagnose patient problems&to provide real-time information on patient health indicators such as prescription compliance. Bio-signal monitoring is used to study patient's status utilising variety of wireless access-based technologies that allow patient's data to be accessed from anywhere.[14]

Systems of Water&Weather

Weather systems make use of variety of sensors to provide accurate data such as temperature, rain, sun irradiation,&wind speed, as well as to assist smart city run more efficiently. Water distribution systems, like energy distribution systems, are critical components of any smart city. Traditional water distribution systems from water source to customer's premises are ineffective&inefficient, particularly when it comes to identifying leaks in pipeline or other elements of system. As result, by placing sensors in strategic positions throughout distribution system, it becomes intelligent for detecting problems&other uses. Water source, such as lake or river, storage facilities, such as reservoirs,&distribution networks, such as underground or aboveground pipes, are all components of water distribution system. Placement of sensors in IoT-based environment may be used to detect problems such as leakage, water quality,&reservoir water level. Placement of sensors in various areas of water distribution networks is depicted. As result, amount of water in storage tank is determined by putting ultrasonic sensor on top of tank&two pressure transducers at bottom. Aside from when cities get too much or too little rain, many of them have serious water difficulties. Local utilities can use IoT to develop innovative methods to plan&manage irrigation, solve excessive water consumption, improve water conservation,&more effectively allocate their scarce resources,&address flooding&wastewater management during storm, depending on needs of region. In absence of management strategy, untreated sewage will inevitably be dumped into local waterways. IoT assists local governments in teaching water management & planning, such as managing large amounts of raw sewage&more effective storm preparedness. [15]

Vehicle Traffic & Transportation

Vehicle traffic data is key source of data in smart cities, & citizens&government will benefit substantially from using data&doing thorough analysis. Residents can use vehicle traffic data to determine when they will arrive at their locations. Use of urban IoT to monitor traffic congestion in smart city should be introduced. Although camera-based traffic monitoring systems are currently in use in many places, they require more robust communication infrastructure in order to deliver more data. Sensing capabilities, GPS installed in contemporary cars, & combination of air quality&sound sensors along specific road are used to monitor traffic. This information is critical for authorities&individuals to control traffic&dispatch cops, as well as to plan most efficient route to work or shopping centre.[16]

CONCLUSION

The significance of evaluating how new concepts & technology (particularly Internet of Things) assist smart cities cannot be overstated. Goal of this review article was to look at different IoT system specs & features, as well as effective incentives for using them. Because completion of IoT substructures can open up wide range of options for smart cities, most significant research reasons were first stated, followed by discussion of many key & useful applications. It was demonstrated how they may be used to expand & improve daily tasks. This paper covers wide range of topics related to Internet of Things in Smart Cities. We show IoT as critical facilitator of smart city services & examine various smart city architectures as well as problems that are experienced in implementation of smart city applications in this thorough overview of Smart Cities & its many areas. We then go through sensing & networking technologies that are utilised in such applications, as well as how AI is applied in smart cities. We have debated on kind of deployment based on technologies & architectures described for each of applications covered for various components to give overview of current research landscape in IoT based Smart Cities.

FUTURE ASPECTS

In terms of encryption algorithms, authentication protocols, data anonymization techniques, & other measures to prohibit invalidated access to IoT networks, major study topic is security & privacy of IoT in smart cities. As previously said, block chain -based solutions might aid in implementation of access tracking & control, secure device detection, spoofing prevention, & data loss while assuring end -to-end encryption. Another area to focus on is development of efficient storage techniques & low -power technology that can help to lower operating expenses. Decentralized systems have been presented as best option for increasing application dependability from deployment standpoint. Further more, developing technique to deal with certain significant problems, such as users'/residents' privacy rights, remains research priority. Some of latest advancements in smart city implementation throughout world were highlighted, which can be used as models or pilot projects for future complete smart cities. Smart systems & sensors should be used by IoT as part of its functionality & specifications to protect inhabitants' rights.

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A descriptive study among GNM 2nd year students on knowledge regarding management of dehydration in children

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Abstract-The current study has been undertaken to assess the Knowledge score regarding management of dehydration in children among GNM 2nd year students in selected nursing schools, Bundi. The research design used for study was descriptive in nature. The tool for study was self-structured knowledge questionnaire which consists of 2 parts -PART- I consisted questions related to Socio-demographic data; PART-II consisted of self-structured knowledge questionnaire to assess the knowledge score regarding management of dehydration in children among GNM 2nd year students. The data was analyzed by using descriptive & inferential statistical methods. The most significant finding was that 30.0% subjects have poor knowledge, 50.0% have average knowledge score while 20.0% GNM 2nd year students were having good knowledge score.

Key-word-Management of dehydration and GNM 2nd year students.

I. Introduction:-Dehydration happens when your body doesn't have as much water as it needs. Without enough, your body can't function properly. When too much water is lost from the body, its organs, cells, and tissues fail to function as they should, which can lead to dangerous complications. You can have mild, moderate, or severe dehydration depending on how much fluid is missing from your body.

Although water is constantly lost throughout the day as we breathe, sweat, urinate, and defecate, we can replenish the water in our body by drinking fluids. The body can also move water around to areas where it is needed most if dehydration begins to occur. Most occurrences of dehydration can be easily reversed by increasing fluid intake, but severe cases of dehydration require immediate medical attention.

Dehydration must be treated by replenishing the fluid level in the body. This can be done by consuming clear fluids such as water, clear broths, frozen water or ice pops, or sports drinks (such as Gatorade). Some dehydration patients, however, will require intravenous fluids in order to rehydrate. People who are dehydrated should avoid drinks containing caffeine such as coffee, tea, and sodas. Underlying conditions that are causing dehydration should also be treated with the appropriate medication. This may include medication available to purchase over-the-counter or online, such as anti-diarrhoea medicines, anti-emetics (stop vomiting), and anti-fever medicines. Treatments for dehydration include rehydrating methods, electrolyte replacement, and treating diarrhoea or vomiting, if needed.

II. Objective of the study

1. To assess the knowledge scores regarding management of dehydration in children among GNM 2nd year students.
2. To find out association between knowledge score regarding management of dehydration in children among GNM 2nd year students with their selected demographic variables.

III. Hypotheses:

H₀: There will be no significant association between knowledge score on management of dehydration in children among GNM 2nd year students with their selected demographic variables.

H₁: There will be significant association between knowledge score on management of dehydration in children among GNM 2nd year students with their selected demographic variables.

IV. Methodology

A descriptive research design was used to assess the knowledge score regarding management of dehydration in children among GNM 2nd year students residing in selected Nursing schools, Bundi. The study was carried out on 40 GNM 2nd year students selected by purposive sampling technique. Demographical variable and self-structured 30 knowledge questionnaire were used to assess the Knowledge score regarding management of dehydration in children by survey method.

V. Analysis and interpretation

SECTION-I Table -1 Frequency & percentage distribution of samples according to their demographic variables.

n = 40

S. No	Demographic Variables	Frequency	Percentage
1	Age in Years		
a.	Less than 20	16	40.0
b.	Greater than 20	24	60.0
2	Gender		
a.	Male	21	52.5
b.	Female	19	47.5
3	Previous knowledge regarding dehydration		
a.	Yes	28	70.0
b.	No	12	30.0
4	Sources of information regarding management of dehydration		
a.	Internet	1	2.5
b.	TV	29	72.5
c.	News paper	7	17.5
d.	Conference / workshop	3	7.5

SECTION-II- Table- 2.1.1- Frequency and percentage distribution of knowledge scores of GNM 2nd year students:

Category and knowledge Score	Frequency (N=40)	Frequency Percentage (%)
POOR (1-10)	12	30.
AVERAGE (11-20)	20	50.0
GOOD (21-30)	8	20.0
TOTAL	40	100.0

The present table 2.1.1 concerned with the existing knowledge regarding management of dehydration in children among GNM 2nd year students were shown by knowledge score and it is observed that most of the GNM 2nd year students 12 (30.0%) were poor (01-10) knowledge, 20 (50.0%) were have average (11 -20) knowledge score and rest of the GNM 2nd year students have 8 (20.0%) were from good(21-30) category.

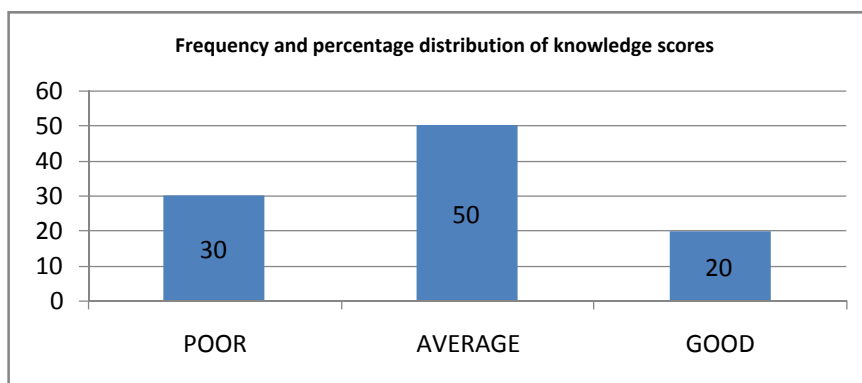


FIG.-2.1.1- Frequency and percentage distribution of knowledge scores of GNM 2nd year students

Table-2.1.2. - Mean (\bar{X}) and standard Deviation (s) of knowledge scores:

Knowledge score	Mean (\bar{X})	Std Dev (S)
	14.20	5.59

The information regarding mean, percentage of mean and standard deviation of knowledge scores is shown in table 2.1.2. Knowledge in mean knowledge score was 14.20 ± 5.59 while in knowledge regarding management of dehydration in children among GNM 2nd year students in selected nursing schools.

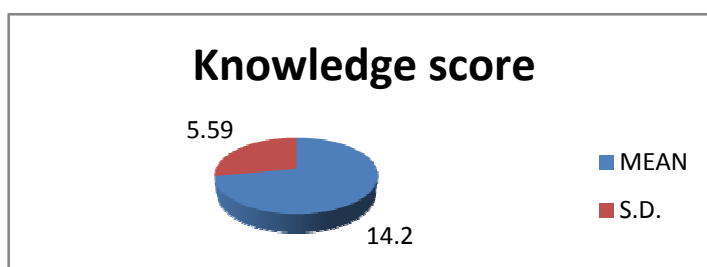


Figure no.-1 Mean and SD of knowledge score of GNM 2nd year students.

SECTION-III Association of knowledge scores and selected demographic variables:

Table- 3.1 Association of age of GNM 2nd year students with knowledge scores:

Age	Knowledge scores			Total
(In years)	POOR (1-10)	AVERAGE (11-20)	FAIR (21-30)	
Less than 20	4	8	4	16
Greater than 20	8	12	4	24
Total	12	20	8	40
$\chi^2 = 0.55$ $p > 0.05$ (Insignificant)				

The association of age & knowledge scores is shown in present table 3.1. The probability value for Chi-Square test is 0.55 for 2 DF which indicated insignificant value ($p > 0.05$). Hence, it is identified that there is insignificant association between age & knowledge scores. Moreover, it is reflected that age isn't influenced with current problem.

Table- 3.2 Association of gender with knowledge scores:

Gender	Knowledge scores			Total
	POOR (1-10)	AVERAGE (11-20)	FAIR (21-30)	
Male	8	10	3	21
Female	4	10	5	19
Total	12	20	8	40
$X^2=1.73$ $p>0.05$ (Insignificant)				

The association of gender & knowledge scores is shown in present table 3.2. The probability value for Chi -Square test is 1.73 for 2 df which indicated gender & knowledge scores. Moreover, it is reflected that gender isn't influenced with current problem.

Table- 3.3 Association of previous knowledge with knowledge scores:

Previous knowledge	knowledge scores			Total
	POOR (1-10)	AVERAGE (11-20)	FAIR (21-30)	
Yes	9	13	6	28
No	3	7	2	12
Total	12	20	8	40
$X^2= 0.47$ $p>0.05$ (Insignificant)				

The association of previous knowledge& knowledge score is shown in present table 3.3. The probability value for Chi -Square test is 0.47 for 4 degrees of freedom which indicated previous knowledge and knowledge scores. Moreover, it is reflected that previous knowledge isn't influenced with present problem.

Table- 3.4 Association of sources of knowledge with knowledge scores:

Sources of knowledge	knowledge scores			Total
	POOR (1-10)	AVERAGE (11-20)	FAIR (21-30)	
Internet	0	01	0	1
TV	9	12	8	29
News	1	6	0	7
paper	2	1	0	3
Conferenc e/worksho p				
Total	12	20	8	40
$X^2=8.14$ $p>0.05$ (Insignificant)				

The association of sources of knowledge& knowledge scores is shown in present table 3.4. The probability value for Chi -Square test is 8.14 for 6 degrees of freedom which indicated sources of knowledge & knowledge scores. Moreover, it is reflected that source of knowledge isn't influenced with current problem.

VI. Results

The findings of the study revealed that 30.0% subjects have poor knowledge,50.0% have average knowledge score while 20.0%GNM 2nd year students were having good knowledge score towards management of dehydration in children in children. The mean knowledge score of subjects was 14.20 ± 5.59 . The association of knowledge score of GNM 2nd year students was found to be statistically insignificant with demographic variables ($p>0.05$).

VII. Conclusion

It was concluded that majority of GNM 2nd year students had average knowledge score regarding management of dehydration in children. GNM 2nd year students should also educate regarding management of dehydration in children to control disease.

VIII. Limitations

- This was limited to selected Nursing schools, Bundi.
- This was limited to 40 GNM 2nd year students.

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Impact of advanced teaching programme on knowledge regarding TB prevention in children among mothers in selected rural area

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ABSTRACT:-The current study has been undertaken to assess knowledge score regarding TB prevention in children among mothers by advanced teaching programme in selected rural area. The research design used for study was pre - experimental in nature. The tool for study was self-structured knowledge questionnaire which consists of 2 parts -PART- I consisted questions related to Socio-demographic data; PART -II consisted of self-structured knowledge questionnaire to assess knowledge score regarding TB prevention in children among mothers. The data was analyzed by using descriptive & inferential statistical methods. The most significant finding was that 29.4% of mothers were having average knowledge regarding TB prevention in children whereas 70.6% had fair knowledge after post-test. It was suggested that nurses must educate mothers regarding TB prevention in children.

Keyword- Impact advanced teaching programme, knowledge & TB prevention in children.

Introduction

Johann Schonlein coined the term “tuberculosis” in the 1834, though it is estimated that *Mycobacterium tuberculosis* may have been around as long as 3 million years. Tuberculosis (TB) was called “phthisis” in ancient Greece, “tabes” in ancient Rome, and “schachepheth” in ancient Hebrew. In the 1700s, TB was called “the white plague” due to the paleness of the patients. TB was commonly called “consumption” in the 1800s even after Schonlein named it tuberculosis. During this time, TB was also called the “Captain of all these men of death.” During the Middle Ages, TB of the neck and lymph nodes was called “scrofula.” Scrofula was believed to be a different disease from TB in the lungs. Today, our names for TB tell us where TB is located (pulmonary, extrapulmonary) and how to treat it (drug-resistant, drug-susceptible, multidrug resistant, & extensively drug-resistant) CDC and many organizations around the world are working towards a future where we call TB “history.” TB is an important cause of illness and death in children in many TB endemic countries.

Need for study

Singh L et al (2017) conducted a study to assess the knowledge regarding pulmonary tuberculosis among family members in selected rural area, Sri Ganganagar District, Rajasthan. A community-based, cross-sectional study was carried out in 6A Chotti Village, a rural area in Sri Ganganagar district of Rajasthan, in April-May 2016.

All family members aged between 18 years to 60 years who were permanent residents of the study area were included in the study. 50 samples were taken for the study. A predesigned and pretested questionnaire was used as a study tool. Data collection was done by house-to-house survey. Data analysis was done by descriptive statistics; informed oral consent was obtained from all the participants.

This study revealed that the majority of most of the family members having knowledge average knowledge 26 (52%) regarding pulmonary tuberculosis. Only 4 (8%) having good knowledge regarding TB and 22(44%) belongs to poor category.

Objective of the study

1. To assess the pre-test Knowledge regarding TB prevention in children among mothers.
2. To prepare and disseminate advance teaching programme regarding TB prevention in children among mothers.
3. To assess the post-test Knowledge regarding TB prevention in children among mothers.

4.To assess impact of advanced teaching programme on knowledge regarding TB prevention in children among mothers.

5.To find out association between pre -test knowledge score regarding TB prevention in children among mothers with their selected socio demographic variables.

Hypotheses:

RH₀: There will be no significant association between pre test knowledge score on TB prevention in children among mothers and selected socio demographic variables.

RH₁: There will be significant association between pre test knowledge score on TB prevention in children among mothers and selected socio demographic variables.

RH₂: The mean post test knowledge score will be higher than mean pre test knowledge score on TB prevention in children among mothers.

Assumption

1. Mothers may have deficit knowledge regarding TB prevention in children.

2. Advanced teaching programme will enhance knowledge of mothers regarding TB prevention in children.

Methodology

A quantitative evaluative approach was used and research design pre experimental one group pre-test post-test research design was used for the study. The samples consisted of 68 mothers selected by Non probability convenient sampling technique. The setting for the study was rural area Digod, Kota. Data was gathered with help of demographic variables & administering a self structured knowledge questionnaire by analyst prior & after advanced teaching programme. Post -test was done after seven days of pre -test. Data were analysis using descriptive & inferential statistics.

Analysis and interpretation

SECTION-I Table -1 Frequency & percentage distribution of samples according to their demographic variables.

n = 68

S. No	Demographic Variables	Frequency	Percentage
1	Age in Years		
a.	19-23	34	50
b.	24-28	12	17.6
c.	≥29	22	32.4
2	Educational Status		
a.	No formal education	5	7.4
b.	Primary	7	10.3
c.	Secondary	34	50.0
d.	Higher secondary	16	23.5
e.	Graduate and above	6	8.8
3	Family type		
a.	Nuclear	32	47.1
b.	Joint	27	39.7
c.	Extended	9	13.2
4	Previous knowledge related to TB prevention in children		
a.	Yes	9	13.2
b.	No	59	86.8

SECTION-II- Table- 2.1.1- Frequency and percentage distribution of Pre -test scores of studied subjects:

Category and test Score	Frequency (N=68)	Frequency Percentage (%)
POOR(1-10)	58	85.3
AVERAGE (11-20)	10	14.7
GOOD (21-30)	0	0.0
TOTAL	68	100.0

The present table 2.1.1 concerned with the existing knowledge regarding TB prevention in children among mothers were shown by pre -test score and it is observed that most of the mothers 58(85.3%) were poor (01 -10) knowledge & some mothers have 10(14.7%) were from average category.

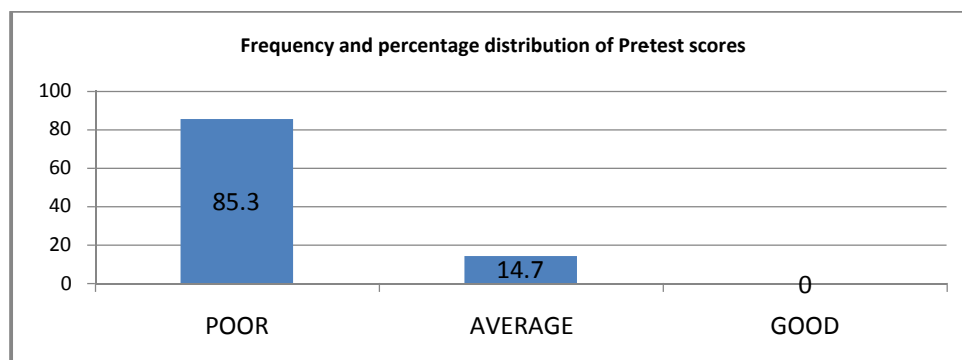


FIG.-2.1.1- Frequency and percentage distribution of Pre-test scores of studied subjects

Table-2.1.2. - Mean (\bar{X}) and standard Deviation (s) of knowledge scores:

Knowledge Pre -test	Mean (\bar{X})	Std Dev (S)
Pre-test score	6.67	1.33

The information regarding mean, percentage of mean and standard deviation of test scores in shown in table 2.1.2 knowledge in mean pre -test score was 6.67 ± 1.33 while in knowledge regarding TB prevention in children among mothers in selected rural area.

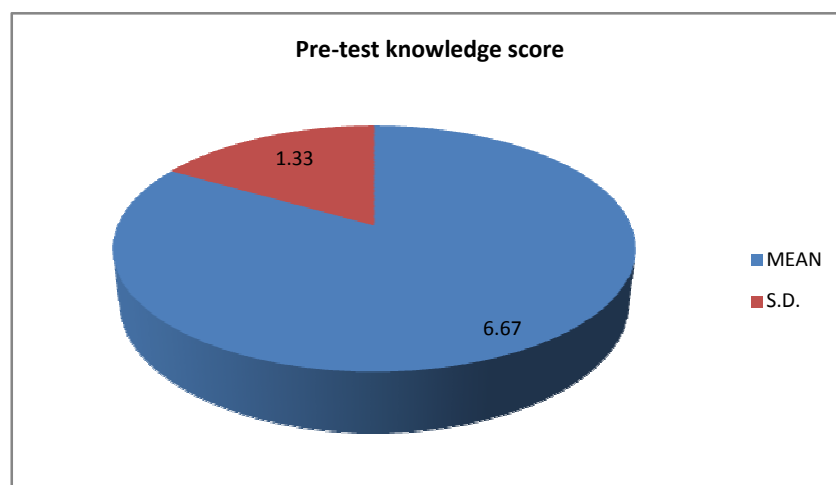


FIG.-2.1.1.1. - Mean (\bar{X}) and standard Deviation (s) of knowledge scores

Table-2.2.1- Frequency and percentage distribution of Post test scores of studied subjects:

Category and post-test Score	Frequency (N=68)	Frequency Percentage (%)
POOR(01-10)	0	0.0
AVERAGE (11-20)	20	29.4
GOOD (21-30)	48	70.6
TOTAL	68	100%

The present table 2.2.1 concerned with the existing knowledge regarding TB prevention in children among mothers was shown by post test score and it is observed that most of the

mothers 48(70.6%) were **GOOD** (21-30) knowledge & other mothers have 20(29.4%) category which are **AVERAGE** (11-20) post test knowledge score in present study.

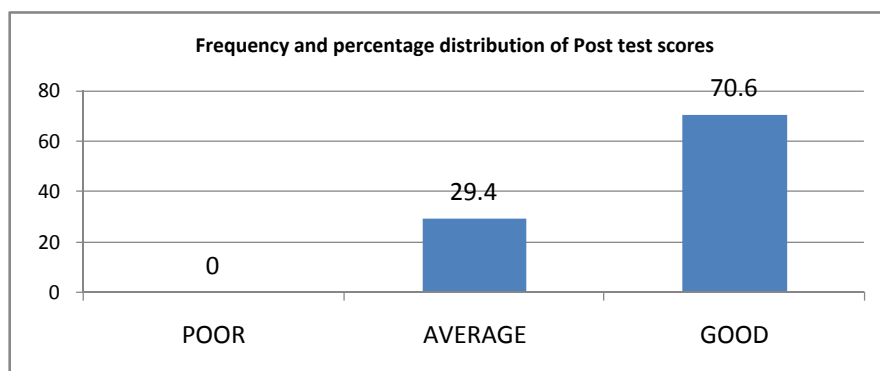


FIG.-2.2.1- Frequency and percentage distribution of Post test scores of studied subjects

Table-2.2.2. - Mean (\bar{X}) and standard Deviation (s) of knowledge scores:

Knowledge Test	Mean (\bar{X})	Std Dev (S)
Post-test score	14.42	1.39

The information regarding mean, percentage of mean and SD of post test scores is shown in table 2.2.2 knowledge in mean post test score was 14.42 ± 1.39 while in knowledge regarding TB prevention in children among mothers in selected rural area.

Hence, it is confirmed from the tables of section -II that there is a significant difference in mean of test scores which partially fulfill 2nd objective of the present study.

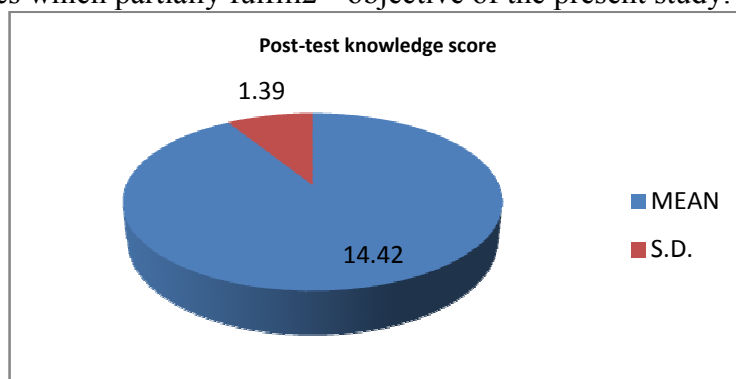


FIG.-2.2.2. - Mean (\bar{X}) and standard Deviation (s) of knowledge scores:

TABLE 2.2.3: Impact of advanced teaching programme by calculating Mean, SD, Mean Difference and 't' Value of Pre-test and Post-test knowledge.

Knowledge Score of Mothers	Mean (\bar{X})	S. D. (s)	D. F.	t-value	Significance
Pre-test	6.67	1.33	67	-30.24	P<0.05
Post-test	14.42	1.39			

When the mean and SD of pre-test & post-test were compared & 't' test was applied. It can be clearly seen that the 't' value was -30.24 and p value was 0.05 which clearly show that advanced teaching programme was very effective in enhancing the knowledge of mothers.

SECTION-III Association of Pre tests knowledge scores and selected socio demographic variables:

Table- 3.1 Association of age of mothers with pre-test scores:

Age	Test scores			Total
(in years)	POOR (1-10)	AVERAGE (11-20)	GOOD (21-30)	
19-23	27	7	0	34
24-28	9	3	0	12
≥29	22	0	0	22
Total	58	10	0	68
X=5.74 p>0.05(Insignificant)				

The association of age & test scores is shown in present table 3.1. The probability value for Chi-Square test is 5.74 for 2DF which indicated insignificant value ($p>0.05$). Hence, it is identified that there is insignificant association between age & test scores. Moreover, it is reflected that age isn't influenced with current problem.

Table- 3.2 Association of educational status with pre-test scores:

Education al Status	Test scores			Total
	POOR (1-10)	AVERAGE (11-20)	GOOD (21-30)	
No formal	5	0	0	5
Primary	6	1	0	7
Secondary	31	3	0	34
Higher sec.	12	4	0	16
Graduate	4	2	0	6
above Total	58	10	0	68
X= 4.81 p>0.05 (Insignificant)				

The association of educational status & test scores is shown in present table 3.2. The probability value for Chi -Square test is 4.81 for 4 degrees of freedom which indicated educational& test scores. Moreover, it is reflected that educational status isn't influenced with present problem.

Table- 3.3 Association of family type with pre-test scores:

Family type	Test scores			Total
	POOR (1-10)	AVERAGE (11-20)	GOOD (21-30)	
Nuclear	26	6	0	32
Joint	24	3	0	27
Extended	8	1	0	9
Total	58	10	0	68
X=0.78 p>0.05 (Insignificant)				

The association of family type& test score is shown in present table 3.3. The probability value for Chi-Square test is 0.78 for 2degrees of freedom which indicated family type and test scores. Moreover, it is reflected that family type isn't influenced with present problem.

Table- 3.4 Association of previous knowledge related to TB prevention in children with pre-test scores:

Previo Knownled ge	Test scores			Total
	POOR (1-10)	AVERAGE (11-20)	GOOD (21-30)	
Yes	6	3	0	9
No	52	7	0	59
Total	58	10	0	68
X=2.86 p>0.05 (Insignificant)				

The association of previous knowledge & test scores is shown in present table 3.4. The probability value for Chi -Square test is 2.86 for 1 degrees of freedom which indicated

previous knowledge & test scores. Moreover, it is reflected that previous knowledge isn't influenced with current problem.

Results:-The result of this study indicates that there was a significant increase in post-test knowledge scores compared to pre-test scores of TB prevention in children. The mean percentage knowledge score was observed 6.67 ± 1.33 in pre-test & after implementation of advanced teaching programme post-test mean percentage was observed with 14.42 ± 1.39 .

Conclusion:-Thus, after the analysis and interpretation of data we can conclude that the hypothesis RH1 that, there will be significance difference between pre-test knowledge score with post-test knowledge score at ($P < 0.05$) is being accepted.

Furthermore, advanced teaching programme related to TB prevention in children among mothers may consider as an effective tool when there is a need in bridging & modifying knowledge.

Limitations

- This was limited to selected rural area.
- This was limited to 68 mothers.

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Nurses Role in Medication Management and Strategies to Prevent Errors

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ABSTRACT

Background- Patient safety is a common goal for every healthcare provider. Medication error is one of the major concerns of the nursing Professionals internationally. Medication errors that nurses makes, violate the precept “does no harm” and may cost a human life. A systematic approach to determine the underlying factors in the occurrence of medication errors is required for the safety of both patients and the staff.

Aim: The aim of this study was to determine the frequency of medication errors and their reporting by nursing staff employed at different hospitals in United Arab Emirates and their relationship with hospital working conditions.

Materials and Methods: -The researcher adopted the Quantitative research approach. Descriptive survey research design was used by the investigator. The accessible population for the study was staff nurses working in different hospitals of UAE selected through random sampling technique.

Results: The findings of the study revealed that maximum are female nurses compare to male nurses .Most of nurses are having above 13 years’ experience in nursing .More than half of the nurses in the survey has undergone a bachelor degree .Nurses are from the outpatient department and prefer an eight hours shift to avoid exhaustion so their working conditions are favorable to them. Most of the nurses are in favor of the statement that they should have a pharmacological knowledge and must know the therapeutic uses of a drug, its normal dosage, and any side effects and contraindications before it is given to a patient. The nurses should be always updated with the current knowledge.

Conclusion: The study concluded that the educational programs that promote the recognition of medication errors. The knowledge also can assist with system redesigns to reduce or eliminate barriers to reporting medication errors.

Keywords: - Medication error, Pharmacology.

Introduction:-Medication errors are prevalent in the hospital settings. To ensure the patient safety and provide better health services, medication errors should be curbed. India is still lacking the regulatory system for the control of medication errors. Therefore, a stringent regulatory set up should be established to reduce medication errors. Awareness among the health-care professionals regarding medication errors may be the major factor in the establishment of successful regulatory system. It is therefore a challenging issue for the health-care settings as these errors pose a great threat to the safety of patient. Giving medicine is probably one of the most critical duties of nurses since the resulting errors may have unintended, serious consequences for the patient .Medication errors can significantly affect patient safety and treatment costs and result in hazards for patients and their families. A medication error is a failure in the treatment process that leads to, or has the potential to lead to, harm to the patient. A medication error can cause or lead to inappropriate medication use or patient harm while patient is admitted in hospital. A United Kingdom study found that 12% of all primary care patients may be affected by a prescribing or monitoring error over the course of a year, which increased to 38% in those 75 years and older and 30% in patients receiving five or more drugs during a 12-month period. Overall, 5% of prescriptions had prescribing errors. A Swedish study found a medication error rate of 42%. However, two -

thirds were related to a failure to state the purpose of the treatment on prescriptions and only 1% of errors resulted in an incorrect dose.

Dorothy A et al (2020) conducted a prospective observational study on Prevalence of Medication Errors and the Associated Factors. This study aimed to determine the incidence and factors associated with medication errors among cancer patients. The study concluded that the incidence of medication errors among cancer patients was high in Mbarara Regional Referral Hospital. Prescription errors were the most common type of error followed by administration errors, and dispensing errors were the least common. Residence, education level, and alkylating agent chemotherapy were significantly associated with occurrence of medication errors.

Ravula S et al (2019) conducted a study of medication errors by prospective observational approach in Warangal hospitals. The objective of the study was to determine the prevalence of medication errors occurring in a multispecialty hospital in Warangal. This present study manifests that medication errors were predominate in males than in females and also the common age group was 50–60 years.

Nargis Perven et al (2018) conducted a descriptive correlation study on Knowledge Regarding Medication Error among Nurses at Tertiary Hospital. The aim of this study is to assess nurses' knowledge regarding medication error. The study concluded that the knowledge is the matters toward safe administration of medication and most of the nurses strongly agree to continue education program for prevention of medication error. Intensive regular retraining programs should be held aiming to improve nurses' pharmacological information, encourage to report medication errors, hospital should provide continuing education to reduce medication error especially; younger and diploma degree nurses and hospital managers should respond to errors in a positive ethical and logical manner in order to enhance patient safety. Medication error is a sensitive subject, and people may have concerns about reporting actual errors. In our staff interviews, talking about the perceived benefits and drawbacks of their hospital electronic prescription system generated many accounts of specific errors which could or might happen, as well as descriptions of near misses which had been made by other people. The general view is that electronic prescription will reduce errors but new technology can also introduce new types of error. We need to explore how people change and are changed by systems and use beliefs about errors to maintain and develop safe and effective healthcare working practices. Change in practice could have a significant effect on inter-professional communication.

OBJECTIVE

- To understand the magnitude of the problem of medical errors.
- To student will learn about the many types of medical errors.
- To student will identify the causes of medical errors.
- To student will learn about the important role that proper documentation and communication plays in decreasing medical errors.
- To student will learn effective strategies to prevent medical errors.
- Identify populations of special exposure to medical errors.

SETTING AND DESIGN:-Hospitals in UAE. Researcher adopted non - experimental descriptive survey research design. Samples are selected through random sampling.

DESCRIPTION OF TOOL :-Structured survey Questionnaire was administered to nurses to know about the pattern of their work and the view about the reporting of incidence.

PART: I SOCIO DEMOGRAPHIC DATA

The data consisting of things requesting background information from the nurses working in different hospitals of United State Emirates. It includes gender, age, years of experience in nursing, highest level of education completed, working hours, and areas of work, patients handled per shift, working conditions, medication training or competency.

PART: II ASSESSMENT OF

RESULTS AND DISCUSSION:

Table-1

Socio demographic variables.	Frequency	Percentage
1. Gender		
Male	9	9%
Female	95	91%
2. Age		
20 – 30 years	15	14%
31 – 40 years	40	38%
41 – 50 years	28	27%
51 – 60 Years	21	20%
3. Years of experience in Nursing		
1 – 4 Years	5	5%
5 – 8 years	14	13%
9 – 12 years	20	19%
Above 13 years	65	63%
4. Highest level of education completed		
Diploma in nursing	26	25%
Bachelor in Nursing	64	62%
Master's degree	12	12%
PhD	2	2%
Working hours		
6 hours shift	0	0%
8 hours shift	59	57%
10 hours shift	23	22%
12 hours shift	22	21%
Areas of work		
Emergency	13	13%
Operation Theatre	3	3%
ICU	7	7%
Labor and Delivery	6	6%
Medical Ward	21	20%
Surgical Ward	22	21%
Out patients	30	29%
Others	2	2%
Patients Handled per shift		
1 to 2	2	2%
2 to 4	6	6%
4 to 6	20	19%
6 to 8	13	13%
8 and above	63	61%
Working conditions		
Exceptionally unfavorable	3	3%

Unfavorable	3	3%
Somewhat unfavorable	9	9%
Favorable	79	76%
Exceptionally favorable	10	10%
Exceptionally unfavorable	3	3%
Medication training competency or		
Yes	95	91%
No	9	9%
Nurses need to update their knowledge in pharmacology		
Strongly Agree	76	73%
Agree	24	23%
Neither Agree nor Disagree	3	3%
Disagree	0	0%
Strongly Disagree	1	1%
Appropriate abbreviations in regards to medication administration		
Hardly Ever	24	23%
Occasionally	12	12%
Sometimes	19	18%
Frequently	22	21%
Almost Always	27	26%
Common type of error reported		
Drug elimination	5	5%
Wrong time	48	46%
Wrong Patient	10	10%
Wrong Dose	31	30%
Wrong Drug	10	10%
Frequency of committing error in a year		
1	38	37%
2	45	43%
3	14	13%
4	2	2%
5 and above	5	5%
Common cause of medication errors		
Environmental distractions	13	13%
Interference from colleagues	12	12%
Interference from patients	10	10%
Verbal orders by physician	23	22%
Work overload	29	28%
Improper communication between team members	17	16%
Frequency of reporting medication error		
Hardly Ever	30	29%
Occasionally	32	31%
Sometimes	18	17%
Frequently	13	13%
Almost Always	11	11%
Committing medication error after using electronic medication management system		
Very little	41	39%
Fairly well	25	24%
Not at all	8	8%
Quite well	19	18%
Very well	11	11%

PART- B ANALYSIS OF QUESTIONNAIRE

S. NO.	Statements	means I am Strongly Agree (f)	means I am Agree(f)	means I am Neither Agree nor Disagree(f)	means I am Disagree (f)	means I am Strongly Disagree (f)
1.	Usually sure what constitutes medication error.	58	35	5	3	3
2.	Usually sure when to inform a physician in case of medication error	62	29	9	1	3
3.	Usually sure when to report medication error using incident report	67	25	5	2	5
4.	Medication errors are not reported because nurses are afraid of the reaction they will receive from the manager.	29	38	15	12	10
5.	Medication errors are not reported because nurses are afraid of the reaction they will receive from their co-worker.	17	41	22	9	15
6.	Aware about an incident where the co -worker has not reported a medication error.	22	33	18	16	15
7.	Failed to report a medication error as the error was not serious to warrant reporting.	17	19	10	27	31
8.	Failed to report a medication error because I was afraid that it might be subject to disciplinary action.	15	22	10	28	29
9.	Education on medication safety reduces the risk of medication errors.	68	18	5	5	8
10.	Bringing medication sheet with me every time when I serve medication to the patient.	69	20	6	2	7
11.	Administered medication that another nurse has prepared.	8	3	18	39	36
12.	Colleague ask me to document the medication that had been given to a patient, thus I help her to sign the medication administration record.	4	13	30	32	25
13.	Check patient's ID band prior to administering medication.	76	16	6	4	2
14.	Labeling syringes and bags with the medication name.	61	22	13	2	6
15.	Preparing and carry medications for more than two patients at a time.	3	18	11	40	32
16.	Medication assignment system reduces medication errors subject to disciplinary action.	21	59	12	5	7
17.	Signing the medication sheet before administration.	3	2	8	42	49

To sum up we can say that-

Most of the nurses have undergone a medication competency, this has become a mandatory requirement in most of the hospitals to support consistent curriculum and practice development so that nurses can develop and maintain the ability to carry out the task, regardless of where they work. Half of the nurses reported wrong time as the common type of medication error. Our participants stated inadequate number of nurses compared to the number of patients to be among the causes of medication errors. The workload will keep the nurses under stress which easily leads to committing errors. Another cause of medication error is the verbal orders by doctors. Nurses informed that check the identification band of every patient before giving medication as it is one of the international patient safety goal,

they also take to medication sheet with them to check the dose, name and route of medication to be given and if they carry medications in a syringe or bag, it should be labeled properly with patient and medication name to avoid confusions. Nurses are in support of the statement that there should be medication assignment nurses in all shifts that are responsible only for medication administration which will help her to concentrate more on the administrations rather than being distraction by external environments. Nurses also confirms that they never sign the medication sheet before administration of the drug as you never know may be the patient will refuse to the medication. Nurses strongly disagree that they use to administer medication which is prepared by their colleagues as it is one of the rule of medication management to do independent check. They also disagreed to the statement that they documented the medication which was given by their coworkers as it can involve them in problems if the patient resulted in any life threatening reactions. The nurses are also not allowed to carry medication for all patient's together unless it is in a medication cart with each drug labeled with patient names. Another reason for medication error is the fear that there will be disciplinary actions from managers and what the coworkers would think about her. Many nurses are aware of incidence where their colleagues are not reporting the errors. They were fear of being blamed, fear of being labeled as incompetent nurses and inadequacy, fear of their future professional career, fear of judicial issues, and adverse reactions of their heads and colleagues. Most nurses fear humiliation from superiors and their peers when reporting medication errors, although it is the nurse's ethical and legal responsibility to document such occurrences.

RECOMMENDATIONS

- Empowering patients by having them share in decision -making about their treatment and instructing them about all aspects of the medications they are given, as well as respecting their rights as patients and listening with genuine attention to their needs, these will also increase the likelihood that error and near-error will be discovered.
- We should create a new collective approach whereby medical staff can freely report all the errors they make without being immediately dragged to judgment. Bringing medical and nursing staff to appreciate that error reporting is a duty, and one that does not automatically attract penalty, will stop them hiding errors and so increase patient safety.
- To take responsibility for an error is not to admit guilt. We have to establish rules which will create a social and organizational culture of transparency and of the full reporting to patients of blunders and accidents in their medical treatment.
- Working nurses need to be trained in how and when to report adverse incidents. This will ensure that they respond fully to the rights of every client and in particular to those patients whose treatment in the community clinic has been sub-standard.
- Insure medication administration workspaces are free of distraction and noise.
- Design nursing workflow to reduce interruptions during medication administration.
- Include unit level nursing staff in the systematic evaluation of clinical policies and procedures.
- Systematically monitor the effectiveness of changes made to the practice environment as the result of nursing errors and close calls.
- Collaborate with unit-level staff in the creation of a non-punitive environment.
- There should be an on -going, systematic program of quality improvement and peer review with respect to the safe use of medications. A formal drug use evaluation (DUE) program, developed and conducted through collaborative efforts among medicine, pharmacy, and nursing, should be integrated and coordinated with the overall hospital quality improvement program.

- It is recommended that there be computerized pharmacy systems in place that enable automated checking for doses, duplicate therapies, allergies, drug interactions, and other aspects of use.
- All discontinued or unused drugs should be returned to the department of pharmacy immediately on discontinuation or at patient discharge

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A study to assess the effect of acupressure on premenstrual syndrome among nursing students in selected nursing colleges of metropolitan city

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ABSTRACT

Background of the study: -It has been estimated from retrospective surveys that nearly 90% of women have experienced at least one premenstrual syndrome as defined by ICD-10.

Materials and Methods: - A study was conducted on 50 nursing students with symptoms of PMC. Probability sampling technique was utilized. The tool consists of Pre intervention tool - Questionnaire, Numerical pain scale, Daily rating of severity of symptoms of pre menstrual syndrome during treatment i.e. acupressure. Analysis of the data was done by using Descriptive statistics which includes percentage, frequency, mean, and standard deviation.

Result: -100% sample belong to 20 to 25 years age group, all are unmarried, majority i.e 80% started their menarche between 10 to 15 years, 100% having duration of menstrual flow for 3-5 days, 80% having normal menstrual flow, 100% had regular menarche for 4 to 5 days and majority of them were experiencing most of physical, psychological and emotional symptoms, 80% have started experiencing symptoms 2 days prior to menses persisting for 1 to 3 days, nobody has received treatment for PMS.

Providing acupressure Day wise Comparison between before and after observations by Wilcoxon Signed Ranks

Test interpreted that the calculated Z statistic of 2.032 for day 1 pre physical and day 1 post physical is more than the Z table value of 1.96 hence it is statistically significant. The calculated Z statistic of 2.023 for day 1 pre physical and day 5 post physical is more than the Z table value of 1.96 hence it is statistically significant.

Key words: Pre menstrual syndrome, acupressure

Introduction: Premenstrual Syndrome is a re-occurring condition that affects women during the one to two weeks before menstruation begins (the luteal phase) and disappears at the end of a full flow of menses.¹

“Acupressure” is an ancient Chinese healing method that involves applying pressure to certain meridian points on the body to relieve pain. The human body has fourteen "meridians" that carry energy throughout the body. These meridians start at the fingertips, connect to the brain, and then connect to the organ associated with the specific meridian.²

Aim: Considering PMS has negative impact on life of the girls to develop the alternative treatment methods like acupressure for improving quality of life among students suffering with PMS been planned.”

Objectives of the study

1. To identify the pre menstrual syndrome among nursing students.
2. To evaluate the effect of acupressure on pre menstrual syndrome among nursing students.
3. To find out the association between effects of acupressure on premenstrual syndrome with selected demographic variables e.g. Age, Education, etc.

Material and Methods: Conceptual framework of this study is based on ‘General System Theory’ and it is given by Ludwig Von Bertalanffy in 1968.

Research Approach – Quantitative research approach.

Research Design – Quasi experimental research design (time series design) to assess effect of acupressure on pre menstrual syndrome.

Technique: Research techniques used for data collection self administered questionnaire and acupressure as intervention.

Sample: Probability sampling Technique (Stratified Random Sampling).³

Setting: Study was carried out in the nursing college hostel in metropolitan city.

Tool - used consists of Pre intervention tool - Section 1. Questionnaire including A) Socio demographic data B) Menstrual data C) Signs & symptoms of pre menstrual syndrome Section 2 Numerical pain scale, Intervention i.e. acupressure & Post intervention tool - Section 3 Daily rating of severity of symptoms of pre menstrual syndrome during treatment.

Validity -Testing of the content validity of the tool was done by experts in the fields of Obstetrics & Gynecology, Nursing, & Acupressure.

Findings:-Demographic Frequency Table

Age

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid B	50	100.0	100.0	100.0

Gen. Edu.

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid A	50	100.0	100.0	100.0

Marital status

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid b	50	100.0	100.0	100.0

Nsg course

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid c	50	100.0	100.0	100.0

Age of Menarche

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid b	10	20.0	20.0	20.0
c	20	40.0	40.0	60.0
d	20	40.0	40.0	100.0
Total	50	100.0	100.0	

Duration of menstrual flow

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid b	50	100.0	100.0	100.0

Menstrual flow

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid a	40	80.0	80.0	80.0
c	10	20.0	20.0	100.0
Total	50	100.0	100.0	

Menstrual cycle

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid a	50	100.0	100.0	100.0

Number of days in each cycle

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid 28	50	100.0	100.0	100.0

L.M.P.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.11.15	10	20.0	20.0	20.0
	7.11.15	10	20.0	20.0	40.0
	8.11.15	20	40.0	40.0	80.0
	9.11.15	10	20.0	20.0	100.0
	Total	50	100.0	100.0	

I. Physical

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,2,5,6,7, 11,12	10	20.0	20.0	20.0
	1,2,5,6,7,11,12,13	10	20.0	20.0	40.0
	1,2,5,6,7,8,11	10	20.0	20.0	60.0
	1,3,5,6,7,8,11,	10	20.0	20.0	80.0
	1,5,6,11,12	10	20.0	20.0	100.0
	Total	50	100.0	100.0	

II. Psychological

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1,4,6,10	10	20.0	20.0	20.0
	10	10	20.0	20.0	40.0
	2,10	20	40.0	40.0	80.0
	nil	10	20.0	20.0	100.0
	Total	50	100.0	100.0	

III. Emotional

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2	10	20.0	20.0	20.0
	2,4	10	20.0	20.0	40.0
	2,4,7	10	20.0	20.0	60.0
	2,7	10	20.0	20.0	80.0
	nil	10	20.0	20.0	100.0
	Total	50	100.0	100.0	

Onset of pms

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	f	10	20.0	20.0	20.0
	g	40	80.0	80.0	100.0
	Total	50	100.0	100.0	

s/s persists for

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	a	20	40.0	40.0	40.0
	b	20	40.0	40.0	80.0
	c	10	20.0	20.0	100.0
	Total	50	100.0	100.0	

Receiving treatment

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid b	50	100.0	100.0	100.0

Type of treatment

	Frequency	Percent	Valid Percent	Cumulative Percent
Valid nil	50	100.0	100.0	100.0

Assessment of Physical, psychological and emotional symptoms by comparison of mean.

Descriptive Statistics

	N	Mean	Std. Deviation
D1 pre physical total	50	6.60	1.949
D1 post physical total	50	2.20	.837
D1 pre psychological total	50	2.00	1.871
D1 post psychological total	50	.20	.447
D1 pre emotional total	50	1.40	1.140
D1 post emotional total	50	.00	.000
D2 pre physical total	50	4.20	2.950
D2 post physical total	50	2.60	2.702
D2 pre psychological total	50	.60	.894
D2 post psychological total	50	.40	.548
D2 pre emotional total	50	.60	.894
D2 post emotional total	50	.20	.447
D3 pre physical total	50	3.80	2.588
D3 post physical total	50	1.60	1.342
D3 pre psychological total	50	.80	1.304
D3 post psychological total	50	.20	.447
D3 pre emotional total	50	1.00	1.732
D3 post emotional total	50	.60	1.342
D4 pre physical total	50	1.00	.707
D4 post physical total	50	.40	.548
D4 pre psychological total	50	.00	.000
D4 post psychological total	50	.00	.000
D4 pre emotional total	50	.20	.447
D4 post emotional total	50	.00	.000
D5 pre physical total	50	.20	.447
D5 post physical total	50	.20	.447
D5 pre psychological total	50	.00	.000
D5 post psychological total	50	.00	.000
D5 pre emotional total	50	.00	.000
D5 post emotional total	50	.00	.000
Valid N (listwise)	50		

Day wise Comparison between before and after observations by Wilcoxon Signed Ranks Test

Ranks

Ranks			N	Mean Rank	Sum of Ranks
D1 pre physical total - D1 post physical total	Negative Ranks		0 ^a	.00	.00
	Positive Ranks		50 ^b	3.00	15.00
	Ties		0 ^c		
	Total		50		
D1 pre psychological total - D1 post psychological total	Negative Ranks		0 ^d	.00	.00

psychological total	Positive Ranks	40 ^e	2.50	10.00
	Ties	10 ^f		
	Total	50		
D1 pre emotional total - D1 post emotional total	Negative Ranks	0 ^g	.00	.00
	Positive Ranks	40 ^h	2.50	10.00
	Ties	10 ⁱ		
	Total	50		
D2 pre physical total - D2 post physical total	Negative Ranks	0 ^j	.00	.00
	Positive Ranks	30 ^k	2.00	6.00
	Ties	20 ^l		
	Total	50		
D2 pre psychological total - D2 post psychological total	Negative Ranks	0 ^m	.00	.00
	Positive Ranks	10 ⁿ	1.00	1.00
	Ties	40 ^o		
	Total	50		
D2 pre emotional total - D2 post emotional total	Negative Ranks	0 ^p	.00	.00
	Positive Ranks	20 ^q	1.50	3.00
	Ties	30 ^r		
	Total	50		
D3 pre physical total - D3 post physical total	Negative Ranks	0 ^s	.00	.00
	Positive Ranks	30 ^t	2.00	6.00
	Ties	20 ^u		
	Total	50		
D3 pre psychological total - D3 post psychological total	Negative Ranks	0 ^v	.00	.00
	Positive Ranks	20 ^w	1.50	3.00
	Ties	30 ^x		
	Total	50		
D3 pre emotional total - D3 post emotional total	Negative Ranks	0 ^y	.00	.00
	Positive Ranks	20 ^z	1.50	3.00
	Ties	30 ^{aa}		
	Total	50		
D4 pre physical total - D4 post physical total	Negative Ranks	0 ^{ab}	.00	.00
	Positive Ranks	20 ^{ac}	1.50	3.00
	Ties	30 ^{ad}		
	Total	50		
D4 pre psychological total - D4 post psychological total	Negative Ranks	0 ^{ae}	.00	.00
	Positive Ranks	0 ^{af}	.00	.00
	Ties	50 ^{ag}		
	Total	50		
D4 pre emotional total - D4 post emotional total	Negative Ranks	0 ^{ah}	.00	.00
	Positive Ranks	10 ^{ai}	1.00	1.00
	Ties	40 ^{aj}		
	Total	50		
D5 pre physical total - D5 post physical total	Negative Ranks	0 ^{ak}	.00	.00
	Positive Ranks	0 ^{al}	.00	.00
	Ties	50 ^{am}		
	Total	50		
D5 pre psychological total - D5 post psychological total	Negative Ranks	0 ^{an}	.00	.00
	Positive Ranks	0 ^{ao}	.00	.00
	Ties	50 ^{ap}		
	Total	50		
D5 pre emotional total - D5 post emotional total	Negative Ranks	0 ^{aq}	.00	.00

total		Positive Ranks		0 ^{ar}	.00	.00
		Ties		50 ^{as}		
		Total		50		

	D1 pre physical total - D1 post physical total	D1 pre psychological total - D1 post psychological total	D1 pre emotional total - D1 post emotional total	D2 pre physical total - D2 post physical total	D2 pre psychological total - D2 post psychological total	D2 pre emotional total - D2 post emotional total	D3 pre physical total - D3 post physical total	D3 pre psychological total - D3 post psychological total	D3 pre emotional total - D3 post emotional total	D4 pre physical total - D4 post physical total	D4 pre psychological total - D4 post psychological total	D4 pre emotional total - D4 post emotional total	D5 pre physical total - D5 post physical total	D5 pre psychological total - D5 post psychological total	D5 pre emotional total - D5 post emotional total
Z	2.032 ^a	1.841 ^a	1.841 ^a	1.604 ^a	1.000 ^a	1.414 ^a	1.633 ^a	1.342 ^a	1.414 ^a	1.342 ^a	.000 ^b	-1.000 ^a	.000 ^b	.000 ^b	.000 ^b
Asymp. Sig. (2-tailed)	.042	.066	.066	.109	.317	.157	.102	.180	.157	.180	1.000	.317	1.000	1.000	1.000

Interpretation-The calculated Z statistic of 2.032 for day 1 pre physical and day 1 post physical is more than the Z table value of 1.96 hence it is statistically significant. Whereas the calculated Z statistic for all rest is less than the Z table value of 1.96, hence they are not significant.

DAY 1 AND DAY 5 wise Comparison by Wilcoxon Signed Ranks Test

Descriptive Statistics

	N	Mean	Std. Deviation	Minimum	Maximum
D1 pre physical total	50	6.60	1.949	4	9
D1 pre psychological total	50	2.00	1.871	0	5
D1 pre emotional total	50	1.40	1.140	0	3
D5 post physical total	50	.20	.447	0	1
D5 post psychological total	50	.00	.000	0	0
D5 post emotional total	50	.00	.000	0	0

Ranks

	N	Mean Rank	Sum of Ranks
D5 post physical total - D1 pre physical total	50 ^a	3.00	15.00
Positive Ranks	0 ^b	.00	.00
Ties	0 ^c		
Total	50		
D5 post psychological total - D1 pre psychological total	40 ^d	2.50	10.00
Positive Ranks	0 ^e	.00	.00
Ties	10 ^f		
Total	50		
D5 post emotional total - D1 pre emotional total	40 ^g	2.50	10.00
Positive Ranks	0 ^h	.00	.00
Ties	10 ⁱ		
Total	50		

Test Statistics^b

	D5 post physical total - D1 pre physical total	D5 post psychological total - D1 pre psychological total	D5 post emotional total - D1 pre emotional total
Z	2.023 ^a	1.841 ^a	1.841 ^a
Asymp. Sig. (2-tailed)	.043	.066	.066

- a. Based on positive ranks.
- b. Wilcoxon Signed Ranks Test

Interpretation:- The calculated Z statistic of 2.023 for day 1 pre physical and day 5 post physical is more than the Z table value of 1.96 hence it is statistically significant. Whereas the calculated Z statistic for day 1 pre psychological and day 5 post psychological and also day 1 pre emotional and day 5 post emotional is slightly less than the Z table value of 1.96, hence they are statistically not significant.

Conclusion- Thus it shows that acupressure is effective method for reducing the physical symptoms of PMS but it is less effective to reduce psychological and emotional symptoms of PMS.

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Malware Detection in Cloud Computing: Advantages and Issues

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Abstract: Cloud computing gives diverse on demand offerings to the user. These offerings offer a bendy and easy mechanism to get admission to diverse net applications. But in cloud computing offerings like infrastructure as a service provider, platform as a service provider and lots of greater are furnished to the user. But diverse malicious assaults may be happens in those process, a overview over the diverse strategies like malware detection in virtualization, machine name hashing, outside host monitoring etc., which used for malware detection is supplied in this paper, which gives a quick evaluation at the strategies used for malware detection in cloud computing. Cloud computing has an crucial function in all elements of storing facts and imparting offerings online. It brings numerous blessings over conventional storing and sharing schema including an smooth access, on -request storage, scalability and lowering cost. Using its swiftly growing technologies can carry many blessings to the safety of Internet of Things (IoT), Cyber-Physical Systems (CPS) from a selection of cyber -attacks, wherein IoT, CPS offers centers to human beings in their day by day lives. Since the malicious software (malware) is growing exponentially and there's no famous method to detecting malware, using cloud environments to hit upon malware may be a promising method. A new era of malware is the use of superior obfuscation and packing techniques to get away from detection systems. This scenario makes almost not possible to hit upon complicated malware via way of means of the use of a conventional detection method.

Keywords: - Cloud Computing, Malware, malware detection.

Introduction:-Cloud computing is a latest technological improvement in the computing subject wherein especially centered on designing of offerings which may be furnished to the customers in identical way because the simple utilities like food, water, gas, strength and telephony. In this era offerings are advanced and hosted at the cloud (a community designed for storing data known as datacenter) after which those offerings are supplied to customers usually every time they need to use. The cloud hosted offerings are introduced to customers in pay -per-use, multitenancy, scalability, self -operability, on -call for and value powerful manner. Cloud computing is emerge as popular due to above point out offerings supplied to customers. All the offerings supplied with the aid of using servers to customers are furnished with the aid of using cloud carrier provider (CSP) that's operating identical because the ISP (Internet carrier provider) withinside the net computing. In the net era a few revolutionary improvement in virtualization and disbursed computing and having access to of excessive velocity community with low value appeal to awareness of customers towards this era. This era is designed with the brand new idea of offerings provisioning to customers without shopping of those of ferings and saved on their local memory. Malware detection is the method of detecting the presence of malware via way of means of reading application executable. There have been proposed numerous exceptional procedures to discover malware consisting of conventional and superior strategies. Traditional strategies had been used greater than a decade consisting of signature -, heuristic -, behavior -, and version checking - primarily based totally detection procedures. Advanced strategies are primarily based totally on diverse procedures consisting of machine studying, deep studying, side computing and cloud computing. It is thought that signature-primarily based totally detection technique plays properly in phrases of time and reminiscence usage, however it fails to discover unknown malware. Even though heuristic, behavior, and version checking -primarily based totally procedures can discover a sizable part of the malware, those procedures can not discover a few part of zero -day malware. Deep studying and side computing (cell devices) primarily

based totally detection procedures use comparable methods, which might be used in the signature, heuristic, and behavior -primarily based totally ones, however those procedures additionally fail to discover complicated and zero -day malware. Malware detection schema course is converting from conventional to a brand new one. One of the simplest new detection a procedure is cloud -primarily based totally detection. It includes sides – customer and server on cloud computing, customer submits a suspicious report over the internet, and server plays the evaluation and specifies whether or not the given suspicious report is malware or not. During the evaluation process, the server makes use of distinct detection retailers to enhance the performance. During the characteristic extraction section strings, device calls, static and dynamic functions, API strains, software strains and hybrid functions are used. Recent research gift that cloud -primarily based totally detection approach complements the detection charge for regarded and unknown malware [5], [6] and offers greater exact evaluation for every malware sample.

Advantages of Cloud Computing - Cloud computing furnished such a lot of offerings to their users wherein a number of the very famous offerings are listed below:-

On-demand self -carrier- A client can unilaterally provision computing capabilities, consisting of server time and community storage, as wanted mechanically with out requiring human interaction with every carrier provider.

Access Broad network - Capabilities are to be had over the community and accessed via fashionable mechanisms that sell use by heterogeneous skinny or thick consumer platforms (e.g., mobile phones, tablets, laptops, and workstations).

Resource pooling -The provider's computing sources are pooled to serve more than one purchasers the use of a multi -tenant model, with extraordinary bodily and digital sources dynamically assigned and reassigned consistent with client call for.

Scalability-Capabilities may be elastically provisioned and released, in a few instances mechanically, to scale unexpectedly outward and inward commensurate with demand. To the consumer, the abilities to be had for provisioning regularly appear limitless and may be appropriated in any amount at any time.

Measured service -Cloud structures mechanically manipulate and optimize useful resource use through leveraging a metering functionality at a few stage of abstraction suitable to the kind of service (e.g., storage, processing, bandwidth, and energetic consumer accounts). Resource utilization may be monitored, controlled, and reported, supplying transparency for each the company and consumer of the applied service.

Agility- Improves the functionality of the useful resource provisioning to the customers in any such manner so they simply experience want to paintings with a separate useful resource the usage of the idea of virtualization.

Pay-Per-Use Cost -Reductions claimed through cloud providers. A public -cloud shipping version converts capital expenditure to operational expenditure. This purportedly lowers obstacles to entry, as infrastructure is generally furnished through a 3rd birthday birthday celebration and does now no longer want to be bought for one -time or infrequent in depth computing tasks. Pricing on a software computing foundation is fine -grained, with utilization-primarily based totally alternatives and fewer IT abilities are required for implementation (in-house). The e - FISCAL project's modern repository contains numerous articles sea rching into value factors in extra detail, maximum of them concluding that expenses financial savings rely on the kind of sports supported and the kind of infrastructure to be had in -house. Device and area independence Enable customers to get admission to structures the usage of an internet browser no matter their area or what tool they use (e.g., PC, cell phone). As infrastructure is off -site (generally furnished through a 3rd -birthday birthday celebration) and accessed through the Internet, customers can join from anywhere.

Easy Maintenance- Cloud computing programs is easier, due to the fact they do now no longer want to be set up on every consumer's laptop and may be accessed from exclusive places.

i) Multitenancy allows sharing of sources and expenses throughout a big pool of customers for this reason permitting for.

ii) Centralization of infrastructure in places with lower expenses (including actual estate, electricity, etc.)

iii) Peak -load potential increases (customers want now no longer engineer f or maximum feasible load -levels) Utilization and Efficiency: - upgrades for structures that are regularly best 10–20% applied.

Reliability- Improves with the usage of more than one redundant site, which makes well - designed cloud computing appropriate for business continuity and catastrophe recovery.

Application programming interface (API) - Accessibility to software program that permits machines to interact with cloud software program withinside the equal manner that a conventional user interface (e.g., a pc desktop) allows interaction among human beings and computers. Cloud computing systems usually use Representational State Transfer (REST) - based APIs.

Productivity- May be expanded whilst more than one customers can work at the equal statistics simultaneously, in place of expecting it to be stored and emailed. Time can be stored as statistics does now no longer want to be re -entered whilst fields are matched, nor do customers want to put in utility software program improvements to their pc.

Malware Issues In Cloud Computing-Over the remaining decade, our society has end up era dependent. People depend on pc networks to acquire news, inventory prices, and electronic mail and on line shopping. The integrity and availability of these types of structures want to be defended towards some of threats. Amateur hackers, rival corporations, terrorists or even overseas governments have the cause and functionality to perform sophisticated assaults towards pc structures. Therefore, the sector of data safety has end up vitally essential to the protection and financial health of society as a whole. In this conflict to steady our saved statistics and the structures, IDS can show to be a useful device, in which its purpose is to carry out early detection of malicious pastime and likely save you extra severe harm to the protected structures. By the use of IDS, one could probably discover an assault and notify suitable employees right now or save you it from succeeding, in order that the risk can be contained. IDS also can be a to tally beneficial device for recording forensic proof that can be utilized in prison complaints if the culprit of a crook breach is prosecuted. Malware is the mixture of phrases called malicious and software, hence malwares are the software which places mali cious and dangerous impact at the software, running gadget or different components. A survey over diverse malwares and malware detection techniques [13] is offered which offers an outline of the diverse sorts of assaults and lessons of malwares, like community based malware assaults, regular malware assaults etc. in community malware, malwares like spywares are used to position dangerous impact over customers machine, in regular malware. Malwares like autorun.inf gadget.inf etc. are used to position dangero us impact over customer's machine. There are diverse techniques affords via way of means of the person to stumble on malwares withinside the gadget. Like in [8] a hybrid signature name graph scheme is used to offer malware detection for the diverse sorts o f malware assaults, in [11] a semantic conscious malware detection approach is offered which makes use of the semantics of the documents to stumble on malware. In [9] metamorphic malware detection approach to stumble on diverse kind of malwares is offered. In [10] a record content material and relation of those documents is used to offer malware detection the cloud computing which offers a stable mechanism to switch facts in cloud. In [12] a waft for the malware

detection approach is offered, and protection mechanism for the [7] which takes a multi marketers structure to offer protection for the diverse kind of facts is offered.

Conclusion- In cutting -edge state of affairs there are numerous approach are used for intrusion detection in cloud computing. There are various on -calls for offerings are supplied to the user, these strategies calls for an greater capability to deal with such issues. A short description over the strategies which used for malware detection in cloud computing is presented on this paper. There are strategies like n -gram based sample detection; IDS signature, malware detection in virtualization etc. are used. A greater approach for the destiny paintings is proposed to offer higher malware detection in cloud computing state of affairs.

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Dual Role in Nursing: Knowledge and perception among nurses

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Abstract:-The concept of dual role (Faculty supervisor position) in nursing has evolved since a decade. But the practice has not been implemented in a wide range. Only very few institutions are practicing it today. Faculty of an educational institution in nursing has to work as a supervisor in the parent hospital or affiliated hospital and vice versa. It is high time to realize that the education and clinical services cannot go separate. The aim of the study was to assess the knowledge and perception regarding dual role among nurses. Quantitative research approach and descriptive research design was used. Tools used for data collection comprised of a structured knowledge questionnaire and structured perception rating scale to assess knowledge and perception of nurses. Convenient sampling was adopted to select the 100 nurses. Findings revealed that 100% of nurses had adequate knowledge regarding dual role in nursing while 86% nurses had favorable perception towards dual role in nursing. The study concluded that nurses had adequate knowledge regarding dual role. Majority of nurses had favorable perception regarding dual role. Hence, the dual role should be implemented as a policy in all the nursing institutions.

Keywords: Nurses, Knowledge, Perception, Dual role, nursing.

Introduction:-The concept of faculty supervisor position (Dual Role) in nursing has evolved since a decade. But the practice has not been implemented in a wide range. Only very few institutions are practicing it today. It's been widely seen in the Indian setting that highly competent faculty members are concerned only to academic aspects only thus ignoring their clinical competencies. So, it has been suggested that the faculty of an educational institution in nursing has to work as a supervisor in the parent hospital or affiliated hospital. In the era of quality orientation, human rights and consumer driven society, the quest is for the best quality of education and service. The nursing education in India is expected to provide quality education and perform their roles respectively in producing qualified graduates who will meet the needs and expectations of the society. Separation between nursing education and service has once been beneficial for the advancement of nursing education but it also had its adverse effects because the nurse educators were no longer practicing in the clinical area, were neither directly involved in delivering nursing service, nor were they responsible for the type of care provided in the clinical setting. As the gap has been widened, there is now a significant difference as to what is being taught in the institution and what has been practiced in the service setting. There has been a considerable progress in nursing over the past several decades, especially in the area of education. The already existing nursing educational programmes have been strengthened and re-oriented in order to ensure that the graduates have the essential competence to make effective contributions in improving people's health and quality of life. As a result, nursing education has made rapid qualitative advances. However, the expected comparable improvements in the quality of nursing service have not taken place as rapidly and this is because, though we are producing quality graduates they are moving from bedside service to the education or teaching side of nursing profession, because of which the quality care that would have been given, is left out. A study conducted by Gupta S

&Vatsa M on “Collaboration between nursing services and nursing education to improve quality of nursing services and nursing education in South East Asian Countries” at College of Nursing, AIIMS, found that the integration process is effective for improving the quality of nursing care as perceived by doctors, nurse practitioners and undergraduate nursing students. Quality of nursing care perceived by doctors improved from 26.06% to 30.68%, nurse practitioners perceived an increase of 7% and quality of nursing perceived by students improved from 18.10% to 33.36%. There was an improvement in patient satisfaction on from 40.29% to 70%. Job satisfaction of nursing personnel increased from 9% to 86%. This shows that integration between nursing services and nursing education is feasible to implement, provided suitable measures are adopted to maintain high level of job satisfaction among nurse practitioners. It is high time to realize that the academics and services cannot go separate. There should be a collaboration of academics and services leading to the dual role of nurses as faculty and supervisor. So, there is a need to assess knowledge and perception of nurses and nurse educators regarding dual role, as they are the personnel's involved in the change or on whom the change would occur.

Objectives:

1. To assess the knowledge and perception of nurses regarding dual role.
2. To determine the relationship of knowledge and perception of nurses regarding dual role.
3. To determine the association of knowledge and perception of nurses with selected demographic variable i.e. age, professional qualification and total experience, designation.

Materials and Methods-Quantitative research approach and descriptive research design was used. Tools used for data collection comprised of a structured knowledge questionnaire and structured perception rating scale to assess knowledge and perception of nurses. Convenient sampling was adopted to select the 100 nurses.

Inclusion Criteria:- The study was confined to nursing personnel with minimum graduation in Nursing and at least one year of experience.

Those who met the inclusion criteria were taken as study subjects after taking informed consent. The researcher used structured knowledge questionnaire based on Definition, Objectives, Background, Need, Benefits & Barriers of dual role in nursing and structured perception rating scale for data collection to assess the knowledge and perception of nurses regarding dual role. Reliability of knowledge questionnaire was established by using Kuder - Richardson formula 20 and it was 0.70, and reliability of perception scale was established by using Cronbach's alpha formula, it was 0.90 and both the tools were found reliable. Data collected, was organized, tabulated, analyzed and interpreted using descriptive and inferential statistics.

Result- Findings revealed that 100% of nurses had adequate knowledge regarding dual role in nursing while 86% nurses had favorable perception towards dual role in nursing. The level of knowledge influenced the favorable perception regarding dual role among nurses. There was no significant association between knowledge and perception scores of nurses with selected demographic variables.

Discussion-It is a fact that the students must have a role model, whom they can respect and follow. These role models must be an expert clinician, educator and research scholars. The faculty members are usually not responsible for service and nurses in clinical setting are not responsible for mentoring the students and have lack of updated researches. This has led to the problem of getting best learning experience in the clinical field.

A study conducted by Balachandran R, to ascertain the opinion of nursing personnel towards dual role in nursing, concluded that there was no significant difference in opinion of nurse educators and nurse practitioners towards dual role and no nursing personnel disagreed with dual role. The findings of the present study are in contrast with the above study, that there is a

significant difference in the perception of nurses and nurse educators regarding dual role. e. 13.33% nurse educators had unfavorable perception regarding dual role.⁵

Conclusion-Dual role should be implemented as a policy in all the nursing institutions. Nurse administrators should work with the concerned authorities towards the acceptance and implementation of the dual role as a policy. Appropriate policies may be framed so the pay, benefits, status and promotional avenues match their responsibilities.

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VEDIC MATHEMATICS IN MODERN TIMES

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ABSTRACT:-Vedic Mathematics is based on sacred ancient Hindu scriptures written by JAGADGURU SHANKARACHARYA SWAMI BHARTI KRISHNA TIRTHAJI MAHARAJA. Vedic Maths is based on 16 Sutras and 13 Sub-Sutras which help in simple and easy methods for fast mental calculations. Vedic Mathematics is used in various fields such as Engineering, Astronomy, Mathematics etc. Vedic mathematics helps in faster and accurate mental calculations. Any difficult equation in addition, division, multiplication, algebra, trigonometry, square, square root, cube, cube root only by mental calculations. Modern life is fastest growing and changing. In competitive exam's like UPSC, GPSC, CET, GATE, JEE and many other Vedic maths help in faster mental calculations and helps to reduce time to solve difficult mathematical equations. It also reduces mathematical anxiety among students and helps in developing interest in math by making mathematics easier. In modern times many researches carried out in many universities of India & abroad on usefulness of Vedic maths. Many universities have started courses based on Vedic maths, yoga & Vedic literature. Our prime minister Shri Narendra Modi and HRD minister Mrs Smriti Irani are also taking interest in Vedic formulas & yoga to become popular in world. Many schools included Vedic maths & yoga in curriculum.

USES OF VEDIC MATHEMATICS:

- It helps a person to solve mathematical problems 10-15 times faster
- It helps in Intelligent Guessing
- It reduces burden
- It is a magical tool to reduce scratch work and finger counting
- It increases concentration
- It helps in reducing silly mistakes
- It is fast, efficient and easy to learn and use

Terms and Operations:

(a) **Ekadhika** means 'one more'

Example: Ekadhika of 0 is 1

Ekadhika of 1 is 2

Ekadhika of 8 is 9

(b) **Ekanyuna** means 'one less'

Example: Ekanyuna of 1 is 0

Ekanyuna of 2 is 1

Ekanyuna of 9 is 8

(c) **Purak** means 'complement'

Example: Purak of 1, 2, and 3 from 10 is 9, 8, and 7

(d) **Rekhank** means 'a digit with a bar on its top' means it is a negative number.

Example: A bar on 7 is written as $\bar{7}$. It is called Rekhank 7 or bar 7. We treat Purak as a Rekhank.

(e) **Beejank**: The Sum of the digits of a number is called Beejank. If the addition is a two digit number, then these two digits are also to be added up to get a single digit.

Example: Beejank of 27 is $2+7=9$.

Beejank of 539 is $5+3+9=17$, further $1+7=8$. i.e., 8 is Beejank.

(f) **Vinculum**: The numbers which by presentation contain both positive and negative digits are called vinculum numbers.

DIVISION:-Defining the Division terms:

There are 16 balls to be distributed among 4 people then how much each one will get is a problem of division. Let us use this example to understand the terms used in division.

Divisor: Represent number of people we want to distribute them or the number that we want to divide by. Here the divisor is 4.

Dividend: Represents number of balls to be divided 16 in this case.

Quotient: Represents the number of balls in each part, 4 in this case.

Remainder: What remains after dividing in equal parts, 0 in this case.

The remainder theorem follows from the division example above and is expressed mathematically as follows:

Divided = Divisor \times Quotient + Remainder

The remainder theorem can be used to check the Division sums in Vedic Mathematics as described in the following sections. Different methods are used for dividing numbers based on whether the divisor is single digit numbers below a base, above a base or no special case.

Special methods of Division:

Number splitting:

Simple Division of Divisor with single digits can be done using this method.

Example: The number 682 can be split into

6/82 and we get 3/41 because

6 and 82 are both easy to halve

Therefore $682/2 = 341$.

Example: $618/6$ can also be mentally done

$618/6 = 103$ note the 0 here

Because the 18 takes up two places

Sutra: Transpose and Apply

A very similar method, allows us to divide numbers, which are close to but above a base number.

Example: $1479 \div 123 = 12$ remainder 13

Step 1: 123 is 23 more than base 100

Step 2: Divide 1479 in two columns therefore of 2digit each

Step 3: Write 14 down

Step 4: Multiply 1 by 23 and write it below next two digits. Add in the Second column and put down 2.

Step 5: Add multiply this 2 the 2, 3 and put 46 then add up last two Columns

123) 14 78

23 23

46

12/02

Special Multiplication Methods:

Sutra: Vertically and Cross wise:

For speed and accuracy tables are considered to be very important. Also, students think why to do lengthy calculations manually when we can do them faster by calculators. So friends/ teachers we have to take up this challenge and give our students something which is more interesting and also faster than a calculator.

Example 1: Solve 7×8

Step 1: Here base is 10,

$7 - 3$ (7 is 3 below 10) also called deficiencies

$\times 8 - 2$ (8 is 2 below 10) also called deficiencies

Step 2: Cross subtract to get first figure (or digit) of the answer: $7 - 2 = 5$ or $8 - 3 = 5$, the two difference are always same.

Step 3 : Multiply vertically i.e. $-3 \times -2 = 6$ which is second part of the answer.

i.e., $7 \times 8 = 56$ (5 / 6)

Same Base Method: -When both the numbers are more than the same base. This method is extension of the above method i.e., we are going to use same sutra here and applying it to larger numbers.

Example 1: 12×14

Step 1: Here base is 10

$12 + 2$ [12 is 2 more than 10 also called surplus]

$14 + 4$ [14 is 4 more than 10 also called surplus]

Step 2: Cross add: $12 + 4 = 16$ or $14 + 2 = 16$, (both same) which gives first part of answer = 16
Step 3: Vertical multiplication: $2 \times 4 = 8$

So, 12×14

$14 + 4$

$16 / 8$

So, $12 \times 14 = 168$ ($14 + 2 = 12 + 4$).

Both numbers less than the same base:

Same sutra applied to bigger numbers which are less than the same base.

Example1: 99×98

Step 1: Check the base: Here base is 100 so we are allowed to have two digits on the right hand side.

$\therefore 99 - 01$ (1 less than 100) i.e., 01 deficiency

$98 - 02$ (2 less than 100) i.e., 02 deficiency

Step 2: Cross – subtract: $99 - 02 = 97 = 98 - 01$ both same so first part of answer is 97

Step3: Multiply vertically $- 01 \times - 02 = 02$ (As base is 100 so two digits are allowed in second part.

So, $99 \times 98 = 9702$

CONCLUSION:-In India, people were less aware of Vedic mathematics. Many schools have realized the importance of Vedic mathematics. Many School and Educational Institutions have adopted vedic mathematic in their curriculum. India has also Vedic culture and hence schools are coming forward to adopt Vedic mathematics but there is still great shortage of Vedic mathematics trainers or teachers in India. This scenario gives great opportunity to teachers to expand their profile.

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Safe pregnancy workouts

Kamna k yusuf

(Ph.D. Scholar)

Abstract: There is a direct connection with healthy mother and healthy infants. Appropriate nutrition, exercise, rest are an important contributor to maternal physical and psychological health and well being. The benefits and potential risks of physical exercise, activity during pregnancy have gained even more attention with a number of studies have been conducted that obstetrics and gynecologists recommends that during pregnancy women should perform 30 minutes or more of moderate intensity exercise on most if not all, days of the week

Introduction The exercise is a vital to a pregnant woman's health, is now a well-recognized fact. Exercising during pregnancy and after birth has many positive effects it minimizes minor discomforts associated with pregnancy also improves self esteem and self image. Good muscle tone, healthy joints and general fitness helps to carry the pregnancy, easy labor and maintain a good post-natal health. According to the American College of Obstetrics and Gynecologists (ACOG) exercising during pregnancy can lead to a lower incidence of:

- Preterm birth.
- Excessive weight gain.
- Gestational diabetes or hypertensive disorders such as preeclampsia.
- Lower birth weight.

Exercise is an excellent way to:

- Reduce stress and maintain physical fitness
- Improve postpartum recovery
- Reduce low back pain

Benefits of exercises:

- Promotes muscle tone, strength, and endurance.
- Improves emotional health and helps you sleep better.
- Helps quick recovery from labour and delivery.
- Keeps you active and energized.

When considering exercises for pregnancy, the majority of exercises can be continued throughout each trimester. With that in mind here are some general safety tips to consider when exercise during pregnancy.

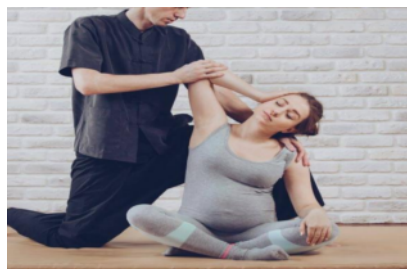
- Get clearance from your doctor if you are new to exercise, you have any health condition that may contraindicate exercise.
- Drink plenty of water before, during and after exercise.

- Wear supportive clothing such as a supportive sports bra or belly band.
 - Avoid lying flat on your belly for too long, especially during the third trimester.
- The following workout is simple; based on your medical history and level of risk, it can be done at home and is safe to do in each trimester. These are:

Types of Exercise:

1. SHOULDER ROTATION

Shrug your shoulder upwards, hold for a few seconds and then relax. Bring your shoulder forward and then rotate them up towards your ears and then backwards. This is like making small circles with your shoulder in both clockwise and anti clockwise direction.



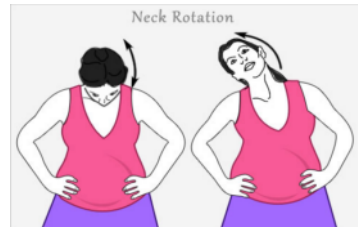
2. DEEP BREATHING EXERCISE

Sit in a comfortable, supported position. Now, place one hand on your abdomen and inhale deeply through your nose, fully into your abdomen. In case you have nasal congestion, you can breathe in through your mouth. Remember that your abdomen should move outwards as you inhale. If you notice that only your chest is moving, then you aren't inhaling deeply enough. Slowly exhale through your mouth as your abdomen returns to its normal position.



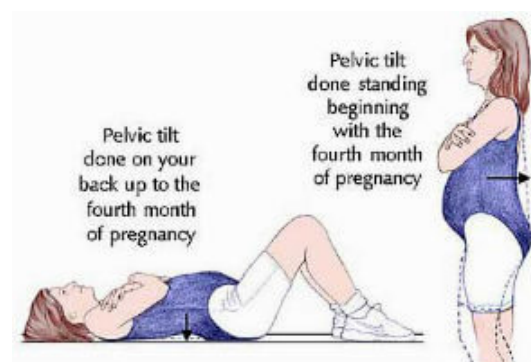
3. NECK EXERCISE

Gentle relaxing neck movements are important. Sit in a relaxed position, now move your neck up, down and to the left and right.



4. **SQUATTING**:-This is especially useful during the first trimester of pregnancy. Lean against the wall and stand with your feet spread. Now lower your body by bending your knees. Pause then slowly push yourself back to the strating position.

5. PELVIC TILT:

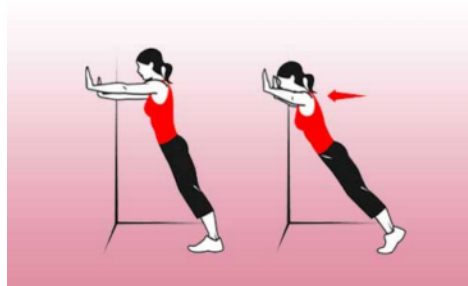


Stand straight with your back to the wall and relax your spine. Breathe in deeply and press your back against the wall. Exhale and repeat. Continue the exercise for about five minutes. Do pelvic tilts exercise many times throughout the day.

6. SIT AND CYCLE:

Sit on a chair, lift a leg and cycle 20 times. Repeat the same with the other leg. In case you have difficulty doing this exercise as your trimester progresses, you can switch to horizontal cycling. Lying down on the mat or bed, you can air cycle with both the legs.

7. WALL PUSH -UP:-Stand facing a wall. Now, lean against the wall with your hands comfortably apart. Place your hands on the wall at the level of your shoulders, slightly greater than shoulder -wider apart. Slowly bend your elbow and lower your chest until your chin reaches the wall. Remember to keep your back straight and then return to the straight position. Wall push-ups engage the triceps and pectoral muscles.



8. CALF STRETCH: -As your pregnancy progresses, your legs may get tired easily. With calf stretches, you can maintain good circulation in your leg. Sit with your legs stretched out. Hold two ends of a long towel with both your hands and use the towel to pull your feet towards you. You feel a stretch in your calf muscles. Hold this position for a few seconds and relax.



SIDE RISES:-Lying on your side, lift your leg and bring it down. Repeat on the other side.



10. PELVIC BRIDGING: -Lie face up on the floor with your knees bent and your feet flat on the floor. Now raise your hips so your body forms a straight line from your shoulders to your knees. Pause for a couple of seconds and lower your back in the straight position.



11. BACK PRESS: -Lie face up on the floor with legs straight. Roll a small towel and keep it under your lower back. Now bend your knees and try to press your back against the towel. Hold this position for a few seconds and then relax.



12. KEGAL EXERCISE: -Lie down on a flat surface. Bend both knees slightly and place a pillow between your thighs. Imagine you are trying to stop the flow of urine while you doing this, you are contracting the muscles of pelvic floor. Try to keep your leg, buttocks and abdominal muscles as stable as possible. You can do the same in sitting position. Each time you contract the muscles of the pelvic floor, hold for a slow count of five and then relax.



Always remember to drink plenty of water to stay hydrated during these exercises. Consult your doctor to discuss your workout plan. A regular workout plan goes a long way to ensure good health during and after pregnancy. Let go of all your worry and stress. Focus on enjoying this session of life. Happy pregnancy.

ETHICAL CONSIDERATIONS: BARRIERS DURING HIV TESTING AND COUNSELLING AMONG PREGNANT WOMEN: A NARRATIVE REVIEW

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ABSTRACT

BACKGROUND: Despite recent advances in ways to prevent transmission of HIV from a mother to her child during pregnancy, infants continue to be born and become infected with HIV, particularly in southern Africa where HIV prevalence is the highest in the world. While mandatory testing is ethically plausible, particularly when coupled with guaranteed access to treatment and care. One of the study shows that, many barriers remain for pregnant women in terms of access to testing, treatment and care despite the presence of national and international human rights Instruments aimed at empowering women and removing such barriers.

AIM: To identify the ethical issues and barriers during HIV - testing and counseling among pregnant women's.

METHODOLOGY: Electronic databases search included Pubmed Google scholar, EBSCO host, MEDLINE etc. Inclusion criteria were study mainly focusing on barriers during HIV testing & Counseling published in peer reviewed journals in English Language. Exclusion criteria were Editorial commentaries, Post natal mother . Types of studies included were Qualitative research, descriptive research design, cross sectional survey. Participants were Antenatal mothers visiting antenatal clinic/hospitals

FINDINGS: Findings of the data indicate that increasing general education on HIV transmission/prevention modes is crucial for increasing acceptability of screening. Furthermore, HIV/AIDS knowledge disseminated to patients in hospital settings should be carefully monitored. Lastly, scaling up MTCT services along with a better and larger community information, may address accessibility barriers observed in the present study. **CONCLUSION:** Study demonstrated that anticipations of HIV/AIDS stigma can be barriers to acceptance of HIV testing by pregnant women and highlights the need to develop interventions that address pregnant women's fears of HIV/AIDS stigma, anxiety, discrimination in society, violence from male partners.

Key words: Ethical considerations, barriers, HIV-testing, counseling, pregnant women's.

INTRODUCTION:- Voluntary counseling and testing (VCT) for HIV infection among pregnant women is a public health priority given the ability of potent antiretroviral therapy to prevent HIV infection in infants and preserve the mother's health during pregnancy . In one of the study, data reviewed by the Institute of Medicine (IOM) suggested that perinatal transmission continues to occur mostly because of 2 factors. First, a significant number of women living with HIV do not receive prenatal care. Second, not all women enrolled in prenatal care are offered VCT. In April 2003, the Centers for Disease Control and Prevention (CDC) recommended the opt -out strategy for perinatal HIV testing as a means to increase testing rates. The intention was to streamline HIV testing so that extensive requirements for pretest counseling and for signed, informed consent would be eliminated. The World Health Organization (WHO) estimated 33.3 million people living with HIV/AIDS in 2009 with 2.3 million coming from sub Saharan Africa. Efforts such as prevention of mother -to-child transmission (PMTCT) and the use of antiretroviral are underway globally, to minimize the

burden. Prevention of mother -to-child transmission (PMTCT) of HIV remains a top priority in HIV/AIDS disease control efforts. Mother -to-child transmission has been significantly reduced worldwide. In 2013, 16 % of children born to women living with HIV became infected, compared to 26 % in 2009 . While mandatory testing is ethically plausible, particularly when coupled with guaranteed access to treatment and care. One of the study shows that, many barriers remain for pregnant women in terms of access to testing, treatment and care despite the presence of national and international human rights instruments aimed at empowering women and removing such barriers.

NEED OF THE STUDY: -HIV testing and counseling (HTC) remains critical in the global efforts to reach a goal of universal access to prevention and timely human immunodeficiency virus (HIV) treatment and health care. Routine HIV testing has been shown to be cost-effective and life-saving by prolonging the life expectancy of HIV patients and reducing the annual HIV transmission rate. However, these benefits of routine HIV testing may not be seen among pregnant women attending antenatal clinic (ANC) due to health facility related factors and others barriers. As the national HIV/AIDS program of RoC aims to move from prevention to elimination of MTCT, one of the key indicators is the increase of acceptability of HIV testing in pregnant women. This article presents an analysis on various obstacles that address HIV counseling and testing among pregnant women. This study would help us to utilize vertical and horizontal equity, user preference including avoidance of stigma and the right to privacy, effectiveness and feasibility.

AIM

To identify the ethical issues and barriers during HIV- testing and counseling among pregnant women's.

MATERIAL AND METHODOLOGY

Search strategy methods: Pub med, Google scholar, EBSCO host, MED LINE etc.

Eligibility criteria: Study mainly focusing on barriers during HIV testing & Counseling, Published articles in English accent and Peer reviewed journals.

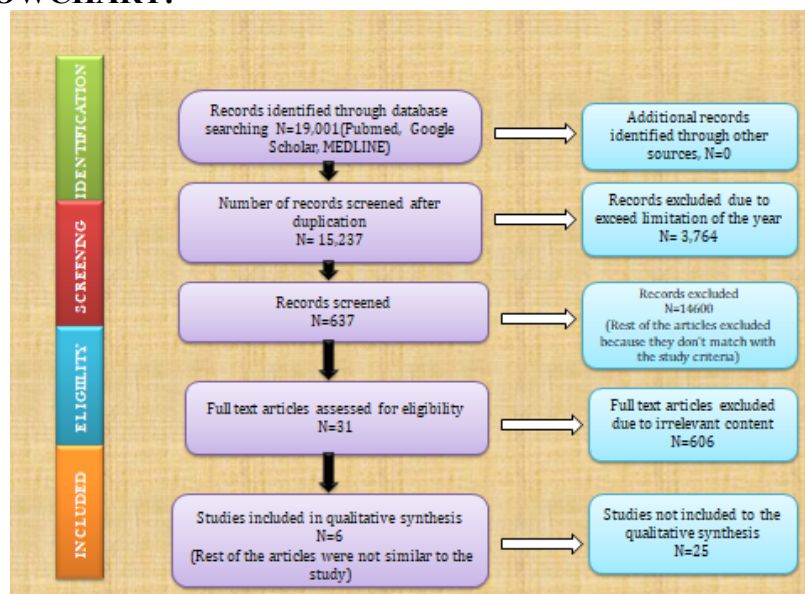
Exclusion criteria: Editorials commentaries, post natal mothers and Non English article were excluded.

Type of studies: Qualitative design, quantitative approach, descriptive and cross sectional survey design.

Participant: Antenatal mothers visiting antenatal clinic/hospitals

Setting: Hospitals/antenatal clinics.

PRISMA FLOWCHART:



RESEARCH FINDINGS:

AUTHOR'S, YEAR, COUNTRY	STUDY TITLE	STUDY DESIGN	INSTRUMENTS	SAMPLE, SAMPLING TECHNIQUE	KEY FINDINGS
1.Viera N et al. (2017) Denmark	Awareness, attitudes and perceptions regarding HIV and PMTCT amongst pregnant women in Guinea-Bissau a qualitative study	Qualitative research approach	interview -based study using a preliminary focus group discussion (FGD), followed by in -depth interviews	N= 27 women, 19 antenatal women, purposive sampling techniques	Amongst women who had been tested for HIV, awareness and knowledge of HIV and PMTCT remained low. Possible drivers of inadequate counseling included lack of confidentiality, suboptimal healthcare worker training, lack of time, and perceived occupational risk. Demand -side barriers to PMTCT included lack of HIV and PMTCT knowledge, customary and cultural beliefs associated with HIV and ill-health, HIV stigma and discrimination, and fear of partnership dissolution.
2.Kwapong GD et al.(2019), Ghana	Health service barriers to HIV testing and counseling among pregnant women attending Antenatal Clinic; a cross-sectional study	cross-sectional design	structured questionnaire and interview guides	N=300 pregnant women aged 18 to 49 years, , systematic random sampling	Twenty-four percent of the pregnant women had not undergone HTC, with “never been told” emerging as the most cited reason as reported by 29.5% of respondents. Decisions by pregnant women to take up HTC were mostly influenced by factors such as lack of information, perceptions of privacy and confidentiality, waiting time, poor relationship with health staff and fear of being positive.
3. Olowokere AE et al. (2018) Nigeria	Knowledge, perception, access and utilisation of HIV counseling and testing among pregnant women in rural communities of Osogbo town, Nigeria.	Descriptive cross-sectional survey	structured questionnaire	N=300 pregnant women, Random sampling	Key barriers found to be associated with utilisation of HIV counselling and testing include 'fear of how to cope with being positive' and 'absence of HIV counselling and testing centre'.
4. Paoli M M et al. (2004), Tanzania	Factors influencing acceptability of voluntary counseling and HIV -testing among pregnant women in Northern Tanzania.	cross-sectional study	interview survey , Focus group discussion	N= 500 pregnant women, Random sampling	Perceived high personal susceptibility to HIV/AIDS, barriers related to confidentiality and partner involvement, self-efficacy regarding alternative feeding methods and religion were all shown to be associated with willingness to accept VCT.

5. Linguisi LSG et al. (2015), Congo	Factors influencing acceptability of voluntary HIV testing among pregnant women in Gamboma, Republic of Congo	cross-sectional study	Questionnaire	N= 98 pregnant women, random sampling	Among 136 participants, 98 women (72 %) accepted voluntary HIV testing after pre-test counseling. Women with basic education, those who cited blood transfusion as a mode of transmission and prevention of mother-to-child transmission (MTCT) were more likely to accept testing as well those informed about free HIV testing. Interestingly, pregnant women who had heard about HIV/AIDS from hospital setting were less likely to accept testing. Lastly, scaling-up MTCT services along with a better and larger community information, may address accessibility barriers observed in the present study.
6. Sinha et al. (2008), India	Low Utilization of HIV Testing During Pregnancy What Are the Barriers to HIV Testing for Women in Rural India?	cross-sectional study	questionnaire	N= 400 pregnant women, random sampling	Thirteen women (3.3%) reported receiving antenatal HIV testing. Women who did not receive HIV testing, compared with women who did, were 95% less likely to have received antenatal HIV counseling and 80% less aware of an existing HIV testing facility. Barriers to HIV testing during pregnancy include lack of discussion by antenatal care providers and lack of awareness of existing testing services. Provider initiated HIV counseling and testing during pregnancy would optimize HIV prevention for women throughout rural India.

SUMMARY OF THE FINDINGS: -Our data indicate that increasing general education on HIV transmission/prevention modes is crucial for increasing acceptability of screening. Furthermore, HIV/AIDS knowledge disseminated to patients in hospital settings should be carefully monitored. Lastly, scaling -up MTCT services along with a better and larger community information, may address accessibility barriers observed in the present study.

STRENGTH OF THE REVIEW:

- Article search was carried out on a significant problem.
- Review could find out various ethical concerns and barriers related to HIV testing and counseling among pregnant women's.

WEAKNESS OF THE REVIEW:

- Only six articles were included for data synthesis due to limitation
- Articles are mainly confined to English accent

RECOMMENDATIONS:

- Antenatal clinic -based programs to increase rural women's awareness of voluntary HIV testing services
- Policy for universal access to PMTCT requires strategies to promote HIV testing Government should plan a policy based on HIV self testing as a gateway to diagnose and screened themselves.

CONCLUSION:-Study demonstrated that anticipations of HIV/AIDS stigma can be barriers to acceptance of HIV testing by pregnant women and highlights the need to develop interventions that address pregnant women's fears of HIV/AIDS stigma, anxiety, discrimination in society, violence from male partners.

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A Study to Assess the Levels of Internet use among Students of Selected College of an Urban Area

Author-Reena Ojha

Phd scholar JJTU

Subject- Nursing

ABSTRACT:-Despite the benefits due to the tremendous increase in use, speed, interactivity, and access over the past decade, a proportion of the internet user population experiences some negative consequences of excessive internet use, as well as symptoms that can mirror an addiction. **Objectives** To assess the levels of internet use among students of selected college and to find the association of selected demographic variables with level of internet use among college students. **Materials and method** The samples size consisted of 230 students between 17 -24yrs of age from a selected college of an urban area. Stratified random sampling technique and systematic random sampling techniques were used. A self administered tool consisting of two parts. Part A of demographic data and part B consisted of 60 point likert scale with 20 items to assess the levels of internet use based on scoring. The findings of the study were analyzed using descriptive statistics (percentage, mean, and standard deviation) and inferential statistics (Man Whitney Test, ANOVA). **Results** Out of 230 samples 28.70% were high level internet users and very few 1.30% were excessively high level users. 89.57% of the subjects were between the age group of 18 -20yrs, 62.17% of subjects had information regarding ill effects of excessive internet use.

Introduction:-The benefits of the internet have been widely researched and include keeping in touch with friends, making vacation plans, managing finances, assisting with educational needs, etc. However, despite the benefits due to the tremendous increase in use, speed, interactivity, and access over the past decade, a proportion of the internet user population experiences some negative consequences of excessive internet use, as well as symptoms that can mirror an addiction.

Key Words- Levels of Internet use, Internet, College students

Objectives:-A cross- sectional descriptive study after the permission of institutional ethical committee was taken up to assess the levels of internet use among students of selected college and to find the association of selected demographic variables with level of internet use among college students.

Materials and methods :-The samples for the present study consisted of 230 students 17 - 24yrs of age from a selected college of an urban area. Stratified random sampling technique and systematic random sampling techniques were used. A self administered tool was used after taking consent from the participants. The tool consisted of two parts. Part A consisted of demographic data and part B consisted of 60 point likert scale consisting of 20 items to assess the levels of internet use based on scoring. The findings of the study were analyzed using descriptive statistics (percentage, mean, standard deviation) and inferential statistics (Man Whitney Test, ANOVA).

Results:-Fig No 4.1 describes the internet use score based levels of internet use among the subjects. The data shows that out of 230 subjects 119 (51.74%) were normal internet users whereas 66 (28.70%) were high level internet users, 42 (18.26%) low level internet users and very few 3 (1.30%) were excessively high level users.

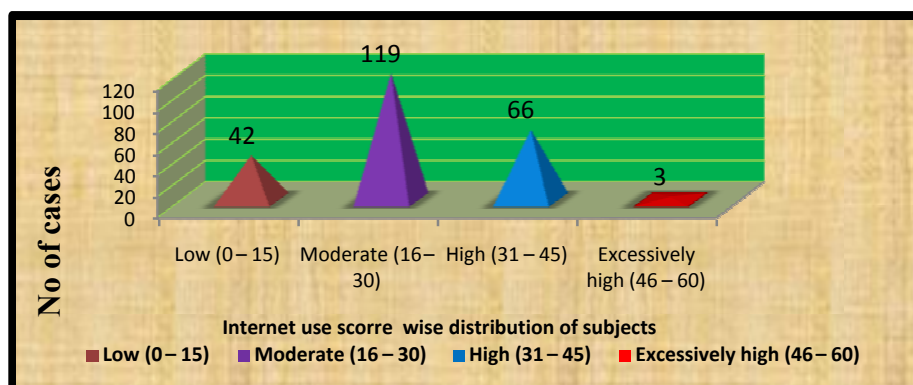


Fig 4.1: Level of internet use score wise distribution

89.57% of the subjects were between the age group of 18 -20yrs. Female students were more compared to male students and the percentage was 58.26%. Maximum student's parents were educated till matric which included 49.57% of fathers and 53.04% mothers. Internet users belonged to all income groups in almost same proportion. 46.20% of students go to pocket money upto Rs 100 which formed the majority. 96.96% of subjects stayed with their families. 86% of the subjects accessed internet from mobile phone. 58.26% of the students used internet for social networking and almost 45% subjects used internet for gaming or surfing whereas only 21% used internet for academic purposes. 62.17% of subjects had information regarding ill effects of excessive internet use. The students whose mothers were illiterate and students with a monthly family income of less than Rs 5000 had higher internet usage scores. Students who got pocket money <Rs 100 used internet more than those who got more pocket money or no pocket money their mean internet use scores was 27.29 with Sd of 10.053. There was no relation between the place of staying of students and their internet use levels. Those who had information regarding ill effects of excessive internet use their internet use levels was less than those who had no information.

Table 4.11 (a): Attributes of internet use wise distribution of student in study group (n=230)

Attributes of internet use		No of student	Percentage
Frequency of internet use	Daily	126	54.78
	Twice a week	40	17.39
	Once a week	63	27.39
	Once a fortnight	1	0.43
Hours per day spent on net	>5 Hrs	24	10.43
	3 - 5Hrs	60	26.09
	1 - 3 Hrs	45	19.57
	<1 Hrs	101	43.91
Part of the day use internet	Day time	78	33.91
	Midnight	51	22.17
	Along with meal	4	1.74
	Evening	97	42.17
Monthly expenditure on internet out of total monthly income from any means	80 - 100 %	53	23.04
	60 - 80 %	24	10.43
	40 - 60 %	48	20.87
	<40 %	105	45.65

Table 4.11 shows 54.78% students used internet daily. 43.91% students used internet less than 1 hour and almost 27% used net for 3 -5 hrs a day. 42.17% subjects used net in the evenings, whereas 33.91% used it in the day time during working hour and 22.17% subjects used internet in midnight. 45.65% subjects spent less than 40% of their income on internet, at the same time 23.04% spent 80% - 100% of their total income on internet. 42.61% borrowed money sometimes for internet usage and 15.65% subjects always borrowed money for internet use. 40.44% faced inability to concentrate on studies after surfing their favourite site or watching something interesting or exciting on internet. The habit of eating

junks while using internet was reported among 49.13% of subjects. 46.96% student's families complained about their being on net most of the times and not spending time with them. 10.44% students indulged in unethical activities on internet like watching or doing something ethically or morally wrong, porn videos, online gambling, posting derogatory remarks or comments. 50.8% students faced problems due to long hours of internet use.

Discussion-Among 230 samples of study group maximum were females between the age group 18-20yrs. The educational status of parents of the participants was matric and most of them belonging to a group having family income < Rs 15000 with maximum number of the samples got pocket money less than Rs100. Most of the samples used internet for social networking. Internet use levels of maximum were in normal range based on the scores but at the same time a significant number of internet users among sample were high level users. There was no significant relation between internet use levels and socio demographic characters of samples. Maximum samples were staying with their families. Most of the subjects had information regarding ill effects of excessive internet use and the source of information was peers and friends.

Recommendation:

On the basis of the present study, the following recommendations were framed for future study:

- A similar study should be conducted as a longitudinal study and in multiple schools and colleges.
- A tool should be devised by means of which we can directly observe the internet use behavior of the adolescents.
- In prospective studies information should also be collected from the parents of the students regarding their internet use behavior.
- More studies in this area could be of use to formulate standard guidelines to prevent the problem internet addiction.
- Interventional studies can be carried out on the same topic.

Conclusions:-The results of the study showed that maximum subjects were normal level internet users at the same time a significant number were high level internet users. Maximum students used internet daily but the difference lies in the number of hours the subjects used internet. Internet use levels of the subjects were related mother's education, family's monthly income, pocket money the subjects got. And internet use levels of subjects were also related to having information regarding ill effects of excessive internet use levels.

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Information Technology: - Importance, Role and Contribution in Health Care

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ABSTRACT:-Information Technology (IT) harbours tremendous scope to enhance the safety, quality, efficiency and effectiveness of healthcare. This paper lays emphasis on the ever growing contribution of IT in healthcare sector. ICT has had a notable and substantial impact on healthcare and the delivery of services. From electronic health records to Telemedicine to remote monitoring of patients, numerous kinds of healthcare services have been seen too enhance and augment administrative and operational effectiveness of rural health centres, large hospitals, home care units, clinical processes and documentation etc. However the benefits and adoption has not been uniform and reliability of success has been hard to come by. Therefore it is essential to enhance the cost efficiency, quality and capacity of health care services.

KEYWORDS:-Information Technology, Decision Support System, Health care, Clinical Decision Support, Remote and Residential Monitoring

INTRODUCTION:-Healthcare broadly encompasses monitoring, control and direction of a cluster of entities or people and motivates them to accomplish a certain defined objective. It demands optimum utilization of resources in terms of technology, finance, people, nature etc. According to a recent Springboard report, the Indian healthcare sector is growing at a rate of 12% per annum, which is highly commendable. The primary goal has been to enhance and augment the services and facilities being provided to the patients. It can be inferred that significant progress needs to be made in the healthcare sector through implementation of automation and technology in processes and transactions. This will go a long way in boosting consumer satisfaction and enhancement of efficiency and effectiveness in healthcare [1].

INFORMATION TECHNOLOGY :-Information Technology (IT) possesses tremendous ability to enhance the safety, effectiveness and quality of health care systems. In order to deliver state of the art health care, assimilation of a composite and multifaceted web of information from numerous organs is necessitated. This assimilation primarily carried out by patients and health care providers. The augmented ability and accessibility of nurses, clinical officers and doctors to retrieve and employ the right knowledge and information about patients will surely go a long way in improvement of health care. IT in healthcare also helps patients to monitor their own condition in a better way. In order to absorb the contribution of informal and unofficial interactions, Doctors more often than not depend on the feedback and advice of colleagues and peers with whom they interact and discuss everyday. Advice given by fellow doctors and physicians go a long way in providing suitable assistance as they act as a connect between certain treatments and a particular patient's clinical requirements who are under a particular physician. However these inputs may not be enough to provide a solution to the problem of information overload. Every physician has limitations with respect to their own cognitive and psychological orientations. These limitations inhibit a physician from keeping himself/herself updated of all the innovations happening around the world. In order to overcome this limitation, it is imperative that physicians should introspect and spend some portion of their day reading magazines and articles in journals of medical science. However journals are not able to establish a linkage between a particular technology and the specific patient where it is applicable. This is where IT enabled decision support system comes to our aid. Technology based Decision Support System has a substantially higher probability of coming up with optimum treatments that are relevant and novel pertaining to a specific patient. Hence the rate of diffusion of new information and innovation can be significantly increased through effective deployment of Information Technology [2]. Technology acts as a great information disseminator. It has made any new development, highly accessible to

patients, paramedics, physicians, regulators, insurers etc. IT acts as a conduit between multiple online data sources through which information flows and disseminates at a blistering speed. The prime contribution that IT has made to the healthcare sector can be easily fathomed from the fact that healthcare design and delivery systems ably supported by IT infrastructure have become increasingly adept at resource allocation. Participation on part of all the stakeholders is an extremely critical facet of healthcare right from production to consumption, whether it is at an individual level (food habits, beliefs, values, lifestyle, hygiene etc) or at a community level (sanitation, safety epidemic control etc) [3].

2.1 Need for IT in Healthcare

IT has become highly significant in healthcare due to following reasons:-

1. There is a huge quantum of information pertaining to patients. It is impossible to cope up this information which is flooding us. The information volume in the field of medical science is going to witness an exponential growth.
2. The assimilation of knowledge in the field of medicine is humungous for any one to store for a given period of time. Computers assist us with their virtually unlimited storage capacity. They store gargantuan quantum of data at any given point of time and also retrieve and reproduce it on demand.
3. State of the art Technological advances and incessant enhancement in the ratio of performance to price has made IT ubiquitous and indispensable at every stage in management of patients and healthcare firms.
4. IT DSS helps enormously in mapping a particular treatment with needs specific to particular patients.

IT in healthcare not only enables systematic, comprehensive and methodical management of information pertaining to medical technology but also secure the exchange of information amongst service providers and consumers [4].

TOOLS OF IT IN HEALTHCARE :- There are a number of tools that are prevalent in healthcare sector. Such tools provide tremendous help in certain domains and promote effective healthcare. Some most widely used IT tools are discussed below [5][6]:

I. Electronic Medical Records (EMR): -The EMR enables the physician to access information about patients to physicians, care givers etc such as contact information, images, diagnostic processes, services schedule, medical condition, allergies etc on a real time basis. An integrated EMR helps a doctor update patient's information on a continuous and regular basis. EMR plays a key role in data assimilation for applications of public health surveillance, quality management, billing, reporting etc.

II. Clinical Decision Support (CDS): -Clinical Decision Support (CDS) includes computerized reminders to patients and care givers. They also provide diagnostic support, patient data reports, summaries and other important tools that augment and strengthen decision making in a clinical and healthcare environment. CDS embodies huge potential to improve adherence to protocols, rules, best practices which assist in prevention of errors and complications related to medical care.

III. Computerized Physician Order Entry (CPOE): -Physicians employ CPOE to order medications, diagnostic procedures, discharges, x-rays, transfers and referrals. A great application of CPOE is that prescriptions too are written using computers.

IV. Electronic Prescribing (E-Prescribing): E-Prescribing pertains to usage of electronic media of prescription, transmission etc between a pharmacy manager, dispenser, prescriber either through an intermediary channel or directly. It is highly imperative that electronic prescription applications should be highly sturdy and secure and must encompass dose appropriateness, drug-clinical condition warning, drug-drug interaction warning, drug laboratory alerts and allergy checks.

V. Remote and Residential Monitoring of Patients: -The highly prohibitive costs of institutional healthcare have necessitated remote and residential monitoring of patients. In this a system linked to the home telephone can collect and record information about Blood Pressure, body temperature, ECG etc of the patient with cardiovascular issues. The telephone is designed to harbor an IC Memory card and is equipped with multiple functions such as picture and character processing functions. The data gathered is then transmitted from the patient's residence to the medical center facility of the physician.

SECURITY AND PRIVACY IN HEALTHCARE INFORMATION TECHNOLOGY

Complete and precise knowledge about patients is vital and most important in healthcare. This enables the institutions to provide state of the art quality assistance and coordinated care to patients. As an when, in order to augment the effectiveness and quality of care, the physician or the doctor implements novel IT healthcare, it becomes imperative to review information security policies and ensure that the confidentiality is not compromise d under any circumstances. Availability, accessibility, integrity and confidentiality of patient information and history is key to an information security policy. Under no circumstances the system must allow any kind of disruption, destruction or unauthorized and illegal access to information.

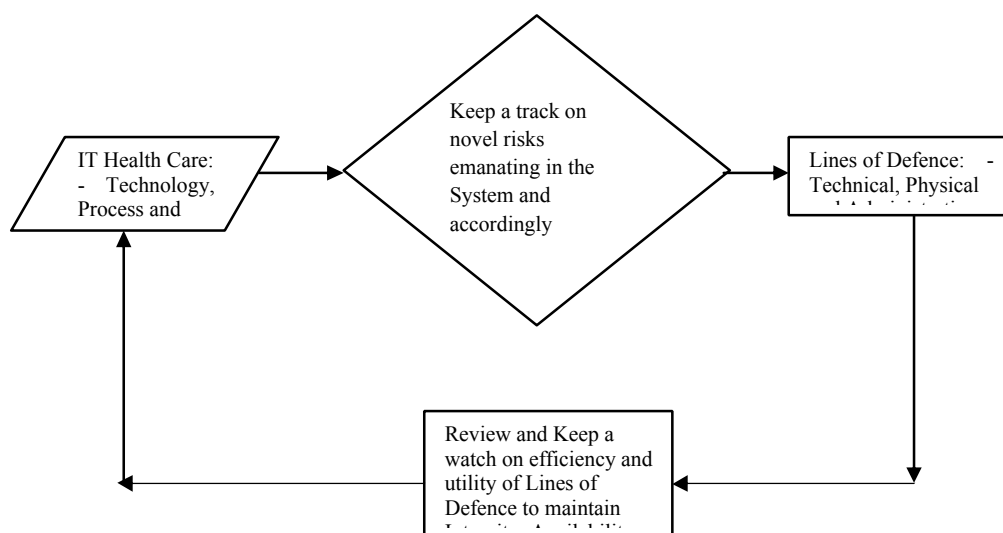


Fig.1. : Security and Privacy in IT Healthcare

The risks arising out of IT healthcare need to be alleviated and physician needs to incorporate and execute certain steps in his practices such as: [7]

1.Revisit the prevalent information security procedures and policies, incorporate and develop novel policy processes to deal with new and unique risks emanating in technological domain of healthcare.

2.The new policies may warrant implementation of certain robust technological measures and mechanisms such as data encryption on laptops, mobile phones and other electronic and digital devices.

3.Put strong access and validation measures in place to ensure only authorized people and that too after due and thorough identification and verification are able to access, modify and transmit information pertaining to healthcare.

4.Consistently review, update and implement information security policies pertaining to healthcare to alleviate and minimize risks to IT healthcare.

Have robust and strong technical, physical and administrative lines of defence in place.[8]

QUALITY AND HEALTH CARE INFORMATION TECHNOLOGY :-A strong and efficient healthcare system in the current century accentuates on the necessity for upgradation and enhancement in six important fields. Equity and Equality, effectiveness, time bound resolution, efficiency, safety and security and minimization of response time in meeting patient requirements. A large number of ever increasing number of published research articles lead us to authentically believe Information Technology shall play a crucial and a decisive role in improvement and enhancement of quality healthcare in each of the aforementioned facets. CPOE with the aid of DSS can minimize mistakes in prescription of medicines and their quantum of dosage. It has been shown by evidence that Decision Support Systems pertaining to clinical procedures have done away with a number of unnecessary lab examinations and tests. The effectiveness and efficiency of healthcare can be significantly enhanced by implementation and perpetuation of compliance with respect to clinical code of conduct and practice. Availability and accessibility to specialty knowledge & data in real time along with live interactions between well known experts, specialists and doctors in the rural areas go a long way in establishment of an health care ecosystem that is equitable and progressive. Transmission of data, information and knowledge amongst doctors in a secure, safe and confidential manner will lead to substantial augmentation in coordination and decision making thereby aiding patients significantly including emergency situations. Its all making right decisions at the right time, which is only possible if right information is available with the right people[5].

CURRENT POSTION OF IT HEALTHCARE :-The magnitude, level and quantum of utility of Information Technology varies in health care depending of domains and specializations. Internet and Information Technology have had a lasting impact and influence on consumers. A wide variety of websites have brought health care information to patient's fingertips. This has led to enormous awareness and has substantially enhanced their role in health care decision making process. Emerging Technologies such as Online Analytical Processing (OLAP), Data Mining Techniques, Clinical Decision Support Systems (CDS), Online Transactional Processing (OLTP) and Clinical Data Warehouse have transformed the health care ecosystem beyond recognition. Such state of the art technologies are deployed to employ and preserve patient data in an intelligent manner through customization in order to cater to dynamic and multiple user demands and requirements. Information Systems through kiosks in health centres and internet have played a vital role in creating awareness about most recent advancements in medical technology [8].

CONCLUSION:-As it is evident that IT makes a vital contribution in healthcare transformation through augmentation of security of patients and effective storage and transmission of data and information as and when required. Incorporation and implementation of IT solutions warrants physicians and doctors to acquire and develop suitable IT skills. They need to dedicatedly spend time on learning technical nuances pertaining to IT health care. IT health care needs to envision through a long term perspective as the benefits will not be instantly visible or measurable immediately. Health care institutions are slowly but surely waking up to the importance of IT and are moving towards information systems and decision support systems, which shall pay rich dividends in the medium and long term through noticeable and substantial reduction in expenditure and enhance the profits[9].

FUTURE SCOPE OF IT HEALTH CARE :-The potential of Information Technology, especially in health care is immense and boundless. Decision Support Systems (DSS) will go a long way in making measurement and perpetuation of quality a reality through coordination and connection between multiple sources and nodes of care. IT in health care is growing at a blistering pace. Hospitals, nursing homes, clinics and health care centres are effectively making use of the power of IT to make health care services ubiquitous in rural and so far

unreachable areas. It is mandatory to ensure that all the recent technological equipments and medical care facilities reach the poor and needy across rural as well as urban centres throughout the country. With the advent of high speed fibre optic connectivity and the ensuing 5G technology, Government should invest substantially in health care IT and take the benefits to masses, which in turn shall pave the way for a new revolution in the field of medical and health care science.

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PREPARATION AND EVALUATION OF MICROSPHERES CONTAINING SPARFLOXACIN FOR TREATING PERIODONTITIS

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Abstract:Periodontitis is a type of inflammation which is causing harmful effects to the bones nearby the cavity and also the other soft tissues surrounding them. Pro inflammatory mediators and cytokines like interleukins have essential roles in the progression of this response. The release of these mediators is triggered by the over accumulation of various microbes around the teeth, this is resulted by the connective tissue destruction. Sparfloxacin was selected as drug to formulate microspheres. The main objective of the study is to prepare chitosan microspheres with antimicrobial agent sparfloxacin for local drug delivery in to the periodontal pocket followed by its evaluation studies. Sparfloxacin loaded chitosan microspheres were prepared by pH -Dependent Ionic Crosslinking or Interpolymer Complex technique. FTIR studies reveals there were no interaction in between drug and additives. Physico- chemical studies of prepared microspheres were found satisfactory. The drug content values were within the normal range. The invitro release studies shows satisfactory release pattern. Stability studies shows drug content did not differ from initial drug content.

Key words: Sparfloxacin, Chitosan, Microspheres.

INTRODUCTION:Periodontitis is an inflammatory disease which may cause harmful effects to the tooth, gum, bones nearby the cavity and also the other soft tissues surrounding them. Ultimately the periodontal bacteria are causing harm to these tissue and lead to various oral associated diseases. Some of the micro-organisms residing in the mouth colonize the oral cavity, were found to be the causative agents for periodontitis. Some bacteria species in which belongs to the actinobacilli has a huge impact in the destruction of the oral cavity. Synthetic and natural polymers are used for the preparation of biodegradable microspheres.

Table 1: MATERIALS AND METHODS

SL NO	CHEMICALS	SOURCE
1.	Sparfloxacin	Yarrow Chem Products,Mumbai
2.	Chitosan	Gift sample from CIFT, Cochin
3.	Triphosphosphate	Nice Chemicals
4.	Potassium dihydrogen orthophosphate	Sigma Aldrich
5.	Ethanol	Sigma Aldrich
6.	Sodium hydroxide	Merck
7.	Acetic acid	Merck
8.	Whatman No.1 filter paper	Sigma Aldrich

Calibration curve of Sparfloxacin in phosphate buffer at pH 6.8 :-A stock solution of Sparfloxacin was prepared by dissolving 50 mg in 50 ml of ethanol. From this stock, the various concentrations (2, 4, 6, 8, and 10 µg/ml) in phosphate buffer at pH 6.8 were prepared,

absorbance measured at 297nm using UV -spectrophotometer to generate a calibration curve for the estimation of Sparfloxacin.

Table 2: Standard graph of Sparfloxacin

Serial Number	Concentration (µg/ml)	Absorbance* (297nm) in pH 6.8
1	0	0.000
2	2	0.1823±0.028
3	4	0.3496±0.004
4	6	0.4954±0.024
5	8	0.6492±0.029
6	10	0.8091±0.017

* Mean of 6 replications.

The spectrum is reproduced for sparfloxacin. The wavelength of 297 nm as absorption maxima was selected for sparfloxacin and utilized for further analysis.

$$y = 0.0193x + 0.4302$$

$$R^2 = 0.9983$$

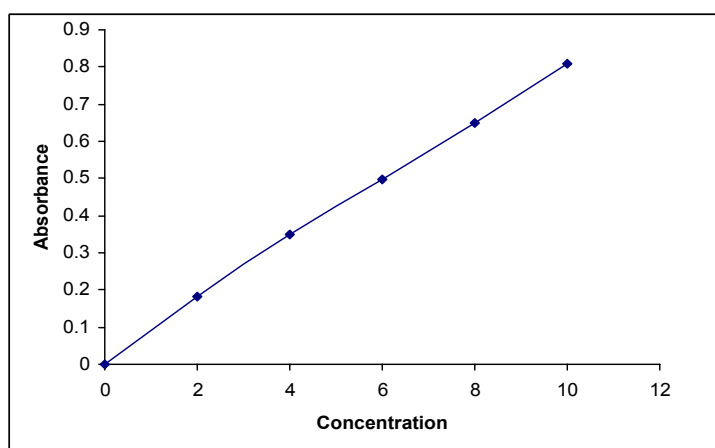


Figure 1: Calibration curve of Sparfloxacin

Calibration curve for Sparfloxacin were plotted. The absorbances of different concentrations of drug samples were taken at 297nm.

Preparation of Microspheres :-Sparfloxacin loaded chitosan microspheres were prepared by pH-Dependent Ionic Crosslinking or Interpolymer Complex technique. Chitosan was weighed. 15 grams were taken and is dissolved in 500ml of 1% v/v dilute acetic acid. Thus chitosan solution is made. In 10ml of the chitosan solution Sparfloxacin (0.2g) was dispersed. TPP (10%) was added into the already prepared solution. This solution was gently stirred. It is placed without disturbing for about 30 minutes. The pH of the solution was gradually modified. It was at pH 8.6 originally. Then it is changed to pH 1.2 and pH 6.6. Filtration process of the microspheres were done and with 100ml of deionized water it is washed repeatedly, Drying of the chitosan -sparfloxacin microspheres were done. For future drug release analysis the final products were stored in a dessicator.

Table3: Formulation of Sparfloxacin Microspheres

Formulation code	Sparfloxacin (gms)	Chitosan Conc. (% w/v)	Conc. of TPP (% w/v)	Stirring time in hrs
F1	0.2	1	10	1
F2	0.2	1.5	10	1
F3	0.2	2	10	1
F4	0.2	2.5	12	1.5
F5	0.2	3	12	1.5
F6	0.2	3.5	12	1.5

EVALUATION OF SPARFLOXACIN MICROSPHERES

% Yield, Drug Entrapment Efficiency and Drug Loading

Known amount of the microspheres were taken keeping it accurately that the 10mg of drug is present theoretically. The Sparfloxacin microspheres were finely ground and in the phosphate buffer solution it is taken. This is added for about fifteen minutes at an interval of 5 minutes. Then it is kept in the room temperature for one day. Through Whatman No.1 filter paper it was filtered. The buffer was taken as 10 millilitre 0.1ml of this solution was diluted. Using 'UV double beam spectrophotometer' the drug concentration was estimated at 297nm. The blank solution used was the same buffer system. The concentrations was estimated by using the equation $Y = mx + c$

$$\text{DEE (\%)} = [\text{Actual Sparfloxacin Content} / \text{Theoretical Sparfloxacin Content}] \times 100$$

$$\text{Drug Loading (\%)} = [Q_m / W_m] \times 100$$

Where, W_m = weight of the microspheres,

Q_m = quantity of the drug present in the microspheres.

Particle Size Analysis

To get a good formulation particle size of a pharmaceutical substance is strictly maintained. In this the main method to estimate the particle size is by Optical microscopy, the particle size ranges from 1-100 μm .

Table 4: % Yield, Drug Entrapment Efficiency and Drug Loading

Sl. No	Formulation Code	% YIELD	Drug Entrapment Efficiency %*	Drug Loading %*	Mean Particle Size $\mu\text{m}(\pm\text{S.D})$
1	F1	82.18	63.79 ± 0.66	12.94 ± 0.60	641 ± 0.80
2	F2	85.70	71.91 ± 0.84	14.10 ± 0.30	697 ± 0.22
3	F3	86.54	72.42 ± 0.51	14.52 ± 0.54	722 ± 0.61
4	F4	81.07	70.81 ± 1.02	13.57 ± 0.89	609 ± 0.44
5	F5	81.14	67.79 ± 0.90	12.84 ± 0.041	662 ± 0.82
6	F6	80.11	69.81 ± 0.42	12.44 ± 0.72	704 ± 0.50

IN VITRO DRUG RELEASE STUDIES

Dissolution of Sparfloxacin loaded chitosan microspheres

Weighed quantities of microspheres were taken into the phosphate buffer in sealed tubes. For 24 hours it is set aside. Fresh phosphate buffer in the volume of 1ml was replaced in every sampling. It is drained off and then replaced. A double bean UV/Visible spectrophotometer is

used to measure the concentration of Sparfloxacin in the buffer. At 297 nm the concentration is measured. Until the drug is completely removed the procedure was continued. Over the sampling times cumulative percentage release was calculated. The Polyelectrolyte complex of Chitosan microspheres were then accompanied by several testing process that include dissolution profiling and release rate study. Dissolution study can be done by pH condition 6.8. Here two types of dissolutions mediums are using such as 6.8 pH phosphate buffer medium.

Table 5: In-Vitro Release Profile In 6.6 pH Medium: (F1-F6)

Time (Days)	Drug release from Formulations					
	F1	F2	F3	F4	F5	F6
1	8.223±0.625	4.358±0.222	11.584±0.840	5.128±0.752	8.003±0.452	7.002±0.352
2	15.956±0.51	22.964±0.012	24.430±0.741	11.774±0.210	16.154±0.108	13.251±0.023
3	23.785±0.356	28.452±0.254	36.1043±0.22	17.573±0.158	30.785±0.750	24.521±0.213
4	33.987±0.354	35.145±0.352	41.623±0.102	30.096±0.374	44.215±0.021	37.251±0.102
8	57.524±0.499	62.514±1.180	52.702±0.297	44.429±0.032	55.432±0.018	45.125±0.213
12	72.420±0.215	69.964±0.552	56.203±0.043	59.215±0.547	74.111±0.254	62.874±0.213
16	85.881±0.745	84.018±0.763	76.556±0.120	84.875±0.032	87.542±0.328	85.028±0.444
18	91.521±0.329	91.489±1.205	82.589±0.125	93.927±0.465	92.650±0.024	91.985±0.645
21	99.110±0.121	97.002±0.512	96.158±0.024	96.008±0.231	96.432±0.852	92.005±0.432

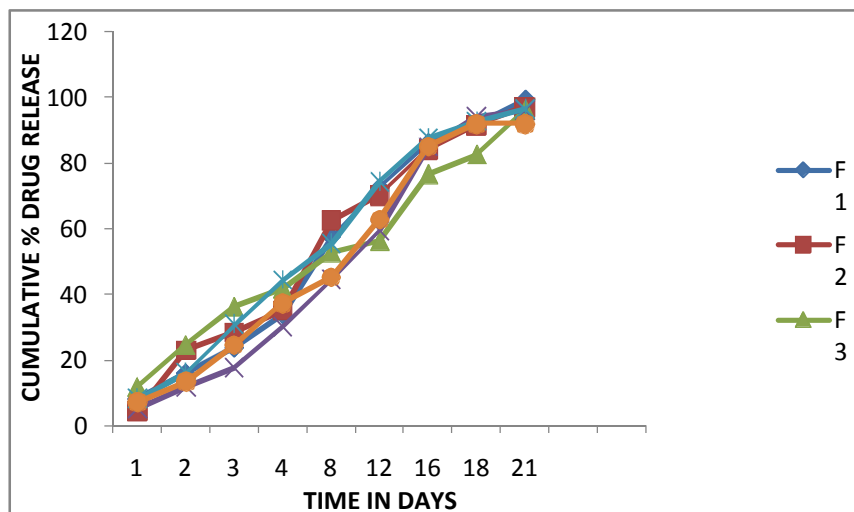


Figure 2:-In vitro drug release profile for F1-F6 formulations in 6.6 pH medium.

Korsmeyer - Peppas kinetics:

Table 6: Release data to be fitted in Korsmeyer - Peppas release kinetics (F1-F6).

S.No	Log percentage Cumulative drug release						
	Log Time	F1	F2	F3	F4	F5	F6
1	0.000	0.915	0.639	1.064	0.710	0.903	0.845
2	0.301	1.203	1.361	1.388	1.071	1.208	1.122
3	0.477	1.376	1.454	1.558	1.245	1.488	1.390
4	0.602	1.531	1.546	1.619	1.479	1.646	1.571
5	0.903	1.760	1.796	1.722	1.648	1.744	1.654
6	1.079	1.860	1.845	1.750	1.772	1.870	1.798
7	1.204	1.934	1.924	1.884	1.929	1.942	1.930
8	1.255	1.962	1.961	1.917	1.973	1.967	1.964
9	1.322	1.996	1.987	1.983	1.982	1.984	1.964

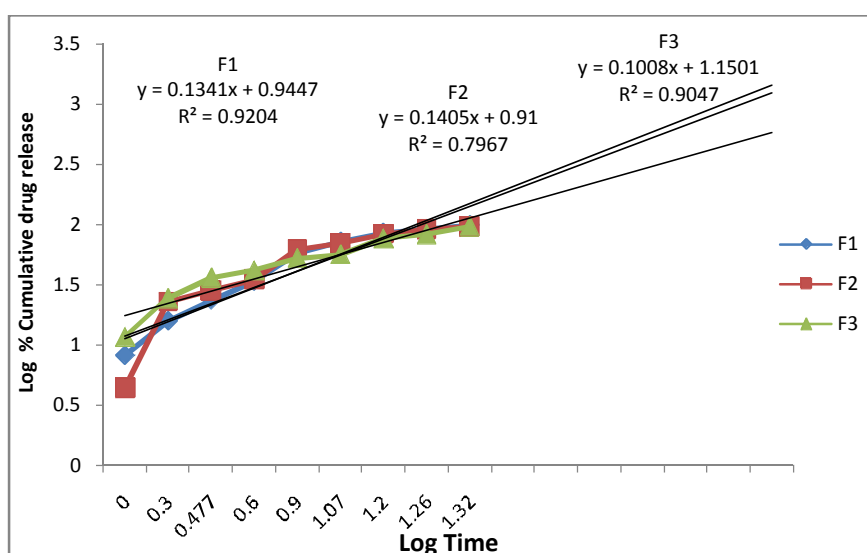


Figure 3:-Release data, Korsmeyer - Peppas release kinetics For F1, F2 And F3

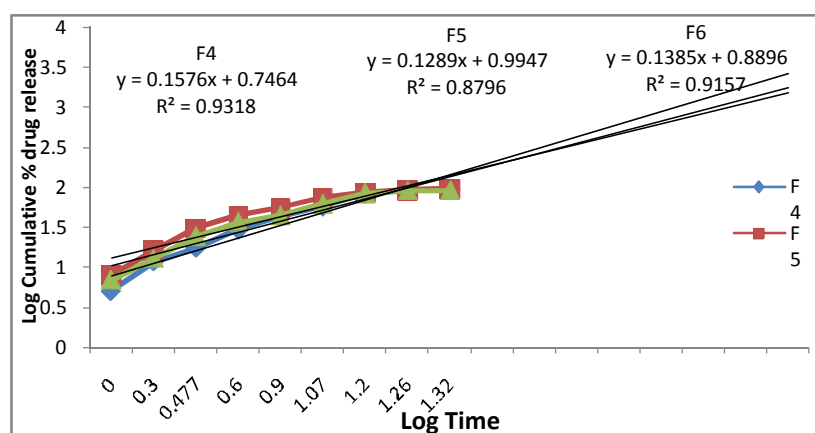


Figure 4:- Release data to be fitted in Korsmeyer - Peppas release kinetics, for Formulations –F4, F5, F6.

FINDINGS OF DRUG RELEASE KINETICS

In the table 7, equations for all parameters were cited, it shows that zero order equation suits to this drug delivery system, thus the release kinetics is depicted as per the R^2 values for chitosan microspheres, it is an encouraging observation. The chitosan concentration increase has brought about a change in the drug release rate. We have to find out the mechanism of release by using two studies that is the in vitro drug release and the release kinetic models.

Table 7: Kinetic evaluation for Sparfloxacin microspheres

Strip code	Zero order plots Regression Coefficient (R^2)	First order plots Regression Coefficient (R^2)	Korsemeyer pepa's plot	
			Slope (n)	Regression Coefficient (R^2)
F1	0.9773	0.9058	0.211	0.9204
F2	0.9756	0.8962	0.172	0.7967
F3	0.9867	0.7969	0.202	0.9047
F4	0.9981	0.8616	0.219	0.9318
F5	0.9813	0.9242	0.186	0.8796
F6	0.9735	0.8954	0.211	0.9157

The cumulative percentage was got in a curve linear shape. That is both curved and linear relationship exists. The zero order drug release kinetics was followed by the drug released vs time plot. The correlation coefficient value was found to be poor and the confirmation was got following these. This is done in comparison with the other models of kinetics, when compared to other kinetic models.

Selection of best Formulation: -F4 formulation was choosed as the best formulation from all the six batches, beca use of practicle size, drug entraptment and release is with in the range when compared to other six formulations. F4 fitted in peppas equation because dissolution release study.

Stability Studies :-Microspheres were taken in hard gelatin capsules wrapped in an aluminium foil. The studies were performed in the stability chamber for ten months. After the specific priod of study, the physical nature of the drug, colour, shape and texture were noted.

Table 8: Stability studies data for drug content at various temperature and conditions for sparfloxacin microspheres

Temp °C	Code	Initial Drug Conc. Gm	2 months	4 months	6 months	8 months	10 months
			A.F	A.F	A.F	A.F	A.F
5° C	F4	171.4	171.2	171.1	170.8	170.6	170.5
27° C	F4	171.4	171.1	171.0	170.9	170.5	170.4
40° C	F4	171.4	171.3	171.2	170.8	170.7	170.4

Temp °C	Code	Initial Drug Conc. Gm	2 months	4 months	6 months	8 months	10 months
			B.P	B.P	B.P	B.P	B.P

5° C	F4	171.4	171.2	171.1	170.8	170.6	170.5
27° C	F4	171.4	171.0	170.9	170.7	170.5	170.4
40° C	F4	171.4	171.3	171.0	170.5	170.3	170.2

* Each value is an average of 2 determinations

A.F = Packed in Aluminium Foil

B. P = Packed in Butter Paper

The drug content evaluation, in vitro drug profiles were found within the range during stability testing and found the preparation as a successful dosage form.

Conclusion-Lowering the bacterial count is the treatment field of periodontitis mainly focuses. If the therapy needs to be succeeded there has a long contact time between sparfloxacin and the microorganism. Antimicrobials are accompanied by every dentistry methods even in tooth cleaning done by dentists. The major focus point in delivering medicines through subgingival route, it has a wide supply of blood capillaries. Local delivery is brought as an arising tool over the conventional methods.

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EFFECTIVENESS OF VIDEO ASSISTED TEACHING PROGRAMME ON USE OF MOBILE PHONES AND ITS ILL EFFECTS ON HEALTH AMONG SECONDARY HIGH SCHOOL STUDENTS (13-15years) AT SELECTED HIGH SCHOOLS

Rosemary Olagundi

Introduction: World wide technology and its changes play a major role in each individual's life. The current trend of the society is to adopt every change in the field of communication technology. The mobile phones are boon of this century. Mobile phone is considered as an important communication tool and became the integral part of the society, it is not only a communication device but it also a necessary social accessory. People are increasingly using mobile phones rather than the fixed telephones.

Objectives of the study:

1. To determine their test knowledge level on impact of the increased use of mobile phone dependence and its ill effects on health among secondary high school children.
2. To find the effectiveness of video assisted teaching programme on mobile phone dependence and its harm full effects on health among secondary school students.
3. To find an association between pre test knowledge score of secondary school students on mobile phone dependence and its ill effects on health among high school students with their selected demographic variables.

Hypothesis:-

H₁-There will be significant gain in the post -test knowledge score regarding mobile phone use and its ill effects on health after attending VATP as compared to the pretest scores.

H₂: There will be significant association between pre-test level of knowledge on Mobile phone use and its ill effects on health and the selected demographic variables of secondary school students.

Methods:-An experimental approach with one group pretest post test design is selected to achieve the objectives of the study. Convenient sampling technique was used to select the sample. The sample size was 60, meets the inclusion criteria at kolar. Data was collected by using structured questionnaire. Analysis of data was done by using frequency and percentage distribution, mean and standard deviation, paired "t" test and chi-square test.

Experimental Group:-O1 X O2

O1-PreTest

X- Video Assisted Teaching Programme

O2-PostTest

Data Analysis and Interpretation-The data was processed and analyzed on the basis of the objectives and hypothesis formulated for the present study. Analysis is a process of organizing and synthesizing the data in such a way that the research questions may be answered and hypothesis is tested. The results were computed using descriptive and inferential statistics based on the objectives of the study.

Section-II Knowledge of Secondary School Students Regarding Use of Mobile Phones and Its Ill Effects on Health

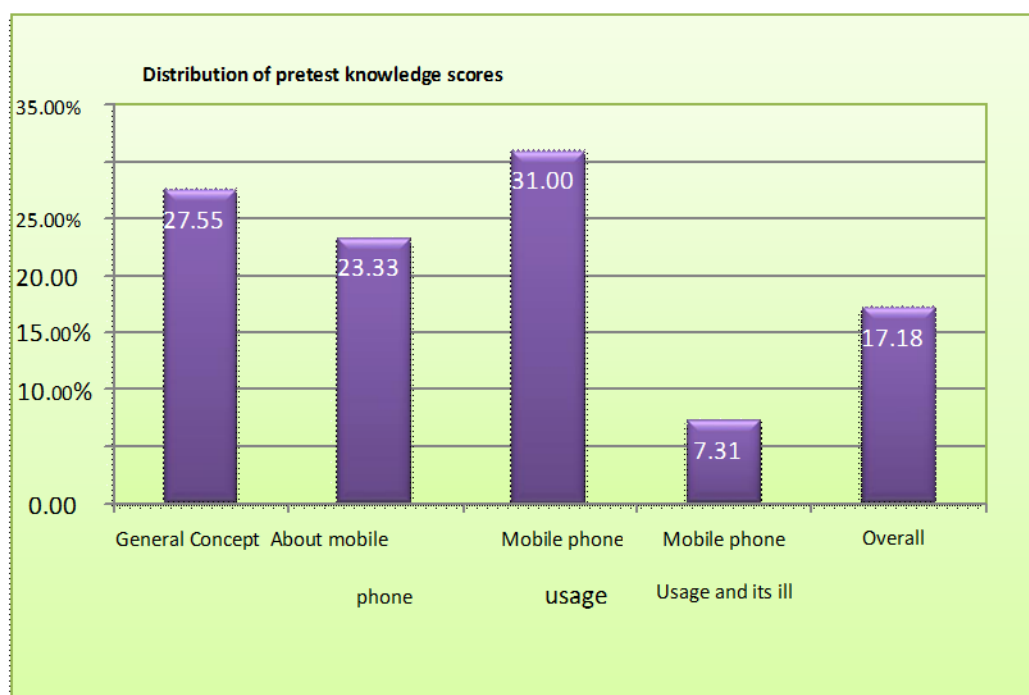
**TABLE-1 Pretest and post test knowledge level of Secondary school students
N=60**

Knowledge level	Pretest		Posttest	
	Frequency	Percent	Frequency	Percent
a.Inadequate knowledge	60	100	0	0.0
b.Moderate knowledge	0	0.0	24	40.0
c.Adequate knowledge	0	0.0	36	60.0
Total	60	100	60	100

TABLE–2Mean, Mean percentage and standard deviation for the pretest knowledge of Secondary school students

N=60

Sl. No.	Knowledge aspects	No. of Items	Max Score	Mean	Mean %	SD
1	General Concept	9	9	2.48	27.55	0.873
2	About mobile phone	6	6	1.4	23.33	0.785
3	Mobile phone usage advantages	2	2	0.62	31	0.666
4	Mobile phone usage and its ill effects	16	16	1.17	7.31	0.924
Over all		33	33	5.67	17.18	1.580



Section –III Comparison of Pre Test and Post Test Knowledge Regarding Use of Mobile Phones and Its Ill Effects on Health

TABLE-3 Comparisons of pretest and post test knowledge scores of Secondary school students regarding Use of mobile phones and its ill effects on health

Sl. No.	Knowledge aspects	Pretest		Posttest		Mean difference	t Value	D f	Inference
		Mean	SD	Mean	SD				
1	General Concept	2.48	0.873	6.52	1.384	4.04	19.865	59	S
2	About mobile phone	1.4	0.785	4.6	0.718	3.2	25.534	59	S
3	Mobile phone usage advantages	0.62	0.666	1.5	0.537	0.88	7.734	59	S
4	Mobile phone usage and its ill effects	1.17	0.924	12.12	2.009	10.95	38.071	59	S
Overall		5.67	1.580	24.73	2.208	19.067	54.852	59	S

Comparison of pretest and post test

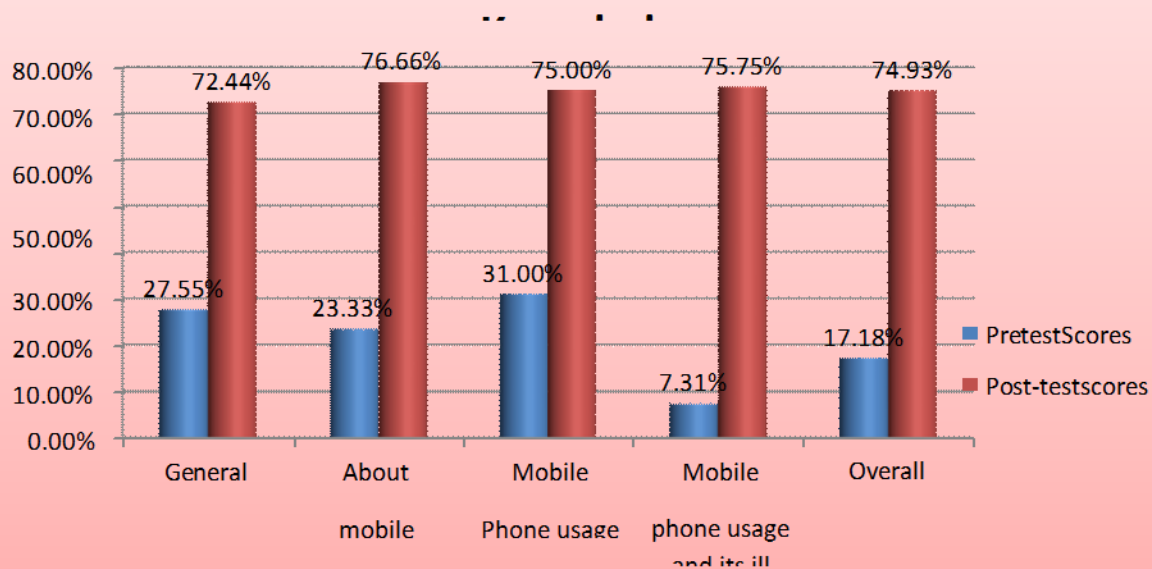


Table-4 Association of pretest knowledge scores of Secondary school students with selected demographic variables

Variables	Below Median	Median and above	Chi square	Df	P value(0.05)	Inference
1.Age in years						
13-15 years	29	31	-	-	-	-
2.Gender						
Female	29	31	-	-	-	-
3.Class						
Vii	18	24	1.681	1	0.195	NS
Ix	11	7				
4.Area of residency						
Urban	12	13	0.002	1	0.965	NS
Rural	17	18				
5.Religion						
Muslim	22	30	5.670	1	0.017	S
Christian	7	1				
6.Education of father						
Graduate	5	12	3.911	3	0.271	NS
High School	10	6				

Primary Education	6	5				
Illiterate	8	8				
7.Educationofmother						
HighSchool	0	2	5.470	2	0.065	NS
PrimaryEducation	8	15				
Illiterate	21	14				
8.Occupationoffather						
Governmentemployee	2	3	1.608	2	0.447	NS
Privateemployee	13	18				
Farmer	14	10				
9.Occupationofmother						
Privateemployee	9	9	0.075	2	0.963	NS
Farmer	4	5				
Home maker	16	17				
10.Monthlyincome						
Rs.5000-10000	13	12	0.231	1	0.631	NS
AboveRs.10000	16	19				
11.Numberofsiblings						
One	8	8	0.024	1	0.876	NS
Two	21	23				
12.Having mobilephone						
Yes	17	17	0.087	1	0.768	NS
No	12	14				
13.Ageatstartedusingmobilephone						
3-5years	14	10	1.602	1	0.206	NS
5-10years	15	21				
14.Awarenessofhazardsofmobile phone						
Yes	13	14	0.001	1	0.979	NS
No	16	17				
15.Durationofusage						
Lessthan2hours	7	9	4.728	2	0.094	NS
2-4hours	16	9				
4-6hours	6	13				

DISCUSSION:-In an effort to assess the effectiveness of video assisted teaching programme on knowledge of phone usage and its ill effects in between the age group of 13 -15years, one group pretest post test design was adopted. Samples of 60 students from Methodist girls high school kolar, have been selected by using convenient sampling technique. A pretest was conducted to assess the knowledge score. Intervention was given by video assisted teaching programme around 30 minutes and after that post test was conducted to assess the effectiveness of video assisted teaching programme on knowledge regarding mobile phone usage and its ill effects in between the age group of 13-15 years high school students. The study's independent variable was video assisted teaching programme while the dependent variable was the level of knowledge regarding mobile phone usage and its ill effects which was evaluated through structured questionnaire. With regard to the age of samples, 60(100%) were belong to the age group of 13 -15 Years. The findings revealed that out of 60 samples

majority of the sample i.e. 60 (100%) samples were belong to the age group of 13-15 Years, As the educational status of students 38(63.3%) were had 8th class 42 (70.0) 9th class 18(30.0) As for the Residency was urban 25(41.7), Rural 35 (58.3),As for the religion were muslims 52 (86.7), Christians 8 (13.3), As for the educational education of father, graduate 17 (28.3), high school 16 (26.7), primary education 11(18.3), illiterate 16(26.7), As for the education of mother high school 2 (3.3), primary education 23 (38.3), As monthly income above 10000 were 35 (58.3), As siblings two are there for 44 (73.3), As mobile phones are 34 (56.7) were having, 36 (60%) students were started mobile phone usage at the 5-10 years of age,As, mobile phone hazards awaking 27 (45%), are the minimal conclusion about the final findings Pretest and posttest level of knowledge regarding mobile phone usage and its ill effects among samples:

During pretest majority of the sample i.e.60 (100%) were having in adequate knowledge and none of them were having adequate knowledge.

During posttest majority of the sample i.e.36 (60 %) were having adequate knowledge, 24 (40%) were having moderately adequate knowledge and 0(0.0%) were having in adequate knowledge.

Mean and standard deviation of pretest and posttest level of knowledge mobile phone usage and its ill effects in experimental group.

The collected data reveals that the pretest mean score of experimental group was 5.67 and for the posttest mean score was 19.067

The standard deviation for pretest was 1.580 and post test was 2.208 Comparison of pretest and posttest level of knowledge regarding mobile phone usage and its ill effects among samples.The “t” value was computed to compare the pretest and posttest level of knowledge regarding mobile phone usage and its ill effects among samples.

In experimental group the calculated “t” value 19.825 was highly significant than the table value 2.009 at 0.05 level of significance. So the researcher accepted the research hypothesis and rejected null hypothesis, so it was proved that there was significant relationship between pre and post test knowledge score.Association between pretest and posttest knowledge score among samples with selected demographic variables.There was no significant association between the pretest knowledge score among samples with selected demographic variables There was no significant association between the post test knowledge score among samples with selected demographic variable

Recommendation based on the findings:

On the basis of the findings of the study, it is recommended that

- A Replication of the present study can be conducted with large sample.
- A comparative study can be conducted among the school students.
- A comparative study can be undertaken on structured teaching programme vs Self Instructional Module on improving the knowledge level.
- A True experimental study can be conducted to know effectiveness of video assisted teaching programme on mobile phone usage and its ill effects on students.
- A Time series study can be conducted to check the knowledge level at regular intervals before and after structured teaching programme An experimental study can be conducted to assess the effectiveness of video assisted teaching regarding mobile phone usage and its ill effects

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INFECTION CONTROL PROCEDURES USED IN ICU IN DISTRICT HOSPITAL, NAVANAGAR BAGALKOT (KARNATAKA)

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Abstract: - In general, the physical facilities available for infection control are below the standards when compared to the recommended ISI standards. The existing infection control measures practices in O.T and ICU are not satisfactory and needs a lot of improvement. Fumigation was practiced weekly, but respondents did not know specific schedule. In the study 33% responded that the air filters of air conditioners are cleaned weekly. The temperature, pressure and duration of sterilization in an autoclave are maintained. Studies show that there are adequate hand washing facilities in the department. 100% responded that their hair is kept fully covered when entering into the department. Study revealed that sterilization of equipment and surgical materials is done as recommended by Ministry of health and family welfare, Govt. of India. In ICU 22% responded as gloves only, 33% responded as gloves and masks and 45% responded as gloves masks and apron. 80% responded that monitoring of sterilisation efficiency of autoclave is done always. The study shows that the waste is collected after each procedure 89% as once daily in ICU. 100% answered that waste is categorised prior to final disposal and disinfected before disposal. The study revealed that training is given to staff in hospital infection control procedures and they learnt from verbal instruction of supervisor and during curriculum. 100% respondents of administrative staff regarding written policy and procedure manual, on-going surveillance program, Policy modified periodically, documentation for epidemiological and statistical purpose.

Keywords: - Infection, Infection control and ICU

Introduction: - Health care system has evolved and grown with the struggle for the survival of human society. Hospital, an integral part of the system has developed and widened its role for the comprehensive medical care for the community. To promote the health of patients and staff, hygiene is the utmost necessity in any hospital. By virtue of being a health delivery agent, hospital attracts the sick with all types of disease causing agents for wide spectrum of disease. Hospital acquired infection also called as nosocomial infections developing in the patients after admission to hospital, which were neither present or in incubation at the time of hospitalization. Such infections may manifest during the stay in hospital or, sometimes, after patient is discharged. Patients in hospital are likely to get sick due to a new variety of microorganisms responsible for wide spectrum of hospital infection, bacterial isolates of more resistant to standard antibiotic therapies, patient clustered in specialized units and variety of health care providers directly involved in patient care. So hospital has increasingly become unsafe place for patient during their stay. Infection is health hazard of great expense and significance affecting the final outcome of treatment.

OBJECTIVES:- 1) GENERAL OBJECTIVES:- To assess the practices and procedures used in OT and ICU in the hospital which will help the hospital administrators to monitor the infection control practices, observe and identify factors that may increase or decrease the infection rates and helps in rendering quality of care.

2) SPECIFIC OBJECTIVES OF THE STUDY: To study the physical facilities available for infection control in ICUs. To study the existing infection control procedures used in the ICUs. To provide suitable recommendation to improve the infection control procedures in ICUs.

Materials and Methods:-

Research approach and Research Design: "Prospective and Descriptive study"

Setting: - ICU in District Hospital, Navanagar Bagalkot (350 Bedded Hospital)

Population: - ICU Staffs (Nurses, Doctors, Hospital Administrators)

Sample size and technique: Sample size 30 and Random sampling Method

Inclusion Criteria: -1) Hospital with more than 100 beds 2) Staff of the administrative department, Doctors, Nurses, CSSD staff, House keeping staff.

Exclusion criteria: 1) Hospital with less than 100 beds. 2) Staff other than Staff of the administrative department, Doctors, Nurses, CSSD staff, House keeping staff.

Description of Tool: -Standard multiple choice questions (Questionnaire) to assess the knowledge of ICU staffs, Nursing Officers, Doctors regarding Hospital infection and Infection control. The data collected will be analyzed using descriptive and inferential statistics from Jan-2019 to April-2019. Basically the researcher has framed questionnaire for Staff of the administrative department, Doctors, Nurses, CSSD staff, Housekeeping who are benefited to know the need, acceptance and performance of infection control procedures and practices in the hospital. For this questionnaire was framed for the Staff of the administrative department (n=2, Q=8), Doctors and Nurses (n=15, Q=18), CSSD staff (n=5, Q=5), Housekeeping (n=6, Q=7).

Data Analysis: Data collected from the subject were transformed into excel master sheet and analyzed using statistical package for social sciences (SPSS) Descriptive (frequency and percentage) and inferential statistics (Chi-square test) were used in study. All statistical analysis was carried out at a 5% level of significance.

RESULTS: - The sample distribution is shown below with the help of Tables

Distribution of samples based on "Gender"

SEX	Nurses	Administrators	Doctors	Housekeeping	CSSD
Male	4(31%)	1(25%)	0(0%)	2(33.33%)	4(80%)
Female	9(69%)	3(75%)	2(100%)	4(66.66%)	1(20%)
Total	13(100%)	4(100%)	2(100%)	6(100%)	5(100%)

From the above table it has been depicted as 31% nurses are of males and 69% of females are the samples, among administrators 25% are male and 75% are female, among doctors 0% are males and 100% are females, among housekeeping staff 33.33% are male and 66.66% are females and among CSSD staff 80% are male and 20% are female.

Distribution of samples based on "Age".

Age In Years	Nurses	Administrators	Doctors	Housekeeping	CSSD
21-25	6(46%)	0(0%)	0(0%)	0(0%)	0(0%)
26-30	4(31%)	0(0%)	0(0%)	0(0%)	1(20%)
31-40	3(23%)	2(50%)	2(100%)	4(66.66%)	2(40%)
Above 40	0(0%)	2(50%)	0(0%)	2(33.33%)	2(40%)

In this group of study the samples are taken based on the age among those samples 46% nurses belongs to 21-25 years, 31% are 26-30 years, 23% are 31-40 years. Among administrators 0% are 21-25 years, 0% are 26-30 years, 50% are 31-40 years and 50% are above 40 years. Among doctors 0% are 21-25 years, 0% are 26-30 years, 100% are 31-40 years and 0% are Above 40. Among housekeeping staff 0% are 21-25 years, 0% 26-30 years, 66.66% are 31-40 and 33.33% are Above 40. Among CSSD staff 0% is 21-25 years, 20% are 26-30 years, 40% are 31-40 years and 40% are above 40 years.

Distribution of samples based on "Experience".

Experience	Nurses	Administrators	Doctors	Housekeeping	CSSD
Less than 1 yr.	3(23%)	1(25%)	0(0%)	0(0%)	2(40%)
1-3 yrs.	5(38%)	1(25%)	0(0%)	5(83.33%)	3(60%)
4-6 yrs.	5(38%)	2(50%)	2(100%)	1(16.66%)	0(0%)
Above 6 yrs.	0(0%)	0(0%)	0(0%)	0(0%)	0(0%)
Total	13(100%)	4(100%)	2(100%)	6(100%)	5(100%)

In this group of study the samples are taken based on the Experience among those samples 23% Of nurses less than 1 year, 38% are 1 –3 year experience, 38% are 4 –6 year experience. Among administrators 25% are Less than 1 yr., 25% are 1 -3 years, 50% are 4-6 years and 0% are above 6 years. Among doctors 0% are Less than 1 yr., 0% are 1 –3 yrs. and 100% are 4 –6 yrs. and 0% are Above 6 yrs. Among housekeeping 0% is Less than 1 yr., 83.33% are 1 –3 yrs. and 16.66% are 4-6 yrs. and 0% is Above 6 yrs. Among CSSD staff 40 % are Less than 1 yr., 60% are 1-3 yrs. and 0% is 4-6 yrs. and 0% is Above 6 yrs.

Response of the nurses and doctor regarding the frequency of wet cleaning of surface, walls, ICU bed

Wet Cleaning	ICU		
	Daily	Weekly	Monthly
Surface	9(100%)	0(0%)	0(0%)
Walls	0(0%)	7(78%)	2(22%)
ICU Bed/ICU Bed	9(100%)	0(0%)	0(0%)
Trolleys	9(100%)	0(0%)	0(0%)

To Trolleys 100% as daily cleaning, 0% as weekly and monthly cleaning. In the ICU department, 100% as daily cleaning of surface, 0% as weekly and monthly cleaning of surface. 0% as daily cleaning of walls, 78% as weekly cleaning, and 22% as monthly cleaning.

Response of the nurses and doctor regarding the antiseptic used after each procedure

Antiseptic after each procedure	ICU
Soap and water	0(0%)
Dettol	7(78%)
Phenol	2(22%)
Spirit	0(0%)

In the study group samples are responded differently with different perception some of them are responded as follows in the ICU department, soap and water as 0%, 78% as Dettol, 22% as phenol and 0% as spirit.

Response of the nurses and Doctor regarding the frequency of fumigation

FREQUENCY OF CLEANING	ICU	
	Fumigation	Carbonize
Weekly	7(78%)	3(33%)
Monthly	0(0%)	6(67%)
Daily	2(22%)	0(0%)
Other	0(0%)	0(0%)
Total	9(100%)	9(100%)

In ICU department for fumigation 78% as weekly, 0% as monthly, 22% as daily, and 0% as other. For cleaning air filters 33% as weekly, 67% as monthly, 0% as daily and 0% as other.

Response of the nurses and Doctor regarding the carbonization every day

Carbonization Every Day	ICU
Yes	9(100%)
No	0(0%)
Total	9(100%)

In the study group samples are responded differently with different perception some of them are responded as follows in the ICU for Corbolization 100% as yes and 0%.

Response of the nurses and Doctor regarding the using protective clothing while handling infected linen

PROTECTIVE CLOTHING	ICU
Gloves	2(22%)
Gloves and masks	3(33%)
Gloves, masks and Apron	4(45%)

Total	9(100%)
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In the study group samples are responded differently with different perception some of them are responded as follows in the ICU department, for protective clothing while handling infected linen 22% as glove, 33% as gloves and masks and 45% as gloves, masks, and apron.

Response of nurse and doctor regarding frequency of monitoring bacteriological testing of swabs

FREQUENCY OF MONITORING	ICU
	Bacteriological testing of ICU swabs
Weekly	2(22%)
Monthly	7(78%)
Daily	0(0%)
Routinely	0(0%)
Total	9(100%)

In the study group samples are responded differently with different perception some of them are responded as follows in the ICU department, for bacteriological testing of ICU swabs, 33% as weekly, 76% as monthly, 0% as daily and 0% as routinely.

Response of the nurses and Doctor regarding the adequate hand washing facilities, protocol regarding hand washing

Response	ICU	
	adequate hand washing facilities	protocol regarding hand washing
Yes	9(100%)	QAQ
No	0(0%)	0(0%)
Total	9 (100%)	9 (100%)

In the study group samples are responded differently with different perception some of them are responded as follows in the ICU department, for adequate hand washing facilities 100% as yes and 0% as no, for protocol regarding hand washing facility 100% as yes and 0%

Response of nurses and Doctor regarding frequency of waste collection

FREQUENCY OF COLLECTION	ICU
Twice a day	0(0%)
Once daily	8(89%)
Alternate days	0(0%)
After each procedure	1(11%)
Total	(100%)

In the ICU department, for frequency of collection of Bio-medical waste 0% as twice a day, 89% as once a day, 0% as alternative day and 11% as after each procedure

Response of nurses and doctor regarding launder linen daily, categorize the linen, marker to indicate the packs

Response	ICU		
	launder linen daily	categorize the linen	marker to indicate the packs
Yes	9(100%)	7(78%)	9(100%)
No	0(0%)	2(22%)	0(0%)
Total	9(100%)	9(100%)	9(100%)

In the study group samples are responded differently with different perception some of them are responded as follows in ICU department, For launder linen daily, 100% as yes and 0% as no, for categorize the linen 78% as yes and 22% as no, for use of marker to indicate the packs that have been sterilized 100% as yes and 0% .

Response of Housekeeping staffs regarding adequate hand washing facilities, Immunization and periodic health check up

Response	ICU		
	adequate hand washing facilities	immunization	periodic health check up
Yes	3(100%)	1(33%)	2(67%)
No	0(0%)	2(67%)	1(33%)
TOTAL	3(100%)	3(100%)	3(100%)

In the study group samples are responded differently with different perception some of them are responded as follows in the ICU department, for adequate hand washing facilities 100% as yes and 0% as no, for immunization 33% as yes and 67% as no, for periodic health check up 67% as yes and 33%

Response of Housekeeping staffs regarding using protective clothing while handling waste

PROTECTIVE CLOTHING	ICU
Gloves	0(0%)
Gloves and masks	3(100%)
Gloves, masks and Apron	0(0%)
Total	3(100%)

In the study group samples are responded differently with different perception some of them are responded as follows in the ICU department, for using protective clothing while handling infected waste, 0% as gloves, 100% as gloves and mask and 0% as gloves, masks and apron

Conclusions:- According to the study, there is clearly a rich vein of additional knowledge to be gained from further studies to know the extent to which measure to improve care in ICU with infection control policies and procedures with adequate protection against infection control. Written policies should be modified periodically and implemented and the scope of further improvement, from the further studies how we can improve the infection control practices and policies, and get to know what is the importance of giving training to nurses, doctors, CSSD staff and housekeeping staff in ICU because it helps a lot in both ways either patient satisfaction and revenue generation to the hospital and also helps in improving the quality of patient care and even it keeps high morale of the staffs.

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Emerging Career Opportunities in the Field of Biotechnology: An Analysis in the Pandemic Era

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ABSTRACT:-Biotechnology has emerged as one of the most popular career options among youngsters who want to explore the modern aspects of science. The demand for skilled biotechnologists is high in industrial sectors like food, textiles, pharmaceutical, agriculture, animal husbandry etc. With several exciting discoveries to form and new issues to resolve, biotechnology professionals will build a difference within the lives of others in many ways. While there's a hiring freeze in place currently, prospects in biotechnology improving due to the growing demand for vaccines and medicines of new variants and diseases. Despite standard belief, the biotechnology and biopharmaceutical trade suffered vast losses as a result of the COVID-19 pandemic. The recent COVID-19 pandemic has increased awareness in the Biotechnology and allied subjects. Even though the Biotech sector in India is growing rapidly, the awareness about the sector was largely obscure to the general population. The research explores the emerging trends, future career prospects that fresh graduates and high school passouts can look forward for in the field of Biotechnology.

Keywords: - COVID-19, Biotechnology, Career Skills, opportunities

OBJECTIVE OF THE RESEARCH

- To understand the impact of the pandemic on the Biotechnology jobs and careers
- To study the issues faced by young Biotech professionals due to the pandemic
- To explore the emerging career options in the field of Biotech
- To identify skills needed to make a successful career in Biotechnology

RESEARCH METHODOLOGY

- Quantitative method of Primary data of Survey (Questionnaire) was used for further finding responses from industry professionals.
- Available secondary data was used for the study wherein various books, articles and websites were referred.

INTRODUCTION:-The biotechnology business has played a monumental role in transferral along the most effective science, drugs and public health measures to handle the worldwide Covid -19 pandemic. The biotechnology business and domain got to be recommended for its determination and transferral its best talent to the table. "Biotechnology", popularly believed to be a research oriented science. To define simply, it is the manipulation of biological processes to evolve reproducible methods and products to form a technology that can be commercialized. Biotechnology uses living matter especially cells and bacteria in evolving industrial procedures. The responsible use of biotechnology is essential for integration of economic, social and environmental benefits that is the prime requisite for evolution of significant research from classical sciences like traditional plant breeding, fermentation technologies to modern sciences equipped with advanced techniques like recombinant DNA technology, cell and molecular biology, genetic engineering and therapy.

The versatility of biotechnology is evidenced by its innumerable applications. It can be categorised under three broad disciplines: Medical Biotechnology, Environmental Biotechnology and Industrial Biotechnology. Since biotechnology has applications in several industries, professionals will value more highly to work for a range of organizations, together with government agencies, non-public firms, regulative bodies, or clinical laboratories. There is great scope for employment in research laboratories run by the government as well as the corporate sectors. The sudden rise of biotechnology as a subject has led to it being one of the fastgrowing sectors. India is among the top 12 destinations for biotechnology worldwide. The industry comprises >2,700 biotech start-ups and >2,500 biotech companies in the country. India has 665 FDA-approved plants the US; 44% of the global abbreviated new drug applications (ANDA) and >1400 manufacturing plants, which are compliant with WHO. Biotechnologists can find careers in government supported entities such as universities, research institutes, chemical industries, agricultural companies, aquaculture, and food manufacturers, and with pharmaceutical firms as research scientists/assistants. They can be employed in the areas of planning, production and management of bio-processing industries. In brief the students equipped with biotechnological skills may be engaged in businesses related to life sciences ranging from equipment to chemicals to pharmaceuticals and diagnostics. Secondly, they may find employment in specialized biotechnology companies or biotech-related organisations. The scope of work can range from research, sales, marketing, administration, quality control, breeding and technical support etc. Department of Biotechnology [DBT], Ministry of Science & Technology, Government of India has played a crucial role in the emergence of biotechnology. There are a number of Institutes that are maintained by DBT to create a strong force of highly skilled manpower and to regulate the standard of education under the 'All India Board of Biotechnology Education & Training'. Some institutes actively involved in research in biotech are Indian Council for Medical Research, The Department of Science and Technology, The Government of India National Biotechnology Board, Council for Scientific and Industrial Research, Indian Institute of Science, Biotechnology Consortium of India Ltd, etc. The BCIL offers industrial training after MSc with a stipend for suitable candidates and then provides them a full placement. Biotech companies require corporate executives with business or management degrees. Different job profiles for biotechnologists include lab technicians, research associates, research scientists, engineers, sales representatives, marketing executives and business development managers.

The Impact of COVID -19 on Careers in the Industry :- The pandemic condition in the present scenario has provided opportunities for biotechnology which can be used in industries that use biological systems for the production of useful entities like the production of new vaccines to eradicate the Corona virus. These recent job opportunities in industries can activate their working powers to produce new vaccines to eradicate the Corona virus. Students of biotechnology can avail of a variety of careers in the basic area of research and development of a vaccine, its production, clinical trials, and distribution of vaccine to the public. Students having biotechnology as their background study can attain the basic research jobs as resource person that focuses to understand mechanisms of increasing immunity to protect the people from the dreadful infectious virus. Biotechnology students can get medical training for understanding mechanisms in increasing immunity which will guide them regarding the development of vaccines for combating infectious diseases. Medical biotechnology offers many students an important chance for the Indian industry for establishing strong pharmaceutical sector, which helps in growing several small and medium biotechnology companies, with a large network of research institutes, universities, and medical schools for production of the low cost of products and their evaluation.

Bioinformatics helps the students who hold out strong expectations of reducing the cost and time of development of new products such as new drugs and vaccines for controlling infectious diseases like COVID 19. (Manisha Jalan), a research scholar in New York, stated that the government will realise the importance of scientific analysis research, project research and this will increase budgets for research funding. This has already started with the discharge of a large quantity of funds dedicated to Covid-19 analysis in India and abroad.

Career Skills required by Biotech aspirants

The best job opportunities after Biotech degrees include: -Biomedical Engineer, Biochemist, Medical Scientist, Biological/Clinical Technician, Microbiologist, Process Development Scientist, Biomanufacturing Specialists, Business Development Manager, Marketing Manager, Lecturer, Biotech Product Analyst, Research Scientist, Research Associate. Biotechnologists need analytical skills to solve and anticipate problems that arise in practice. They also need to develop clear and concise written and oral communication skills to convey findings or concerns. Since biotechnologists manipulate living organisms, they must be able to react quickly to any unexpected developments or results. With the ever increasing competition in the field of Biotechnology, the aspirants are required to have some exceptional skills that will help them getting a job.

Technical Skills :- Although it goes without saying, technical skills hold an added value for the aspirants. If someone has to work in the most decent and repaying job posts, they should be acquainted with the requisite technical skills. Furthermore, they should also be aware of all the latest technological advancements, these include the following: Tissue culture, Polymerase chain reaction (PCR), Western Blot, ELISA (Enzyme-Linked Immunosorbent Assay), Molecular Cloning

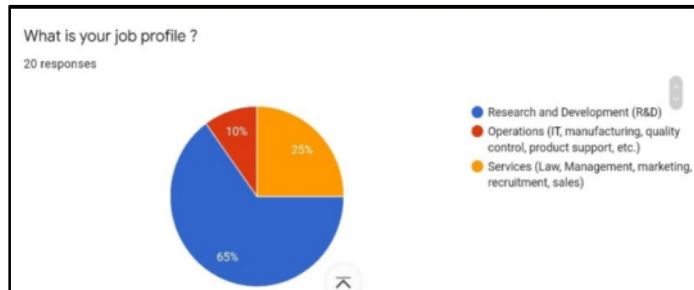
Management Skills:- There are additional skills that promise better jobs. These skills cannot be ignored if one is determined to work in the Top Biotech Companies in India or abroad. No matter how much in-depth knowledge you have about the industry, if you lack management skills, you won't be able to give in your best. Without proper management, tasks can get delayed time and again. Therefore, this is one of the most important skills of the 21st century; not only for biotech but all industries across.

Analytical Skills: These skills are a concoction of many others: problem-solving, decision-making, research, data mining, data interpretation, reporting, and organization. Since the whole discipline of Biotechnology is research-driven, analytical skills become valuable. Research is the lifeline of this industry, to be able to work in the best positions, analytical skills are the key.

Collaborative skills: Considering how biotechnologists work, collaborative skills appear prominently. There is a lot of team-work required in this domain. From developing a new vaccine to checking the effectiveness of pre-existing medicines, everything is done in teams. Ergo, the skills quintessential for working together hold a lot of significance.

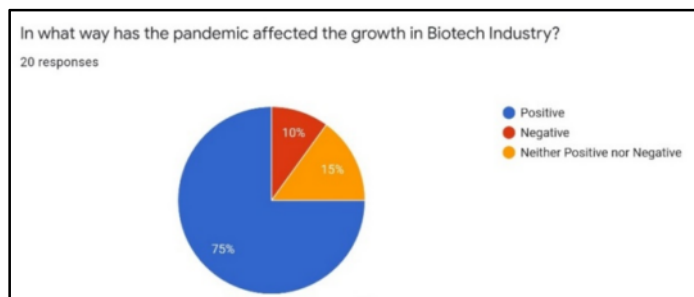
DATA ANALYSIS AND RESEARCH FINDINGS: -The expertise/professionals view, opinions and thoughts are provided which is considered to be appropriate for the research. The questionnaire consisted of 10 questions with a mix of open ended and close ended questions some responses were taken on a Likert scale. The sampling method followed is simple random sampling method. This technique provides every element or unit an equal chance of being selected in the sample. Non probability sampling technique is used in which data is analysed on the bases of the knowledge and professional judgement. This technique

was taken into effect as being a limited number of individuals possess the trait as it is used to obtain information from a very specific group of people by choosing the best most experienced professional of the field for collecting data. The analytical format of the research was based on the responses to the circulated questionnaire. The survey was conducted in a systematic manner among 20 professionals from various fields and industries of biotechnology. Below are the results of the survey in an analytical format.



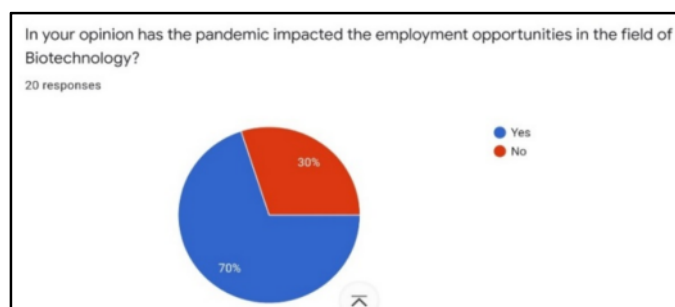
Majority of the respondents were from the Research and development, the main role of this department is to study diseases to discover new treatments or invent medical devices used to directly assist patients or to improve the accuracy of diagnostic tests of Biotechnology. This was followed by Services and Operations

Management department.

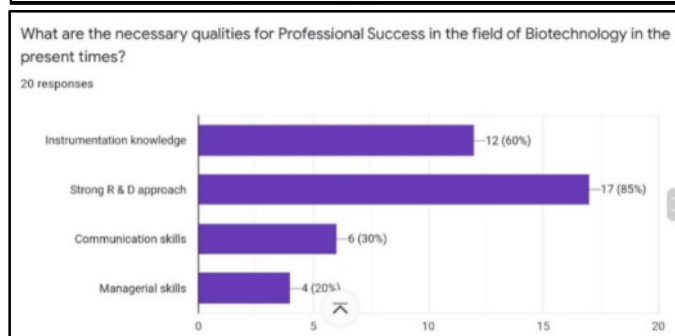


75% of the respondents said that the pandemic has a positive impact on the Biotechnology field the reason being that citizens leaders from across the globe are leaning on biotechnology and pharmaceutical companies with hopes of possible solutions for the COVID -19 pandemic. This has resulted into

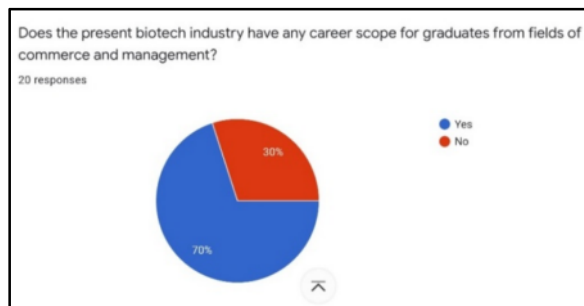
growing need for researchers and professionals to manage innovate techniques, medicines and vaccines to bring a much needed break to the pandemic



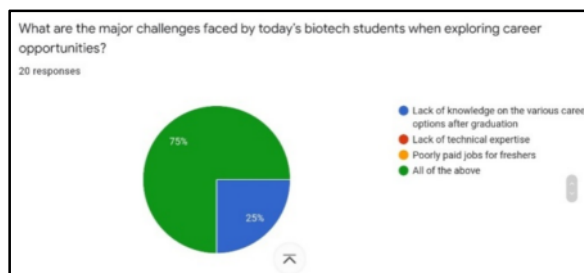
Similarly 70% industry professionals are of the opinion that the increasing need for vaccines, medicines, food biotech and allied services has resulted in an increase job opportunities in the field of biotech.



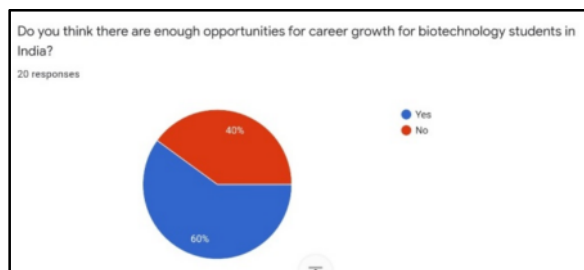
According to 85% industry professionals required skill for success in biotech is R&D followed by Instrument Knowledge 60% and Communication Skills 30%. Some professionals also highlighted the need for managerial ability since research projects need to be handled by individuals



70% of respondents agree students from management commerce can explore opportunities in the biotech field this could be in areas of management, marketing, HR, logistics, sales. Demand for a professional who is not only good at R&D but possess other commerce traits is most sought after by Biotech companies

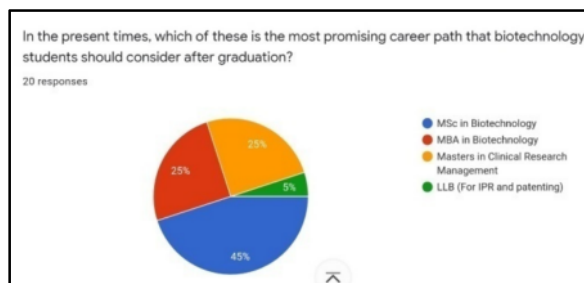


75% respondents say that Lack of proper knowledge on career options in biotech is the major issue faced by fresh graduates which could be due to lack of counselling, gap between industry and students, lack of technical expertise, poor salaries are issues faced.



With the much needed support by the government, awareness towards developing pharmaceutical, food and agriculture related research has resulted in generating career growth opportunities for biotech professionals in India hence 60% of respondents are positive that young students and professionals can look forward for bright

careers in Biotech field.



According to 45% respondents MSc in Biotechnology is the most promising career after graduation followed by Masters in Clinical Research and MBA in Biotechnology.

DISCUSSION:-The above responses suggest that the professionals in the field of biotechnology are positively affected by the biotech Industry. Individuals from various fields were included in this survey which included the Analytical Sciences, Bioanalytical science, Biopharmaceuticals, Industrial Biotechnology, Law, Microbiology, Proteomics, and Sales. The professionals were employed in various profile like Research and Development (R&D), operations (IT, manufacturing, quality control, product support, etc.), and services (Law, Management, marketing, recruitment, sales). Majority of the study participants were from Research and Development and operations. According to the responses from majority of the participants, the pandemic has considerably impacted the employment opportunities in the field of Biotechnology. To understand the current trends in the industry for fields related to Biotechnology, a survey was conducted to determine the field of preference in the industry. A ranking system in the survey revealed that Clinical Research has the highest scope for graduate students today followed by Fermentation technology, Gene cloning and sequencing, Food Biotechnology, Nanotechnology, Regulatory Affairs, Intellectual property rights, and patenting.

In the present times, MSc in Biotechnology is the most promising career path that biotechnology students should consider after graduation, followed by MBA in Biotechnology, Masters in Clinical Research Management, and LLB (For IPR and patenting). Majority of the study participants believe that there are enough opportunities for career growth for biotechnology students in India. The major challenges faced by today's biotechnology students when exploring career opportunities are Lack of knowledge on the various career options after graduation, Lack of technical expertise, and poorly paid jobs for freshers. A strong research & development approach is key to establishing oneself in the biotechnology industry. Other necessary qualities for professional include, instrumentation knowledge, communication skills, and managerial skills. Majority of the study participants believe that career opportunities in the biotechnology industry are open to graduates from the fields of commerce and management in sectors including administration, finance, operations, HR and business development, marketing, financial management, customer service, account management, marketing management, sales, procurement, valuation evaluation, nanotechnology, banking, investment, portfolio and program management, supply chain, packaging, and MBA in biotechnology.

CONCLUSION:-Indian biotechnology is built on entrepreneurship, innovation, developing domestic talent and demonstrating value-based care. Given the long history of diseases in India, the country has accumulated years of experience and scientific knowledge to prevent and treat them. India is working to boost the biotechnology sector under the flagship programmes such as 'Make in India' and 'Start-up India'. Increase in the number of biotech incubators will boost research and promote growth of start-ups; this is critical for the success of the Indian biotech industry. The current COVID-19 pandemic situation has gathered considerable attention towards the importance of biotechnology and recombinant DNA technology in the testing of the virus (using reverse transcriptase-PCR) and in the development of vaccines (based on mRNA technology). This study thus highlights the impact of the pandemic on the field of biotechnology and the career opportunities for students from this field. The increasing need of therapeutics and vaccines from the healthcare industry requires a strong research and development approach from the freshers entering into this field. The research findings recommend better grooming of the students from this field to create awareness regarding the future career paths.

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AN OVERVIEW OF CHARACTER RECOGNITION

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ABSTRACT:-When it comes to storing all of the data in a digital format that can then be utilized to do various manipulation operations, character recognition is a very difficult undertaking. Character identification of multiple typefaces in which the text is written is the real issue. One of the early uses of Artificial Neural Networks, which partially mimic human thinking in the domain of artificial intelligence, is the recognition of optical characters. The best strategy for getting more than 90% accuracy in the field of Handwritten Character Recognition will be described in this paper (HCR). There has been a lot of study done in the subject of HCR, but it is still an open problem because we don't have the best accuracy yet. The goal is to show that neural networks are effective for handwriting character recognition and other sorts of recognition. Once the data has been translated to digital form using an OCR (Optical Character Recognition) system, it can be altered, processed, and stored in a computer-readable format.

Keywords:- OCR, Artificial Intelligence, Neural Network. Feature extraction.

INTRODUCTION:-Computers have become a major aspect of human existence today, and will continue to grow in importance. In every area from medical research to manufacturing units, they tend to play a vital role. The growth of the internet has led to a rise in the demand for online information, which in turn has led to an increase in the need for the electronic storage and retrieval of printed content. In order to convert human-readable text into machine-readable form, character recognition technologies are being created. Computers may be quicker at computations and processes, but they still lag behind humans in the area of problem solving, despite their superior speed. It was for this reason that in the beginning artificial neural networks were created, which in some respects mimicked the human nervous system. An early use of artificial intelligence, automatic text and image recognition (ANN) trails human interpretation of words and pictures, despite recent advances. Thus, character recognition systems need to be improved to provide more coherent and resourceful outputs. Using Artificial Neural Networks, we propose a novel method to identify text from scanned or inputted pictures. With the complexity of word recognition from input pictures, the non-linearity of ANNs is helpful. On proposes in the article a set of goals to address the issue under discussion. The capacity to learn makes it easy for humans to decipher handwritten characters or typed texts. Machine Learning and Artificial Intelligence may be used to instill the same capacity in machines. OCR or Optical Character Recognition is the area that deals with this issue. Pattern recognition, image recognition, and artificial intelligence are some of the disciplines that are studied in this area. Electronic and picture text is converted into digital characters that may be read by machines using this method.

LITERATURE REVIEW:

Wang,X at el (2018) From natural scene pictures, a text-detection system was developed. The stages of their suggested algorithm are as follows. Candidate areas were found using the Canny Edge Detector first. A technique called connected component (CC) was employed to extract the text. For text extraction, the authors obtained an accuracy rate of 94.65 percent.

Sushree Sangita Patnaik (2017) There are two methods proposed in this work for optimum harmonic compensation: particle swarm optimization (PSO) and biological foraging optimization (BFO). Comparing the efficiency and efficacy of implementing two distinct

methods under two different supply scenarios APF performance is measured by the total harmonic distortion (THD) in the source current. BFO outperforms traditional and PSO-based methods by guaranteeing good functionality of APF and fast triumph over harmonics in the source current, even under unbalanced supply, according to the findings of this study.

Amir Bahador Bayat (2013) Automatic identification of handwritten characters has long been a target of many pattern recognition research projects. The purpose of this article is to look at the design of a high -efficiency system for recognising handwritten numbers. First, it suggests an efficient system comprised of two major modules: the feature extraction module and the classifier module. Seven sets of discriminative characteristics are retrieved and utilised in the recognition system by the feature extraction module. The adaptive neuro -fuzzy inference system (ANFIS) is studied in the classifier module for the first time in this field. The experimental findings indicate that the suggested system has a high level of recognition accuracy (RA). However, the findings indicate that in ANFIS training, the radius vector plays a significant influence in recognition accuracy.

Pritesh A. Pali et al (2015) For the solitary Handwritten English character(A to Z), an effort is made to create off -line recognition methods (0 to 9). Since various individuals may use different styles of handwriting and directions to draw the same form of their recognised script, the challenges in handwritten character identification reside in the variations and distortions of handwritten characters. An overview of character recognition using neural networks is provided in this article.

OBJECTIVES OF THE STUDY:

1. Artificial Intelligence will be used to study and show character recognition.
2. By creating a system that uses efficient technology for identifying Handwriting letters and words from picture media, the project will solve the problem of accuracy in Handwriting character recognition systems.

Artificial Intelligence:- Reading letters, numbers and words by computers may be seen as an imitation of a human being since they are being read by computers. One might claim that these systems utilise artificial intelligence to decipher handwriting from pictures or any other source of handwriting. A machine's intelligence may be defined as artificial intelligence. Use of the phrase "cognitive computing" refers to computers or devices that can imitate human "cognitive" capabilities. It enables machines to learn from experience, adapt to new data (inputs), and execute activities that can be accomplished by human beings, a concept known as artificial intelligence. Machine learning, neuron networks, and deep learning are some of the branches of artificial intelligence. Character Recognition System is one of the most traditional uses of Artificial Neural Networks. In a wide range of disciplines, including those that we utilise in our everyday lives, this framework provides the foundation for a wide range of applications. Businesses, post offices, banks, security systems, and even the area of robots rely on this system since it is cost -effective and time-efficient. Character Recognition is used while completing a check, scanning an eye or face at the airport entry, or training a robot to pick up an item.

CHARACTER RECOGNITION:-

When characters are printed or typed, they are recognized. Optical scans of the characters are used to transform them into machine-editable form for archiving and study.

Major uses includes-

1. Form of data entry for old books
2. Storage of office papers, bank forms
3. Storing old and decaying material like handwritten manuscripts for research purpose

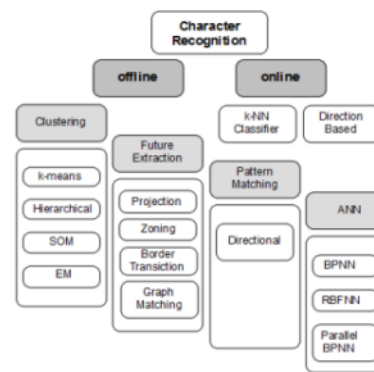


Figure 1: Types of Character Recognition Techniques

Most OCR systems decompose the process into several stages:

1. Format Analysis (Document Image => Character String Image)
2. Character Segmentation (Character String Image => Character Image)
3. Feature Extraction (Character Image => Character Properties)
4. Classification (Character Properties => Character ID)

Types of Recognition Engines: Recognition Engines are –

5. Optical Character Recognition (OCR)
6. Intelligent Character Recognition (ICR)
7. Optical Mark Recognition (OMR)
8. Magnetic Ink Character Recognition
9. Barcode Recognition

Optical Character Recognition (OCR) :- OCR engines convert pictures of machine -printed characters into machine -readable characters by converting them from images into machine -readable characters. From a bitmap, images of machine-printed characters may be retrieved. An image scanner, via fax or by computer may create the bitmap. Optical mark recognition is more accurate than OCR, although Intelligent Character Recognition (ICR) is more accurate.

Intelligent Character Recognition (ICR): - A machine -readable character is created by reading the hand-printed picture of the character (not cursive) and converting it into machine -readable characters. From the bitmap of the scanned picture, characters are extracted. As a result, ICR recognises numeric characters considerably more accurately than it recognises letters. A little tweaking and checking is required with ICR, since it is less accurate than OMR. ICR mistakes may be minimised by using the form design techniques described later in this article.

Optical Mark Recognition (OMR): - No matter what the mark looks like, OMR technology identifies the presence of it. The responder fills in tiny ovals, called bubbles, or check boxes on OMR forms. No alphabetic or numeric characters are recognised by OMR. As far as data gathering technologies go, OMR is the quickest and most accurate one. In addition, it is a reasonably user -friendly application. As a consequence of exact measurements of mark darkness, and advanced algorithms for distinguishing between erasures and marks, OMR is very accurate.

Magnetic Ink Character Recognition: - In the U.S. banking sector, MICR (Magnetic Ink Character Recognition) is a specialised character recognition technology used to simplify check processing. Almost all are from the United States and the United Kingdom. "E -13B" typeface is used for MICR characters on checks. Even though E -13B typefaces are not produced with magnetic ink, many contemporary recognition engines can identify the fonts. The banking sector, however, utilises magnetic writing on checks to guarantee accuracy since backdrop patterns may interfere with optical identification.

Barcode Recognition: - "A barcode is an informational representation that can be read by a machine." Software or barcode readers may be used to scan a picture for barcodes. There are two types of barcodes: one-dimensional (linear) and two-dimensional (dimensional).

PHASES OF GENERAL CHARACTER RECOGNITION SYSTEM:

Digitization: Digitization is the process of turning a handwritten paper document into an electronic version. Each document in this case has just one character. The electronic conversion is done by scanning a document and producing an electronic representation of the original document in the form of an image file format. We utilised a variety of scanners to digitise the picture, and the digital image was then sent to the preprocessing phase.

Pre-processing: A number of actions are performed on the input picture during the preprocessing phase. It improves the picture, making it ideal for segmentation. Noise reduction was performed on the bitmap picture, which was then converted into a vector image. Next, the bitmap picture was thinned.

Segmentation: Most essential is the segmentation step. In order to segment a picture, the constituent characters must be separated from each other. For printed papers that are in conventional form, it is more difficult to segment handwritten characters into various zones (upper, middle and lower zone) and characters. This is primarily due to paragraph, word, and character variations, as well as skew, slant, size, and curvature. It's possible that components of two neighbouring characters may be touched or overlapped, which makes segmentation harder. The upper-zone and lower-zone characters are often changed, causing the characters to touch or overlap each other. Segmentation is an essential step in the development of a campaign.

Feature Extraction: In this phase, the characteristics of an individual's personality are analysed. An individual character recognition system's performance varies according on the characteristics it extracts from its input data. It should be possible to classify a character in a unique manner based on the characteristics retrieved from the input character. For each letter, we utilised diagonal features, intersection-and-open-end-points-features, transition-and-zoning features, directional features, and features that were based on parabola curve fitting.

RESULTS:- This project, "Handwriting Character Recognition using Neural Networks", is targeted at identifying handwritten characters. In order to build the "handwritten character recognition system", a neural network was used. In this method, the original picture is transformed to grayscale and then segmented. This is the final output of the system after preprocessing and segmentation.

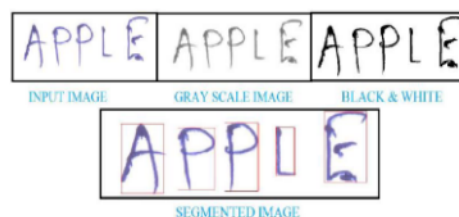


Figure: Modules Result

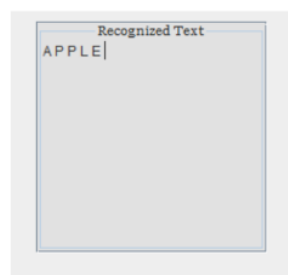
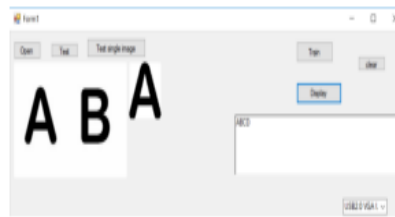
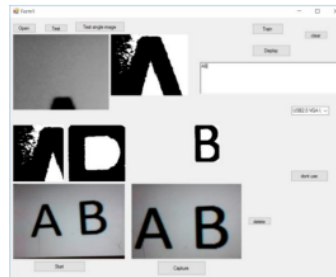


Figure: Recognized Text

A classifier based on SVM conducts classification of test and train data, respectively. The file "result" contains the predicted results. Inside a text box, a text is shown and spoken out .



It is possible to conduct character recognition on printed texts by taking a picture and following the steps described above.



CONCLUSION:- This article discusses the difficulties associated with character recognition. In the past decade, character recognition techniques have advanced significantly. As a result of advances in related areas such as image recognition and face recognition, a number of methods have been developed. In addition, it is anticipated that this thorough debate would offer insight into the ideas involved, and possibly stimulate future advancements in the field as a result of this conversation. The type of the content to be read and its quality are closely related to the accuracy of the recognition. Cursive handwriting and kid handwriting are not explicitly addressed in current studies. Characters must have certain characteristics in order to be categorised. Intelligent usage of features and neural networks has increased accuracy, according to our research. It is possible to combine two or more methods in order to enhance the system's accuracy. For the identification of handwritten characters, this article provides a very helpful technique. For character recognition in additional languages, the work of the present study may be expanded. If you utilise the machine-learning models developed in this study, you can transform handwritten notes and newspaper articles into digital text format.

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AN APPROACH TO DETECT MALICIOUS APP USING EMBEDDED METHOD

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ABSTRACT:-In parallel to the development in mobile apps, mobile dangers are also on the side of increase this is due to the fact that it is based on open source software and has outstanding performance. Nevertheless, the simplicity of the Android platform has also been a driving force behind malware creation. Unknown apps cannot be detected using the usual signature-based technique. Mobile devices should be protected against malware attacks by implementing security mechanisms.

Keywords: - smartphone, VGN classification

1. Introduction

Smartphones and tablets have become extremely popular in the last years. At the end of 2014, the number of active mobile devices worldwide was almost 7 billions, and in developed nations the ratio between mobile devices and people is estimated as 120.8 %. Given their large distribution, and also their capabilities, in the last two years mobile devices have become the main target for attackers. Android, the open source operating system (OS) introduced by Google, has currently the largest market share, which is greater than 80%. Due to the openness and popularity, Android is the main target of attacks against mobile devices (98.5%), with more than 1 million of malicious apps currently available in the wild. Malicious apps (generically called malware) constitute the main vector for security attacks against mobile devices. Disguised as normal and useful apps, they hide treacherous code which performs actions in the background that threatens the user privacy, the device integrity, or even user's credit. Some common examples of attacks performed by Android malicious apps are stealing contacts, login credentials, text messages, or maliciously subscribing to the user to costly premium services. Furthermore, all these misbehaviors can be performed on Android devices without the user noticing them (or when it is too late). We have derived from known malware misbehaviors. Then by using the obtained features the malware app and the normal app can get distinguished by using the Hybrid Biased VGG Net Classification. Generally the suggested classifier can analyze the Android malware features, and the malware app gets pointed out. The experimental results show that the new method performance better than that of the traditional permission detection.

2. Literature of Review

- 1) **A. Reina et. Al.** CopperDroid's VM-based dynamic system call-centric analysis is able to faithfully describe the behavior of Android malware whether it is initiated from Java.
- 2) **S. Bugiel et. Al.** we investigate the problem of designing and implementing a practical security framework for Android to protect against confused deputy and collusion attacks.
- 3) **M. Backes et. Al.** The work presents AppGuard, a powerful and flexible security system that overcomes these deficiencies.
- 4) **Y. Zhou et. Al.** Here we developed a system called TISSA that implements such a privacy mode on Android. The evaluation with more than a dozen information-leaking Android applications demonstrates its effectiveness and practicality. Furthermore, our evaluation shows that TISSA introduces negligible performance overhead.
- 5) **W. Enck et. Al.** Monitoring sensitive data with Taint Droid provides informed use of third-party applications for phone users and valuable input for smartphone security service firms seeking to identify misbehaving applications.

6) **C. Gates et. al.** The new method has been described for malicious android application that uses the main security of application.

7) **B. Wolfe, K. Elish, and D. Yao** Here they presents a new method of screening for malicious Android applications that uses two types of information about the application: the permissions that the application requests in its installation manifest and a metric called percentage of valid call sites (PVCS).

3. Scope of Study

- In this paper we present a novel malware detector for Android devices. In particular, to detect app misbehaviors, the suggested architecture can monitors the device actions, its interaction with the user and the running apps, by retrieving of malware features finally to classify it.
- Proposed a system to protect android users from the malicious applications
- It helps to run continuously and provide automated updates of detection malicious signatures or other reference information used to identify malicious code.
- The suggested also has shown efficient detection capabilities as it acquires a high range of detection accuracy (99.1%)
- Finally, by applying the novel classification methods, to categorize them into one of those malicious applications and accurately classify whether an application is benign or malicious one.

4. Methodology

MODULES:

- Pre-processing module
- Feature extraction module
- Feature selection module
- Malware classification module

MODULES DESCRIPTION:

Pre-processing module :-Details re-organization process which includes the following steps in the pre-treatment stage, such as tokenization, word elimination, stemming and cleaning, etc. The preprocessing stage is used in this opinion mining to reduce the number of characteristics which help to successfully achieve the chosen methods. The appropriate collection of vectors representing the number of terms in the text, while the TF-IDF model incorporates details about the more relevant and less meaningful terms.

- Term Frequency: is a frequency calculation in the present document.
- Inverse Document Frequency: That is a indicator of how uncommon the term is in records.

$$\frac{\partial m}{\partial x} \left(\int_0^m p(x) dx \right) = \partial m(m)(x^{-1})(m)) d/dm \quad (1)$$

Here finally the uniform document can be represented as $\frac{\partial s}{\partial x}$, while the outcome shows, should smooth and boost the cycle of record equalization.

Feature extraction module :-The following equation depicts the shearlet method for app text categorization on noisy the features regarding abnormality:

$$K(l, n) = G(l, n, o, \emptyset) / \sum_{l=1}^H \sum_{n=1}^H G(l, n, o, \emptyset) \quad (2)$$

Where G is the vector of frequency, l, n, o the frequency of the specific variable usually represents 0-1, K represents the characteristics of the data (l, n) is the component of l , and \emptyset is a normalised constant.

This implies that the algorithm will decide its next steps, provided by a (heuristic) function, by choosing the option that optimizes the performance of this feature.

Heuristic functions may also be built to reduce the expense to the target. By using the following equation the correlation between the features can be defined

$$K\left(\frac{o}{\partial}, \mu\right) = \left[\frac{\varphi(\partial+\mu)}{\varphi(\partial)\varphi(\mu)}\right] o^{\partial} (\partial + \mu)^{\mu} (\mu - 1) \quad (3)$$

After that, some of the important web page features that can be extracted can be depicted below.

$$\text{Text correlation} = \frac{1}{1} - 1 \sum_{i=1}^{l-1} a(j+1) - y_i(j) \quad (4)$$

$$\text{High connectivity} = \sum_{i,j=0}^{n-1} F(i, j) \left[\frac{(i-\mu_i)(j-\mu_j)}{\sqrt{(\sigma_i^2)} \sqrt{(\sigma_j^2)}} \right] \quad (5)$$

$$\text{Relevant texts} = \sum_{i,j=0}^{n-1} \frac{F(i,j)}{F} - (F + 2) \quad (6)$$

This method helps to process the data and extracting the features of the web page from the data in an effective manner.

Feature selection module :- This paper represents the need for feature selection in classification. The suggested algorithm provides a way of calculating posterior probability $P(c|x)$ from $P(c)$, $P(x)$ and $P(x|c)$.

$$p\left(\frac{c}{x}\right) = p\left(\frac{x}{c}\right) p(c)/p(x) \quad (7)$$

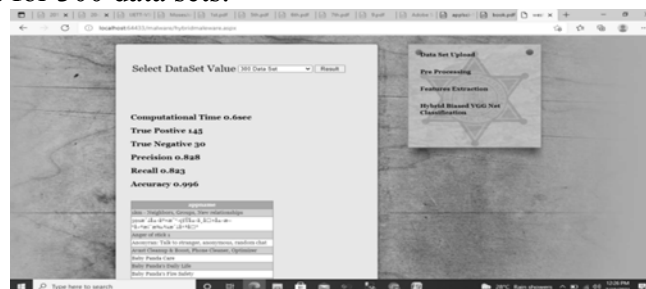
where,

- $P(c|x)$ is the posterior probability of class c (target) given predictor (x, A_i) , where $A_i = \{A_1, A_2, \dots, A_{14}\}$
- $P(c)$ is the prior probability of class $p(\text{yes/no})$
- $P(x|c)$ is the likelihood which is the probability of predictor given class.
- $P(x)$ is the prior probability of predictor.

5. RESULTS AND CONCLUSION

Results:- The proposed system is tested using popular database. The images are captured in these databases for different persons, taken 200 and 300 and 400 data at a time. The proposed system performance is evaluated according to the accuracy of the recognition rate. The accuracy is the fraction of labels that the classifier predicts correctly. We tested the system on Visual Studio. The specifications of these subjects for the four databases are summarized in below Table.

Result1:- The result is for 300 data sets.



6. CONCLUSION:- In this research, we proposed a mobile malware detection model based on app comment features. Moreover, the model uses classification methods including wrapper embedded feature selection and hybrid biased VGG Net classifier will characterize malware app families. The analysis shows the proposed feature set has more than 93% accuracy in the detection and 92% success probability on characterization with less than 0.04 percent false positive rate on average, which is adequately good and necessary for real world malware app detection systems. In future work, we plan to include other features such as system and host information together with the app features for the malware characterization and propose a complete detection system for smart-phones.

Soil Stabilization using Sisal fiber with Banana Yarn Ash

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Abstract–The aim of this study is to stabilize weak soil as Soil stability is one of the key factors in the construction of a building. To make the best use of the structures in the soil, the performance characteristics of the soil need to be improved. Soil engineering malfunctions have forced engineers to try to improve substandard soil engineering structures. The soil used in this study is obtained from the Ottu barrage located in Distt. Sirsa in the state of Haryana. The test performed in the study includes Maximum Dry Density (MDD), Optimum Moisture Content (OMC) and California Bearing Ratio (CBR) on samples with varying percentage of banana Yarn ash 4%, 8%, 12%, 16%) along with sisal fiber composition (0.5%, 1.0% and 1.5%). The optimum percentage of the Banana Yarn Ash is recommended as 12% and Sisal fiber with 1 cm length. The CBR value of the finally recommended samples treated with 12% ash and 1% fiber is increased by 430.13%.

Key Words: -Soil Stabilization, Coconut husk ash, Polypropylene fiber, UCS, MDD, OMC and CBR tests

1. INTRODUCTION

Soil stability is one of the key factors in the construction of a building. To make the best use of the structures in the soil, the performance -cum-engineering characteristics of the soil must be enhanced. Soil engineering malfunctions have forced engineers to try to improve substandard soil engineering structures. Most of the northern part of India has soil with high swelling, shrinkage features, very low CBR content. Expansive soil is the soil that expands when water is added, and then decreases when it dries because of abundant existence of a mineral named montmorillonite. This constant change in soil volume causes fragmentation of the structure and results in its appearance. The use of very strong soil -reinforcing materials has become a widespread method of land reclamation. This soil is too weak to build up any structure or mortar above it. Soil material should be raised before any road or pavement can be built on it. Methods for improvising/upgrading the engineering properties (most probably strength as well as durability/permanence) of clayey soils include treatment (stabilization) with lime or cement or chemicals (Hausmann 1990). The optimum percentage of the Banana Yarn Ash is recommended as 12% and Sisal fiber with 1 cm length. The CBR value of the finally recommended samples treated with 12% ash and 1% fiber is increased by 430.13%. Soil sample for the study was collected from Ottu barrage located 12.8 kms from Sirsa Distt. in the state of Haryana. This barrage is a feeder for the two canals of Ghaggar river i.e. the Northern Ghaggar canal and the Southern Ghaggar canal. Water from this source is further used for irrigation purposes in Rajasthan.

2 Materials used

2.1 Sisal fiber:-Sisal Fiber is one of naturally grown fiber that can be utilized in enhancing the shear properties of soil by acting as a reinforcement material. The use of such natural fibers can be traced from the past as they were used more prominently due to their easy availability and being cheap as compared to the other available such alternates like glass, Kevlar and plastic. It has been seen that sisal fiber has substantiated that it can effectively improvise the shear characteristics of soil by increasing value of deviator stress and other parameters like cohesion and angle of internal friction.

Table 1 Physical characteristics of Sisal Fiber

Description	Values
Average dia in mm	0.80 to 1.20 mm
Avg. Tensile Strength in Mpa	385 to 728
Young's Modulus of elasticity in Gpa	9.0 to 22.00
Density in gram/ cm ³	1.58
Type of origin	Naturally

2.2 Banana Yarn Ash -The ash made from banana yarn is a non -crystalline pozzolanic and with a small amount of cement like properties. Banana ash is not a compact material with low gravity compared to normal soil. The ash size of the yarn banana is the same as silk. It contains the most common blank layers of silicon, aluminum and iron oxides, and unbleached carbon. Bananas being pervasive fruits, these are grown round the globe and especially in India. The total annual production of bananas in the world is 120 -150 million tons approximately. Since the Banana plants can only be harvested once, thus the stems and leaves of the plant becomes useless for the farmers after the harvest. Banana fiber as extracted from leaves of plant it is a cellulosic fiber -derived fiber. It is strong at mechanical properties. Banana fiber is also used in the form of ash to produce cement structures. Banana ashes can be called pozzolanic materials from the civil engineering point of view. Its use helps in reducing pollution & increase the strength of concrete and soil, where it is used for stability.

Table 2 Physical characteristics of Banana Yarn ash

Parameter	Composition Banana Leaves Ash (%)
Silicon Dioxide (SiO ₂)	48.7
Iron Oxide (Fe ₂ O ₃)	1.4
Aluminium Oxide (Al ₂ O ₃)	2.6
Sodium Oxide (Na ₂ O)	0.21
Loss of Ignition (LOI)	5.06

Source: Kanning, R.C. et al., (2014)

3. Clayey Soil: The Prime Material Used for Present Investigation -Clayey soil obtained from the vicinity of Ottu Barrage on Ghaggar River on Rania road Sirsa (Haryana) was in form of big lumps which was pulverized at first. Then the pulverized soil was air dried to remove all the absorbed moisture. The soil specimen is stored in airtight containers to save it from being contaminated by moisture.

Evaluation of soil grouping as per its index properties

Sr. No.	Description	Value
1	LL	28.10 %
2	PL	16.26 %
3	I _p	11.84
4	Specific Gravity	2.56
5	Soil Group as per IS: 1498	CL

4. Analysis of the Experimentations Results of Modified Soil

4.1 Optimum Moisture Content and Maximum Dry Density

The Modified Proctor's Compaction Test was used for examination of Maximum Dry Density (MDD) and Optimum Moisture Content (OMC) of the soil specimen with varying proportion of Banana Yarn ash and Sisal fiber. The results of these experimentations are tabulated as below:

Table 3 Results of experimentations for MDD and OMC of soil with varying proportion of Banana Yarn ash

Sr. No.	% content of Banana Yarn ash	MDD	OMC
1.	0	1.96 g/cc	11.67 %
2.	4	1.92 g/cc	9.95 %
3.	8	1.90 g/cc	12.10 %
4.	12	1.88 g/cc	13.94 %
5.	16	1.82 g/cc	15.30 %

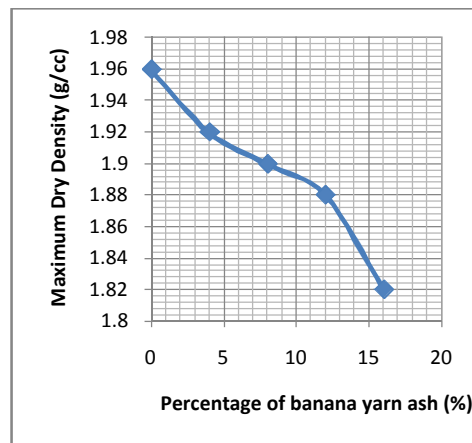


Figure 1 MDD for soil with Banana Yarn Ash

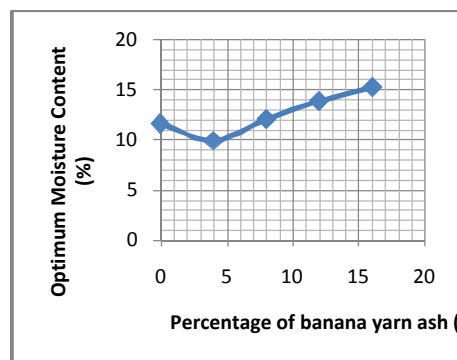


Figure 2 OMC for the soil with Banana Yarn ash

MDD and OMC for 12% Banana Yarn ash amalgamated soil with varying composition of Sisal fiber.

Sr. No.	Sisal fiber content C1 = 0.5%		Sisal fiber content C2 = 1.0%		Sisal fiber content C3 = 1.5%	
	MDD (γ_d) g/cc	OMC, (w) %	MDD (γ_d) g/cc	OMC, (w) %	MDD (γ_d) g/cc	OMC, (w) %
Sisal fiber 1.5cm in length						
1.	1.82	14.5	1.76	14.9	1.69	15.5

This value of Banana Yarn ash is adopted on the basis of UCS and CBR tests. As maximum value of these parameters is achieved by adding 12% Banana Yarn ash.

4 UC Compressive Strength of the Modified Soil

Experimentations were carried out on conventional clayey soil specimen stabilized with Sisal fiber to obtain value of Unconfined Compressive Strength (UCS) at the max. dry density and optimum moisture content. The results of following tests are tabulated below:-

Table 4 UCS test results for modified soil with varying percentage of Banana Yarn ash

Sr. No.	% of Banana Yarn ash	UCS (kg/cm ²)
1.	0	3.081
2.	4	3.174
3.	8	3.368
4.	12	3.527
5.	16	3.280

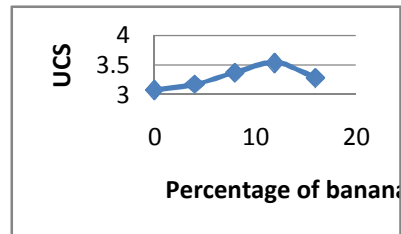


Figure 3 UCS values of soil with Banana Yarn ash

Table5 UCS values of 12% Banana Yarn ash modified soil incorporated with Sisal fiber

Sr. No.	Content of Sisal fiber (%)	Length of Sisal fiber
		1.5 cm
		UCS value of modified soil
1.	0.5%	3.39 kg/cm ²
2.	1.0%	3.57 kg/cm ²
3.	1.5%	3.28 kg/cm ²

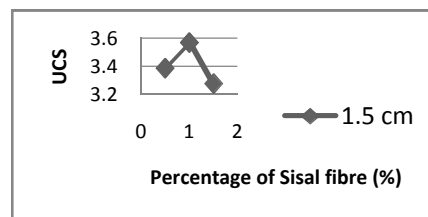


Figure 4 UCS values of modified soil

4.3 CBR test results for the Modified Soil :-The modified clayey soil specimens are examined for CBR value through experimentations carried out at the MDD and OMC with varying composition of banana yarn ash and sisal fibre. The inferences made of following tests results are tabulated below:-

Table 6 CBR values of soil with varying percentage of Banana Yarn ash

S.No.	% of Banana Yarnash	CBR value
1.	0	3.65%
2.	4	9.29%
3.	8	11.19%
4.	12	14.42%
5.	16	13.80%

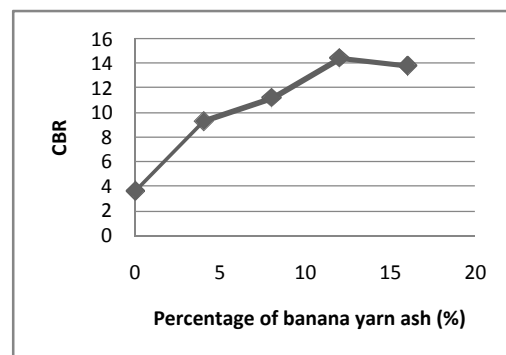
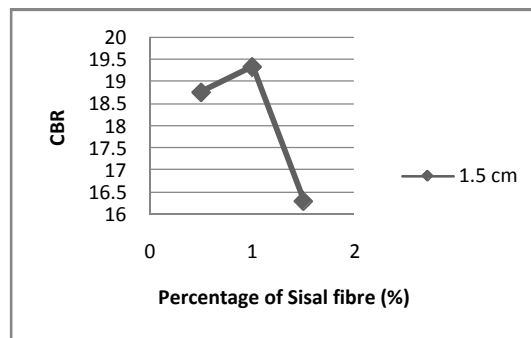


Figure 5 CBR values of soil with Banana Yarn ash

Table 7 CBR values of modified soil

Sr. No.	% of Sisal fiber	Length of Sisal fiber
		1.5 cm
		CBR value of modified soil
1.	0.5%	18.78%
2.	1.0%	19.35%
3.	1.5%	16.32%

**Figure 8** CBR values of modified soil

5. CONCLUSIONS :-On the basis of analysis of laboratory experimentation as discussed above, following conclusions are drawn:

5.1 Compressibility of Soil

As the percentage of Banana yarn ash increases, there observed hike in OMC whereas decline in MDD. The CBR value has special behavior; it is maximum when content of Banana Yarn ash is 12 % and 1% of 1.5cm long Sisal Fiber is added for soil modification. Therefore, the value of most important engineering property i.e. strength at this combination is maximum and does not decline with the decrease in MDD as compared to conventional virgin soil.

5.2 UC Strength of Soil

- From the experimentations carried out for current investigation it is inferred that the value of UC Strength at 4, 8, 12 & 16% of Banana Yarn Ash were 10.78, 21.56, 47.05 & 26.96% in comparison to the unmodified clay.
- Maximum increase in UCS was of 47.05% and observed when banana yarn ash content was 12%.
- The value of UC for specimen of modified soil consisting 12% Banana yarn ash and 1% 1.5cm long sisal fiber was about 3.57 kg/cm². At this mix proportion of stabilizing agents and soil the percentage increase was maximum i.e 75 % in comparison to the unmodified clay.

5.3 CBR value of Soil

- The value of Soaked CBR of unmodified/conventional clay is 3.65%.
- The value of Soaked CBR test of soil blended with 12% Banana Yarn Ash is 14.42%, which is 295.06% of CBR value of unmodified clay.
- The value of Soaked CBR for specimen of modified soil consisting 12% Banana yarn ash and 1% 1.5cm long sisal fiber was about 19.35%. At this mix proportion of stabilizing agents and soil the percentage increase in CBR value was maximum i.e. 430.13 %

From the graphs of UCS value & CBR value it is inferred with increasing content of banana yarn both UCS & CBR value decreases. But the trend of decline of UCS value is completely different with Banana Yarn Ash and Sisal Fiber, as there is steep decline in UCS value with increase in content of Banana Yarn Ash and whereas this decline in UCS value is gradual with increase in content of Sisal Fiber. This differential behavior of UCS is due to microstructure of Banana Yarn Ash and Sisal Fiber. As Banana Yarn Ash quickly breaks the bond in clay soil due to its cohesion diminishes, due to which UCS shows a steep decreasing trend. The CBR value of modified soil showed completely opposite fashion to that of UCS

value with increasing content of banana yarn & sisal fiber CBR value decreases. But the trend of decline of CBR value is completely different with Banana Yarn Ash and Sisal Fiber, as there is steep decline in CBR value with increase in content of Sisal Fiber and whereas this decline in CBR value is gradual with increase in content of Banana Yarn Ash.

6. RECOMMENDATIONS

On the basis of various experimentations and their analysis as discussed above, following recommendations can be made:

- i) Soil in vicinity of Ottu Barrage on Ghaggar River on Rania road Sirsa (Haryana) can be economically improved by using waste Sisal Fiber & Banana Yarn Ash in the optimum percentage.
- ii) The optimum proportions of the stabilizers are 12% Banana Yarn Ash and 1% 1.5cm long Sisal Fiber.
- iii) In terms of CBR value the best results can be achieved at proportioning of modified soil consisting 12% Banana yarn ash and 1% 1.5cm long sisal fiber.

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BREAST FEEDING AND COVID 19 PANDEMIC

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Abstract:-The World Health Organization suggests select breastfeeding for the initial a half year of life, trailed by kept breastfeeding with suitable correlative food sources for as long as 2 years and past. Early and continuous skin -to-skin contact, staying in and kangaroo mother care likewise essentially improve neonatal endurance and decrease horribleness and are suggested by WHO. In the scenario of Covid-19 there arises a question whether to continue breastfeeding the baby or not if the mother is infected. Breastfeeding is the best defensive measure accessible for sound and in danger babies and their mothers during the COVID -19 pandemic. Thusly, breastfeeding ought not be intruded on, mothers and babies ought not be isolated, and skin -to-skin contact ought not be ended. While guaranteeing ordinariness beyond what many would consider possible, general contamination control measures ought to be set up and clung to stringently. In uncovered or contaminated mother's extra drop insurance ought to be taken by mother by wearing a (transparent), careful face cover when dealing with and taking care of her baby. At the point when mothers are too sick to even consider breastfeeding, they should in any case be upheld to communicate their milk, and the newborn child ought to be taken care of by a solid person. Breastfed newborn children enjoy a benefit getting extra security against SARS -CoV-2. In view of the current proof, it appears to be that the infection isn't sent by means of breastmilk. Thus, the advantages of breastmilk exceed the danger of breastfeeding suspension and of an expected transmission of the Covid.

Keywords:-Breast feeding, Neonatal, Pandemic, Isolated, Transmission.

INTRODUCTION:-Breastfeeding is the foundation of baby and small child endurance, sustenance and advancement and maternal wellbeing. The World Health Organization suggests select breastfeeding for the initial a half year of life, trailed by kept breastfeeding with suitable correlative food sources for as long as 2 years and past. Early and continuous skin-to-skin contact, staying in and kangaroo mother care likewise essentially improve neonatal endurance and decrease horribleness and are suggested by WHO. The COVID -19 pandemic is upsetting ordinary life worldwide, each everyday issue is contacted. The pandemic requests fast activity and as new data arises, solid combines and rules for care are critically required. Be that as it may, concerns have been raised about whether moms with COVID-19 can communicate the SARS -CoV-2 infection to their baby or small kid through breastfeeding. Suggestions on mother-baby contact and breastfeeding should be founded on a full thought of not just of the likely dangers of COVID -19 disease of the newborn child, yet additionally the dangers of dreariness and mortality related with not breastfeeding, the unseemly utilization of baby equation milks, just as the defensive impacts of skin -to-skin contact.

BACKGROUND:-SARS-CoV-2 is beta Corona viruses, which cause the COVID -19 disease. Presently the method of transport of SARS -CoV-2 recommends individual to individual transmission which happens when in close contact with a contaminated individual. The infection is moved by means of respiratory beads created when hacking and sniffing. Beads can either arrive on a solid individual near a depression in the facial region or be breathed in into the lungs of people in nearness. Note that the airborne transmission over significant distances is far -fetched. The epic Covid (SARS -CoV-2) began in Wuhan, in Central China in December of 2019 and spread quickly across China. 49% of patients who gave pneumonia were exposed to the Seafoods. On 5 February 2020, the infection likewise

spread to different nations including Japan, Thailand, Singapore, Republic of Korea, the United States of America and Australia . As of now, every landmass on Earth has been influenced and the World Health Organization (WHO) pronounced the episode of the sickness as a worldwide general wellbeing crisis. Although the vast proportion of the diseases happen in grown-ups or people above 60 years, some pregnant ladies have likewise been contaminated, causing worries for the administration of the perinatal period. A couple of studies have investigated the disease of youngsters with SARS-CoV-2 and none showed breastfeeding as technique for the transmission of the infection. Breastfeeding is the best defensive measure accessible for sound and in danger babies and their mothers during the COVID-19 pandemic. Thusly, breastfeeding ought not be intruded on, mothers and babies ought not be isolated, and skin-to-skin contact ought not be ended. While guaranteeing ordinariness beyond what many would consider possible, general contamination control measures ought to be set up and clung to stringently. In uncovered or contaminated mother's extra drop insurance ought to be taken by mother by wearing a (transparent), careful face veil when dealing with and taking care of her baby. At the point when moms are too sick to even consider breastfeeding, they should in any case be upheld to communicate their milk, and the newborn child ought to be taken care of by a solid person. Breastfed newborn children enjoy a benefit getting extra security against SARS-CoV-2. In view of the current proof, it appears to be that the infection isn't sent by means of breastmilk. Thus, the advantages of breastmilk exceed the danger of breastfeeding suspension and of an expected transmission of the Covid

WHO RECOMMENDATIONS :-WHO suggests that mothers with suspected or affirmed COVID-19 ought to be urged to start or keep on breastfeeding. they ought to be advised and counselled for the advantages of breastfeeding considerably exceed the possible dangers for transmission. Mother and newborn child ought to be empowered to stay together while living in for the duration of the day and night and to rehearse skin-to-skin contact, including kangaroo mother care, particularly following birth and during foundation of breastfeeding, regardless of whether they or their babies have suspected or affirmed COVID-19. Worldwide measures to control the spread of the Covid ought to be applied in ordinary circumstances to forestall and stop the spread of microorganisms. These actions incorporate individual cleanliness and social separating, which ought to be applied to all babies, to keep them from getting the ailment.

DISCUSSION:-Breastfeeding secures mother and kid; its medical advantages are undisputed and dependent on proof. Breastfeeding secures youngsters, babies and kids against bleakness and demise. The defensive impact is especially solid against irresistible illnesses, because of the immediate exchange of antibodies just as hostile to infective factors and enduring exchange of immunological capability and memory. Breastfeeding has both short and long haul benefits for the mother and her newborn child. To profit with the defensive variables in bosom milk, each exertion ought to be made to help and empower early and prompt commencement of breastfeeding. Not exclusively does the early commencement decline neonatal passings, however along with incessant breastfeeding, guarantees that the breastfeeding dyad are not isolated. Early commencement of breastfeeding fundamentally expands the breastfeeding rates in sound term newborn children at one to multi month's age by animating chemicals and working with holding. The Lancet Breastfeeding Series (2016) detailed that increasing breastfeeding could forestall around 823,000 kid passings every year. Breastfeeding decreases 64% of dreariness and mortality in looseness of the bowels, 74% in the seriousness of RSV and its hospitalization with 72% . This shows the defensive advantages of breastfeeding, which relate to COVID-19 pandemic.

SUGGESTED PRACTICE GUIDELINES :-It ought to be noticed that the WHO interval direction reports on the administration of COVID-19 has been supported by proof based rules additionally distributed by the WHO, like the Infection avoidance and control and pandemic -

inclined intense respiratory sicknesses in medical care, just as current data on COVID -19. General disease counteraction measures ought to in this way consistently be taken, in all conditions, with uncommon regard for drop protection. Direction about the requirement for exposed as well as infected breastfeeding mothers to rehearse hand and respiratory cleanliness has been given by numerous associations global ly and specialists in the field . In light of this the mother can settle on an educated decision in regards to breastfeeding during the pandemic. Measures for communicating breastmilk ought to likewise be applied as in typical circumstances; be that as it may, no gear ought to be divided among moms. All items used to express milk, ought to be thoroughly washed with cold water and besides washed with warm water and cleanser and thirdly, disinfected. In the event of a pestilence it could be prudent to clean items after each utilization , rather than once in 24 h. Another extra measure is that if a mother is possibly exposed or tried positive for COVID -19, she should utilize a separate item and not offer or share one with different mothers. She should likewise communicate nearby in which she has been isolated. A viable idea might be that the mother express in her holder in seclusion and afterward empty the expressed milk into a perfect compartment held by a sound individual with proper defensive dress, including covers and gloves, to keep the infection from spreading through the outside of the compartment. Thusly a perfect holder can then additionally be put away/milk frozen for later use without the danger of tainting different compartments with milk. There has been a lot of discussion on approaches to diminish the danger of the outside pollution of expressed human milk compartments. On the off chance that mother's test is positive, staying in and breastfeeding is material, focusing on ordinary insurances of airbor ne respiratory illnesses. Coronavirus infected mothers who are breastfeeding or rehearsing skin-to-skin contact or kangaroo mother care should definitely maintain respiratory cleanliness to try not to pass on the infection to her child:

- The room ought to be disconnected, not permitting visits of family members and companions.
- The child ought to be guaranteed a two meters safe distance.
- The mother should wear a face protection shield during breastfeeds and private contact with the infant.
- The mother ought to perform hand cleanliness when contact with the kid.
- Routinely spotless and clean surfaces which the suggestive mother has been in touch with.
- There is no requirement for the mother to utilize FFP2 or FFP3.

On the off chance that communicating bos om milk with a manual or electric bosom siphon, the mother should wash her hands prior to contacting any siphon or container parts and follow proposals for appropriate siphon cleaning after each utilization. On the off chance that conceivable, consider havi ng somebody who is well to really focus on and feed the communicated bosom milk to the newborn child. In the event that mother has obvious respiratory contamination side effects (fever, hack and respiratory discharges, myalgias, sore throat, asthenia, dyspn oea), mother and newborn child ought to be momentarily isolated, forthcoming test reaction:

- If there should be an occurrence of positive test, mother and baby keep on being overseen independently;
- If there should arise an occurrence of negative test, staying in for mother and infant is material with ordinary safeguards for airborne respiratory sicknesses. When mother's clinical condition has improved, the infant can be breastfed straightforwardly.

In the event of partition of mother and child, the art iculation, transportation and organization of the new mother's milk to infant is suggested. Communicated bosom milk ought not be sanitized, as it isn't accepted to be a vehicle of disease. Additionally, purification diminishes the natural and immunological worth of human milk. In instances of genuine maternal

contamination, breast milk articulation may not be conveyed and given human milk ought to be thought of. The similarity of breastfeeding with drugs in the end regulated to a mother with COVID-19 ought to be evaluated dependent upon the situation. Clinic release of a paucisymptomatic COVID-19 mother along with a solid SARS-CoV-2 negative child ought to be done properly. Returning home as ahead of schedule as 48 h after labor may be a choice just in instances of clinic over-burden. By and large, multi week clinic stay for observation of the infant and redundancy of the pharyngeal swab for SARS-CoV-2 at release is best. Neonatal COVID-19 follow-up can be halted on the 28th day after release, if the pharyngeal swab for SARS-CoV-2 is affirmed negative.

KNOWLEDGE GAPS :-It is as yet not satisfactory whether the infection can or can't be communicated however through mother's milk. Hazard of transmission dependent on taking care of practices have not been evaluated, analyzed, or displayed against the advantages of breastfeeding and sustaining mother-newborn child interaction.

CONCLUSION:-Kept breastfeeding and zero division of the mother-newborn child dyad seems, by all accounts, to be the best practice in the present circumstance. Thinking about the current proof, it isn't not unexpected for respiratory infections to be communicated through mother's milk and transmission, for example, this has not been exhibited in newborn children who contracted COVID-19 or were brought into the world to moms who tested positive for the infection. What's more, the properties in mother's milk can secure the infant. At present, information are not adequate to close vertical transmission of COVID-19 through breastfeeding. In babies, the danger of COVID-19 disease is low; the contamination is regularly gentle or asymptomatic, while the results of not breastfeeding and partition among mother and kid can be critical. Now apparently COVID-19 in babies and youngsters addresses a much lower danger to endurance and wellbeing than different diseases that breastfeeding is defensive against. The advantages of breastfeeding and sustaining mother-newborn child connection to forestall contamination and advance wellbeing and improvement are particularly significant when wellbeing and other local area administrations are themselves upset or restricted. Adherence to disease avoidance and control measures is fundamental to forestall contact transmission between COVID-19 suspected or affirmed moms and their babies and youthful newborn children. In light of accessible proof, WHO suggestions on the commencement and kept breastfeeding of babies and little youngsters additionally apply to moms with suspected or affirmed COVID-19.

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Peripheral Intravenous Cannulation and Vein Visualization Device

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Abstract:-Intravenous cannulation is basic skill required for nurses. Peripheral Intravenous (PIV) Cannulation is used to administer fluids, blood products, drugs and nutrition through the venous route. According to study every year almost 40million people undergo intravenous cannulation procedure. According to almost all the hospital policy and Centers for Disease Control and Prevention, cannula should be changed every 48 -72 hours or 72 -96 hours to prevent cannula site infection. So, the patients required frequent re-insertion of IV cannula and it may difficult to identify the vein due to repeated vein puncture. This procedure is commonly carried out in the emergency ward especially for the critical and unstable patients. Vein visualization is technologies which help to find out veins during vascular procedure for easy access.

VEINS-Veins are blood vessels which carries deoxygenated blood in right atrium of heart. Veins are closed to skin and less muscular than arteries. Veins collect deoxygenated blood from capillaries of tissues and organ. Diameter of veins are larger than arteries hence blood pressure in veins is lower than arteries.

INTRAVENOUS ACCESS -Venous access is the method to access blood through vein for administering intravenous therapy.

NEED OF INTRAVENOUS ACCESS -As a part of care over 90 % of hospitalized patient receiving intravenous therapy because intravenous therapy is needed to deliver fluid, medications, blood, nutrition.

The common reason of intravenous access is:

1. Intravenous therapy for dehydration -Almost around 60 Percentage of human body contains water. During breathing, urinating, sweating, physical exercise water get loose from body. Some factors are responsible to loose more water like high temperature, drinking alcohol, playing etc. and cause to lead dehydration.

Hence administering IV fluid is best and efficient way to replace fluid in body but no need to give IV therapy for all dehydrate patient.

2. Having IV line during surgery -Intravenous therapy is key component during surgical procedure. IV therapy is necessary to administer anaesthesia, fluid, and medication during and after surgery. IV line is necessary to deliver emergency drugs quickly while surgery. Also therapy helps to maintain fluid electrolyte balance, blood sugar level and blood pressure during surgery.

3. IV therapy for malnutrition -Total parenteral nutrition and partial parenteral nutrition are methods of IV feeding which help to fulfil some or almost all daily nutritional requirements of patients through intravenous line.

4. Medications administration through intravenous therapy -Most of the time patients are taking medications topically or orally but in some situation there is need to administered medication intravenously and this is the best route to administered certain medications like antibiotics, antifungal, chemotherapy, pain medications etc.

5. Blood transfusion -Intravenous access is method to administered blood and blood components in emergency condition like in severe anaemia, during surgery or after excessive blood loss.

6. Chemotherapy-Chemotherapy allow to administer cytotoxic drugs which are very high risk and hazardous. Chemotherapy by infusion is the best and safe method of administer cytotoxic drugs.

PERIPHERAL INTRAVENOUS ACCESS -Peripheral intravenous infusion (PIV) is a procedure where IV cannula is inserted into small peripheral veins. IV cannula is small, flexible and hollow medical disposable tube or device which is designed to place in veins.

PURPOSES OF PIV CANNULATION-The main purposes of IV cannulation are:

To administered intravenous fluid

To give bolus medications

To administered intravenous medications

To give anesthesia

To provide nutritional therapy that is total parental nutrition

To draw blood specimen for diagnostic purpose

Blood and blood products transfusion

CONTRAINDICATIONS OF PIV CANNULATION

Actually there is no any absolute contraindication but cannulation should be avoid on:

Injured limb

Infected or burned extremities

Extremities with arteriovenous (AV) fistula

Surgically compromised extremities

TECHNIQUES OF FINDING SUITABLE VEINS

It is very crucial step to find suitable vein during PIV cannulation hence we have to spend some time to find proper and appropriate vein for cannulation and that's why have to keep some points in mind while finding veins are that,

There should be proper positioning to patient

There should be good lightening during procedure

Have to spend some time and should look for all usual sites and then have to choose appropriate vein for cannulation.

SITE FOR PIV CANNULA INSERTION

Most probably upper extremities are preferred for IV cannulation over lower extremities because upper extremities interfere less in patient mobility and also there is low risk of phlebitis than lower extremities.

We can select veins for PIV cannulation as followed;

Veins of upper extremities

Digital dorsal vein

Dorsal metacarpal vein

Volar aspects

Median cubital veins

Cephalic vein

Basilic vein

Veins of lower limbs

Dorsal arch

Saphenous veins of ankle

Saphenous veins of knee

COMPLICATIONS OF IV CANNULATION

Local complications

Thrombosis

Thrombophlebitis

Phlebitis

Extravasation

Infiltration

Systemic complications

Emboli

Air embolism
Hematoma
Systemic infection
Speed shock
Allergic reaction
Hypervolemia
Infection

Other complications

Needle stick injury
Damage to other vessels
Pain
Arterial cannulation

DIFFICULT VENOUS ACCESS

Difficult venous access refers to difficulty in placing venous cannula with lack of palpable and visible veins. To insert cannula in difficult venous access is very challenging task for health care professionals. People with difficult venous access are:

1. Elder people
2. Dark skinned patient burns victim
3. Agitated and restless patient
4. Drug abusers
5. Obese patient
6. Patient with hairy skin
7. Hypovolemia
8. Swelling
9. Patient with small fragile veins
10. Malnutrition
11. Patient with underweight

There are number of factors that are responsible to predispose patient to difficult venous access (DVA) such as small, fragile or hidden veins and collapsed veins due to dehydration, patient with complex disease, old age, obesity, use of intravenous drugs, malnutrition may face problem of difficult venous access. Even trained nurses and doctors may face challenges to locate the blood veins on the first attempt itself in such cases. Difficult IV access patients are always subjected to multiple venous attempts by many health practitioners and experiences pain, anxiety, delayed diagnosis and treatment and even increase cost. Sometime in such patients need to place central venous lines, which is very complicated and high-risk procedure for patients.

VEIN VISUALIZATION TECHNOLOGY

It is innovative and modular technologies which help health care fraternity to find best veins for intravenous infusion and also create map of veins on the surface of skin

Vein visualization device

Vein finder devices are composed of high powered near infrared and LED light sources to produce clear image of veins for easy vascular access.

Vein visualization device principles are specially based on two illumination types that is trans-illumination and reflected light. In trans-illumination technology image of vein get captured once light will penetrate overlying skin of selected vein, while in reflected light source, light is getting reflected on skin surface to visualize selected area and then camera captured it

Need to locate veins

Peripheral intravenous catheterization
Intravenous injections
Intravenous fluid
Blood transfusion

Total parental nutrition
Venipuncture
Dialysis

Types of vein finders

Vein finders are of two types depending on use of light sources:

1. Vein illumination devices: use near infrared (NIR) technology to locate veins
2. Trans-illumination devices: use LED light sources to access veins easily

TRANS ILLUMINATION DEVICE

Trans-illumination device use bright colored Light Emitting Diodes (LEDs) which are directly positioned on skin surface during peripheral IV cannulation procedure to access veins. Even though use of trans -illumination device for visualization of vein is old method but still it is not popular or well known in world.



Figure No. 1: Trans Illumination Device

Purposes

To visualize vein easily while performing procedures related to venous access

Indications

Intravenous catheterization
Venipuncture
Patient with difficult venous access

Working of device trans-illumination device

Once device hold on skin then this bright colored LED lights passes through the skin and some light get absorbed by the deoxygenated blood from veins, ultimately it results in presentation of location of veins, its size and depth as well. These devices are able to find veins up to 6mm depth

Advantages

Trans-illumination devices are portable
All devices are easy to use
Costs of trans-illumination devices are low if we compare to vein illumination devices with NIR radiation technology

VEIN ILLUMINATION DEVICE

It is a device which use near infrared (NIR) radiation and shined on the body of the clients to enhance visual contrast of the veins and specially designed to help medical fraternity for easy and fast vascular access while performing number of procedures.

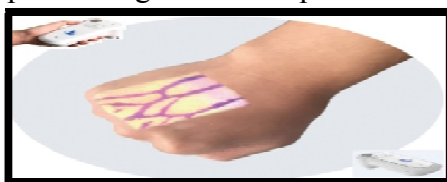


Figure No. 2: Vein Illumination Device

Purposes

To visualize veins easily
To map veins during phlebotomy
To highlights vessels during transdermal laser therapy
To locate feeder veins during cosmetic practice

Indications

Vein visualization device can be useful while performing:

Vascular surgeries

Sclerotherapy

Venipuncture

Intravenous catheterization

Principles of vein detection

Near infrared radiation with wavelength region 740nm to 760nm can detect veins but not able to find arteries because of selective absorption of infrared radiation in blood vessels.

Oxidized hemoglobin in arteries is almost transparent.

Radiations are getting completely absorbed by deoxidized hemoglobin in veins.

Near infrared radiation (NIR) penetrate into the human tissue by depth of 3 mm.

Veins appear darker due to high absorption and surrounding tissue appears lighter than veins and hence it allows easily detection of veins.

Parts of models

There are four basic parts of model

A. Infrared source

B. Optical filter system

C. Camera to view infrared images

D. Laser based 3 d pointer to visualize optimum distance

Working of device -Vein illumination device is the device which use near infrared (NIR) imaging and help to medical professionals to perform easy and fast venous access. It is a modular technology which allow device to shine on the patient's body and advance the visual contrast of the veins. Once device will held on the skin, then infrared lights get absorbed by hemoglobin in the blood and vein appears noticeably different that the surrounding tissues. This help to produce clear vasculature on skin surface and then medical fraternity can get easy access to find veins and perform procedures.

Advantages

Devices are contactless and hygienic hence less chances of spreading infection from one patient to another.

Helpful for easy vein visualization.

Can increase confidence of medical professionals while performing vascular related procedure

Can save time to perform procedure and help to proceed with further treatment

It give innovative approach and help to provide standard care

Help for early diagnosis

May reduce cost of hospitalization

Drawback-The vein illumination devices are very expensive and the cost of devices are depend on quality, brand and utility.

Conclusion-Peripheral intravenous cannulation is routine procedure in all inpatient and outpatient department but difficult venous access may hamper the success rate of cannulation. In such cases vein visualization devices may contribute to overcome such kind of issues in health care sector.

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ANALYSIS OF QUARRY WATER FOR THE USE OF AGRICULTURAL PURPOSES

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ABSTRACT

Purpose of the study: - The goal of this research is to determine whether or not the quarry water chosen is suitable for agricultural usage.

Methodology:-Quarry water was collected using clean and disinfected polyethylene bottles with a 1-liter capacity. The goal of this study is to determine if the selected quarry water is suitable for agricultural purposes or not by analyzing it in the laboratory using standard methodologies and techniques.

Main Findings: -Meanvalues of sodium absorption ratio, electrical conductivity and total dissolved solids of the quarry water are 0.98 me/l, 616 (μmhos/cm), 345mg/liter, which are within the range prescribed by the FAO for the irrigation.

Applications of this study: This study gives us the idea about the variousness of the parameters of quarry water for the use of agricultural purposes.

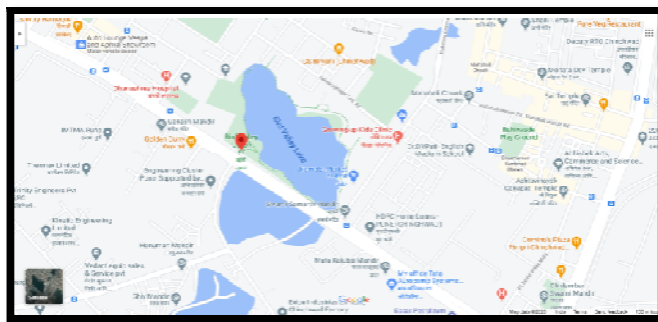
Novelty/Originality of this study: This is the first study of its kind on quarry water, and it will help us determine whether or not this quarry water can be used for agricultural purposes.

Key words: quarry water, Physico-chemical parameters, agriculture.

INTRODUCTION-Water is essential to all organisms, from unicellular to multicellular, and in all kinds of life. The majority of daily human activities necessitate large amounts of water. The demand for fresh water has risen dramatically as due to result of population growth, intensive agricultural activities, urbanization and rising standards of living, as well as home and industrial usage. ([Bhavarth Shah et al,2019](#)). India is an agricultural country, which employs a major portion of the population in farming. Irrigation is amongst the most critical parts of agriculture. In India, irrigation uses the maximum amount of water (85 percent), followed by home consumption (6 percent), energy development (3 percent), and industries (6 percent). ([Mandal S. K et al 2018](#)) Water shortage is a big issue for all countries, particularly during the summer months, when the rate of evaporation increases owing to the high temperatures, resulting in a depletion of water levels from all accessible sources.

Irrigation is difficult due to scarcity of water. It is vital to investigate the availability of other resources of water in this scenario. There are lots of abandoned quarries all around the world that get filled up with water during the rainy season and store rain water throughout the year. This quarry water is a great choice for irrigation, and it might be used for irrigation in the surrounding area. Before the use of water for any purpose, its quality should be checked. It is necessary to test the purity of water before using it. The chemical, physical, and biological properties of water are analyzed to determine its quality. Hydrochemistry knowledge determines the degree to which water is suitable for irrigation. The geological makeup and minerals present in watersheds play a big role in water quality. The chemical processes that occur within the watershed, as well as the kind of land, use, and anthropogenic acts, are all factors to be considered ([Dimitris Alexakis et al 2011](#)). Various physiological and biological parameters that improve soil quality have been explored in this paper.

RESEARCH METHODOLOGY -The quarry water from Bird Valley was chosen for this study. It used to be a limestone quarry until a few years ago. It currently retains a significant volume of water from rain and other artificial sources. This quarry has now been transformed into a lovely landscape known as "Bird Valley Udyan." This lovely garden has a jogging path, boating facilities, and a children's play area. It's in Pune, Maharashtra's PCMC (Pimpri Chinchwad Municipal Corporation) (India)



Map showing 'Bird Valley' Quarry Lake

Sample Collection-This research was conducted in the months of January (2020), which is the winter season, and May (2020), which is the summer season. The sterilized polyethylene bottles were used to take water samples. Polythene bottles were first rinsed in quarry water before being plunged into the water for collection. Water was gathered from various locations across the quarry and blended together to create a homogenous concentration of water.

Results and Discussion -Following table shows the difference in values for selected parameters of quarry water in the winter and summer season

Comparison of water quality data of the quarry water with recommended Standards for irrigation

Sr. No	Parameters	Summer	Winter	Mean	FAO guidelines of water quality for irrigation
1	pH	7.20	8.16	7.68	6.0- 8.5
2	Electrical Conductivity (µmhos/cm)	625	607	616	0-3(dS/m)
3	TDS(mg/liter)	350	340	345	0 – 2000
4	Chlorides(mg/liter)	73.92	68.45	71.18	0-1065
5	Sulphates (mg/liter)	20.48	22.87	21.68	0-960
6	Nitrates (mg/liter)	7.56	6.80	7.18	0-10
7	Sodium (mg/liter)	47.05	24.83	35.94	0-920
8	Calcium (mg/liter)	30.91	34.06	32.49	0-400
9	Boron(mg/liter)	0.11	0.04	0.075	0-2
10	Magnesium (mg/liter)	21.11	21.11	21.11	0-60
11	SAR (me/liter)	1.31	0.66	0.98	0-15

1decisiemens=100000 micromho

me/l = milliequivalent per liter ($\text{mg/l} \div \text{equivalent weight} = \text{me/l}$); in SI units

Between January and May 2020, a total of 22 water samples from the quarry were analysed at various sites. Table shows the range and mean values of water quality variables along the quarry water. The pH levels were largely within the acceptable range for irrigation in agriculture. Irrigation water with a pH outside of the typical range may contain harmful ions or cause nutritional imbalances (FAO 1994). The concentration of cations such as sodium, calcium, and magnesium were likewise within the irrigation allowed limit. In both seasons, sodium (Na^+) concentrations range from 24.83 to 47.05 mg/litre, calcium (Ca^{2+}) concentrations range from 30.91 to 34.06 mg/litre, and magnesium (Mg^{2+}) concentrations range from 21.11 mg/litre. The mean concentrations of anions such as chloride, sulphate, borate, and nitrate in (mg/L) were likewise well within the irrigation standard (FAO 1994). Chloride concentrations in quarry water range from 68.45 to 73.92, sulphate from 20.48 to 22.87, borate from 0.04 to 0.11, and nitrate from 6.80 to 7.56.

TDS (Total dissolved solid) :-The kind and quantity of dissolved salts in irrigation water can have a significant impact on its quality. In irrigation water, salts are present in small but considerable concentrations. The salts are applied with the water in irrigation and remain in

the soil when the water evaporates or is absorbed by the crop. If salt builds up in the crop root zone to the point where it causes yield loss, there is a salinity problem. Water with a TDS of less than 450 mg/l is regarded good, whereas water with a TDS of more than 2000 mg/l is unfit for irrigation. (Dhirendra Mohan Joshi et al, 2009). The lowest value of total dissolved solids was discovered in the current study during the winter season, ranging from 340mg/lit to 350 mg/lit. This TDS value is suitable for irrigation, according to FAO criteria.

SAR(Sodium Absorption Ratio) :-Excess sodium in drinking water has the unfavourable effect of altering soil characteristics and lowering soil permeability. As a result, when determining irrigation appropriateness, sodium content must be assessed. The sodium adsorption ratio indicates the degree to which irrigation water tends to engage cation exchange reactions in soil. The risk of sodium replacing adsorbed calcium and magnesium is that it damages the soil structure. Because it is responsible for the sodium threat, SAR is an important criterion for determining the appropriateness of irrigation water. Water with a SAR of 0 to 15 is deemed excellent, whereas water with a SAR of greater than 15 is considered unfit for irrigation. SAR was determined to be 0.66 to 1.31 in this investigation. The sodium absorption ratio, which is computed using the method below, is an important parameter for determining the appropriateness of irrigation water.

$$SAR = \frac{Na}{\sqrt{[(Ca^{2+} + Mg^{2+}) / 2]}}$$

EC (Electrical Conductivity) -Water salinity hazard, as assessed by electrical conductivity, is the most impactful water quality guideline on crop yield (EC). Even if the soil appears wet, the higher the EC, the less is the water available to plants. Because plants can only transpire "clean" water, when the EC rises, the amount of usable plant water in the soil solution falls dramatically. Water with an EC of less than 250 mhos/cm is regarded excellent for irrigation, while water with an EC of more than 750 mhos/cm is discarded water (Dhirendra Mohan Joshi et al, 2009). During the winter season, the minimum EC value 607 mho/cm was recorded and the highest EC was measured as 625 mho/cm during the summer season.

CONCLUSION-According to a study of the quarry water's "Bird Valleys" for agricultural uses. This quarry water, it is believed, could be utilised for agricultural purposes.

CONFLICT OF INTEREST AND ETHICAL STANDARDS -All of the tests were carried out with the authorization of the organization/approval. Institute's Water samples were taken with the agreement of the "Bird valley Udyan" management.

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Survey on Privatization of Data Using Association Rule Mining and Neural Network

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Abstract:-Data perturbation has been recognized as a more successful data protection mechanism than re-identification because of the high probability that attacks will occur that connect public datasets to original identifiers or subjects. For that reason, when it comes to confidentiality, data perturbation is hailed as a more solid approach to privacy preservation. The miner will rebuild the corrupted version before conducting data mining operations to retrieve the original data distribution. For this reason, data perturbation is hailed as a more rigorous approach to privacy protection when it comes to encryption. The miner would rebuild the perturbed version before conducting data mining operations to obtain the original data distribution. Deep learning (aka, deep machine learning) has created promising results in both the academia and industry in recent years, where deep learning systems are approaching and even surpassing accuracy at the human level. This is due to algorithmic breakthroughs and physical parallel hardware for storing large quantities of data applied to neural networks. Huge collection of data, while crucial to deep learning, poses privacy concerns. A photo taken independently can be stored indefinitely on a company server, beyond the control of the owner. Legally, concerns about privacy and confidentiality that prohibit hospitals and research centers from sharing their medical data sets, preventing them from enjoying the advantage of deep learning on a large scale over joint datasets.

KEYWORDS- Neural Network, Deep learning, data mining

INTRODUCTION:-Nowadays, many companies collect data from users actively or passively. The individual's data are also obtained from different databases. These data includes Personally Identifiable Information (PII) that can identify the person through. Scientists and data analyst want the companies to get an idea from the published results. And a huge risk of breach of privacy could arise if the PIIs were not deleted or anonymized. The big data is generated by any electronic operation every day, and the size of the data grows exponentially every day. Which makes the protection of privacy more difficult? Recent years have seen remarkable achievements in various fields of deep neural networks. DNNs demonstrate superb capacity to discover high-dimensional structures from vast quantities of data. In the meantime, electronic apps such as smartphones, diagnostic instruments, and applications using the Internet of Things (IoT) have become almost omnipresent. The on-device machine learning capabilities are highly requested, including object recognition, language translation, health tracking, and many more. Encouraged by the outstanding success of DNNs in these systems, people naturally seek to drive mobile devices to deep learning. In recent years, perturbation of unauthorized access data is considered a fairly simple and efficient technique for securing electronic data.

REVIEW OF LITERATURE

Andrew J et al [1] A Mondrian-based k-anonymity approach is proposed to provide a trade-off between the users' privacy and data utility. Deep Neural Network (DNN) based framework is proposed to protect the privacy of high dimensional data. The experimental result shows that the method being suggested mitigates data loss of information without compromising privacy. Lingchen Zhao et al [2] they presented practical, collaborative deep learning system that enables users to build a collective deep learning model with data from all participants, without direct data sharing and centralized data storage, in cooperation. Each participant trains a local model with their own data in our system, and only shares model parameters with the others. To further avoid potential privacy leakage from sharing model parameters, we use functional mechanisms to disrupt the neural network's objective function

in the training process to achieve differential privacy. Lichen Zhang et al [3] they proposed an efficient data aggregation approach whereby an untrusted mobile sensing aggregator can collect data statistics from multiple mobile users while promoting the privacy of each user and the verification of data integrity. In this approach, information hiding and homomorphic encryption are implemented to ensure the mobile users' data privacy. In detail, a wide-first search tree is first built among mobile users in the initial phase, and then the original data of each user in cipher text space is disturbed among their neighbors by using information hiding and homomorphic encryption. Their method tests show that our protocol requires lower overhead communication and computation, and therefore more feasible for mobile devices that are computationally limited. Mithun Mukherjee et al [4] their paper provides an overview of the security and privacy concerns that exist, especially for fog computing. The survey subsequently highlights ongoing research effort, open challenges and research trends for fog computing in the areas of privacy and security issues. MadhuriSiddula et al [5] they presented various privacy preserving models and methods including naive anonymization, perturbation, or building a complete alternative network. They showed the work done by multiple researchers in the past where social networks are stated as network graphs with users represented as nodes and friendship between users represented as links between the nodes. They studied ways and mechanisms developed to protect these nodes and links in the network. Mehmet EmreGursoy et al [6] this work aims to employ and evaluate such methods on 14 learning analytics by approaching the problem from two perspectives: (1) the data is anonymized and then shared with a learning analytics expert, and (2) the learning analytics expert is given a privacy-preserving interface that governs her access to the data. They developed proof-of-concept implementations of privacy preserving learning analytics tasks using both perspectives and run them on real and synthetic datasets. Y. Sei et al [7] they modify ϵ -differential privacy for machine learning, and they propose three approaches for creating privacy-preserved DNNs based on the modified ϵ -differential privacy. Their proposed approaches are experimentally evaluated using a real data set, and we show that our approaches can protect personal attribute values while maintaining the accuracy of the DNNs. M. Keshk et al [8] In this paper, they propose a new Privacy Preservation Intrusion Detection (PPID) technique based on the correlation coefficient and Expectation Maximisation (EM) clustering mechanisms for selecting important portions of data and recognizing intrusive events. This technique is evaluated on the power system datasets for multiclass attacks to measure its reliability for detecting suspicious activities. S. Moriai et al [9] they propose a novel deep learning system to protect the gradients over the honest-but-curious cloud server, using additively homomorphic encryption. All gradients are encrypted and stored on the cloud server. The additive homomorphic property enables the computation across the gradients. S. Zhu et al [10] this paper proposes a 2-correlated block differential privacy protection model on the internal correlated data sets, and gives the specific implementation process. The maximum information coefficient (MIC) and machine learning algorithm are used to construct the dependence of correlated data, which improves the accuracy of sensitivity of the query function, and can effectively solve the problems caused by under noise and over noise. A means-Laplace differential privacy implementation mechanism is proposed to improve the accuracy of noise introduction. HaiderSajjad et al [11] they have identified and formally defined a privacy attack, Leader Collusion Attack (LCA); where first and second leaders may collude to breach individuals' privacy during data collection process. In this regard, we have proposed a novel k -anonymity based dynamic data collection protocol (presented single leader election) to mitigate LCA. Moreover, we have formally modelled and analyzed the proposed protocol through HLPNs and demonstrated the mitigation of LCA. Peipei Sui et al [12] they address privacy protection on the integration of transaction data and trajectory data. They first demonstrate a privacy leakage model caused

by 15 integration of multimodal datasets, where integrated data are modeled as a tree. To address the identity disclosure of trajectories, they partition location sequences to meet privacy demands, and copy locations to offset information loss caused by partition; then, to deal with the sensitive item disclosure of transactions, we use suppression technique to eliminate sensitive association rules. Consequently, they propose a k -anonymity- ρ -uncertainty privacy model to protect the privacy information in integrating transaction data with trajectory data in a tree-structured data model. M. Li et al [13] they propose a differentially private trajectory data publishing algorithm aiming to protect the privacy of sensitive areas. Privacy analysis show that the proposed scheme achieves differential privacy and experiments with real trajectory data exhibits that the proposed scheme achieves good data utility and is scalable to large trajectory databases. JiLiang Li et al [14] they present a PPA protocol for mobile services and demonstrate that the proposed protocol supports the level of security and privacy required in the typical mobile service application. They prove the security of the protocol in the random oracle model. They also present a comparative summary of the efficiency of the proposed protocol and three other competing protocols, which demonstrate that the proposed PPA protocol has less computation and communication overheads. This also suggests the potential for the proposed protocol to be deployed in mobile service applications for smart cities. Rana Elgendy et al [15] they present privacy preserving data publishing model based on integration of CPBAC, MD-TRBAC, PBFW, protection against database administrator technique inspired from oracle vault technique and Benefits of anonymization technique to protect data when being published using anonymity. The proposed model meets the requirements of workflow and nonworkflow system in enterprise environment. It is based on the characteristics of the conditional purposes, conditional roles, tasks, and policies. It guarantees the protection against insider threats such as database administrator. Pedro Garcia et al [16] they advocate for Edge-centric Computing as a novel paradigm that will push the frontier of computing applications, data, and services away from centralized nodes to the periphery of the network. Then position that this paradigm will retain core advantages of using clouds as a support infrastructure but will put back the control and trust decisions to the edges and allow for novel, human-centered computing applications. J. Chi et al [17] they propose a practical method for privacy preservation in deep learning classification tasks based on bipartite topology threat modeling and an interactive adversarial deep network construction in the context of edge computing. they term this approach Privacy Partition. A bipartite topology consisting of a trusted local partition and untrusted remote partition provides an apt alternative to centralized and federated collaborative deep learning frameworks in the case of deployment contexts such as IoT smart spaces, where users would like to restrict access to high-resolution data streams due to privacy concerns but would still like to benefit from deep learning services as well as external computational resources such as public cloud computing.

Conclusion:-Recent privacy preserving technique proposes a significant challenge when more records added to the stored record. The integration of SLT algorithm with the incremental data Anonymization can overcome the privacy issues and performance overhead. The major contributions of this paper are a privacy preserving association rule mining algorithm given a privacy preserving scalar product protocol, and an efficient protocol for computing scalar product while preserving privacy of the individual values. We show that it is possible to achieve good individual security with communication cost comparable to that required to build a centralized data warehouse. There are several directions for future research. Handling multiple parties is a nontrivial extension, especially if we consider collusion between parties as well. This work is limited to Boolean association rule mining.

Non-categorical attributes and quantitative association rule mining are significantly more complex problems.

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Selenium Nanoparticles for Photovoltaic Applications: Synthesis & Characterization.

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ABSTRACT-This is first research to reveal synergistic antibacterial action of selenium nanoparticles & lysozyme, in light of anticipated potency of selenium nanoparticles in biomedical applications. Various concentrations of each component were used to create nanohybrid system. In presence of individual Nano & Bio equivalents, as well as nanohybrid system, resistance of *Escherichia coli* & *Staphylococcus aureus* was compared. As SeNPs & Lysozyme interacted, nanohybrid system significantly increased antibacterial activity when compared to protein alone. As result, SeNPs play key part in bacterial growth suppression at extremely low protein concentrations, whereas large amount of protein is necessary to limit bacterial growth singly. Se NPs have been shown to have antibacterial, cancer prevention, antiprotozoal, & anticancer effects, according to ongoing research. As number of biomedical applications for Se NPs grows, it has become increasingly important to produce biocompatible Se NPs. In our research facility, bacteria called *Pantoea agglomerans* was isolated from soil samples & tested for mix of Se NPs. *Pantoea agglomerans* intercedes for mixture of Se NPs both intracellularly & extracellularly under oxygen-depleted circumstances. UV-Vis spectroscopy, XRD, SEM, & EDAX were used to characterise synthesized NPs. Se NPs were found to be nebulous, with diameters < 100 nm, after further testing. In flow investigation, several parameters such as development medium, temperature, pH, light force, grouping of Selenium dioxide, & season of response are advanced for bio-amalgamation of Se NPs using *Pantoea agglomeration*.

KEY WORDS - Nanoparticles, Selenium, Application, Photovoltaic.

INTRODUCTION:-Nanoparticles are particles that are fewer than 100 nanometers in size & have one or more dimensions. Because nanoparticles have bigger surface area, they can interact with more targets. It possesses low melting point, strong catalytic activity, high photoconductivity, & high semiconductivity, among other features. Nanoparticles have this feature, which is exploited in medicinal applications. Nanoparticles are key component of nanotechnology, with applications in biomedical engineering, chemical engineering, environmental engineering, polymer technology, biotechnology, food science, & agricultural development, among others. Gold, silver, silver oxide, copper, copper oxide, copper sulphide, zinc, zinc oxide, zinc sulphide, cadmium sulphide, titanium oxide, zirconium, cerium oxide, selenium, chitosan, cellulose, silica, iron, iron oxide, antimony trioxide, zirconium dioxide, platinum, & palladium are some of nanoparticles used in various applications.

Selenium Nanoparticles-Selenium is essential trace element that human body requires up to 40–300 g per day. It aids in regulation of human bodily function. It aids in protection of cardiovascular health, regulation of thyroid hormones & immunological response, & prevention of cancer progression. Only little quantity is necessary to keep function going, & too much selenium can be damaging to human body. Selenium has codons in mRNA that insert as selenoprotein to create seleno-cysteine. Antioxidant & detoxifying enzymes thioredoxin reductase & glutathione peroxidase are found in selenoprotein. Selenium nanoparticles are employed in variety of medicinal applications, including anticancer, antibacterial, & drug delivery, due to their low toxicity & high activity. Human body is capable of naturally degrading selenium nanoparticles; selenium nanoparticle residues serve as selenium nutrition supply & are not hazardous to human body. Biological activity of selenium nanoparticles is enhanced by their large surface area & small particle size. Antibiotic-resistant bacteria, which have lately become more prevalent, are actively combated by selenium nanoparticles. Typical size of selenium nanoparticle is 80 nm, & its properties &

activity are determined by size, shape, & composition of biomolecule. Selenium nanoparticles may be made in variety of ways. Biological & chemical methods are commonly used to make SeNPs. Living organisms such as bacteria, yeast, fungus, & plants are used in biological production of selenium nanoparticles. Selenium nanoparticles made by biological methods offer wide range of uses, including antibacterial, antifungal, & anti-pathogenic yeast. Chemical production of selenium nanoparticles involves converting selenite to selenium nanoparticles utilizing chemicals as reducing agent. Chemical vapor deposition, template-free, template-assisted, & electrodeposition are among numerous methods used to make selenium nanoparticles.

Selenium Nanoparticles: Chemical Synthesis -Selenium nanoparticles are made from biopolymers such as gum acacia, glutathione, sodium alginate, & carboxymethyl cellulose. Manufacture & utilisation of selenium nanoparticles has been subject of several investigations. Different sizes of selenium nanoparticles are manufactured using simple reduction process using ascorbic acid as reducing agent & polysorbate 20 surfactant to regulate reaction kinetics. Size & quality of selenium nanoparticles are examined using TEM. AAS method is used to determine presence of selenium. The structure of nanoparticles is measured using XRD. Antibacterial properties of produced nanoparticles are tested using three bacterial strains. Gram-positive bacteria *Staphylococcus epidermidis* & *Staphylococcus aureus* were shown to be susceptible to selenium nanoparticles. Selenium is essential mineral for human health. Selenium protects cells from free radicals. Two different sized selenium nanoparticles are synthesized using bovine serum albumin & keratin. SEM, XRD, & EDX are used to examine properties of produced selenium nanoparticles. Antioxidative properties of selenium nanoparticles & sodium selenite are investigated in vivo & in vitro. Results suggest that by employing beta-lactoglobulin as stabiliser & ascorbic acid as reducing agent, selenium nanoparticles may be efficiently employed as ingredient in alcoholic beverage sector. Size, shape, structure, morphology, biological activity, & stability are studied using TEM, dynamic light scattering (DLS), ultraviolet visible spectrophotometry, & FTIR. Bls-SeNPs is very stable at both high & low pH. Toxicity of selenium nanoparticles is lower than that of selenite, & nanoparticles are spherical in form. Lentinan is kind of β -glucan that is found in nature & is used to stabilise selenium nanoparticles. properties of selenium nanoparticles are studied using transmission electron microscopy (TEM), X-ray diffraction (XRD), energy dispersive X-Ray (EDX), dynamic light scattering (DLS), & ultraviolet visible spectrophotometry. Different sizes of selenium nanoparticles can be generated by varying concentrations of sodium selenite & reducing agent. anticancer activity of selenium nanoparticles is determined by their size distribution. Self-assembly technique is used to regulate form of selenium nanoparticles by tailoring chemical structure of stabilising agent. Cubic structure of selenium nanoparticles is manufactured at 300 nanometers utilizing folic acid-gallic acid-N, N, N-trimethyl chitosan as stabilising agent. Unmodified chitosan is used to make 200 nanometer spherical shaped particles.

Selenium Nanoparticle Synthesis via Biological Methods -Due to its low cost, high impact, & environmentally benign nature, synthesis of selenium nanoparticles utilizing bacterial biomass has sparked lot of attention. To convert selenite into selenium nanoparticles, variety of bacteria, yeast, fungus, & plant components are employed based on their tolerance to selenite. Anaerobic bacteria *Rhodococcus aetherivorans* BCP1 is used to convert selenite into selenium nanoparticles. Strain contains 500 mM MHC & has strong selenite tolerance. In bioconversion, cells are employed in two states: conditioned & unconditioned. In conditioned cells, bioconversion process is more successful. Selenium nanoparticles were synthesized using fish gills & utilized to improve thermal tolerance of *Pegasus hypophthalmus* at high temperatures & lead concentrations. Bacteria with rapid growth rate in bioconversion of selenite into selenium nanoparticles, *Vibrio natriegens* is utilized. *Vibrio natriegens* may be

readily genetically modified with desired gene & cultivated with any carbon source. At extreme concentration of 100 mM, *Vibrio natriegens* exhibits high resistance to selenite, & efficient growth may be detected at 15 mM. Properties of produced selenium nanoparticles & development of *Vibrio natriegens* on selenite were studied using X-ray spectroscopy & electron microscope. Culture is cultured in LB medium, & selenium nanoparticles with sizes of 100–400 nm are generated. Selenium depletion is shown during exponential growth phase of cell growth, while SeNP production is observed after cell lysis. To speed up formation of SeNP, *Vibrio natriegens* is utilized. It is required to develop acceptable approach for nanoparticle manufacturing & retrieval. Selenium nanoparticles are made from selenium chloride utilizing *Klebsiella pneumonia* strain. culture broth is sterilised for 20 minutes at 17 pressure at 121 °C. Nanoparticles that have been synthesized range in size from 100 to 550 nanometers. Because no chemical changes occur, wet heat sterilisation is used. Proteins are also involved in production of selenium nanoparticles. It involves reducing selenium oxyanions to produce selenium nanoparticles. Proteins are involved in conversion of selenite to selenium as well as stability of selenium nanoparticles. Biosynthesized nanoparticles have different structure than chemically produced nanoparticles. Structure & properties of these organisms are also examined. Other features of selenium nanoparticles made using actinobacteria include antioxidant, antiviral, & anticancer effects. Extracellular selenium nanoparticles can be synthesized by *Streptomyces minutiscleroticus* M10A62. To explore features of selenium nanoparticles, many forms of analysis such as XRD, FTIR, HR-TEM, & UV visible spectroscopy are used. Nanoparticles produced have diameter of 100–250 nm & spherical shape.

CHARACTERIZATION TECHNIQUES-Imaging tools that can identify particular atoms & molecules have greatly aided our knowledge of microscopic processes. For advancement of nanotechnology & nanoscience, tools that offer elemental & molecular information at high spatial resolution are becoming increasingly critical. Today, atomic-scale observation is feasible, & determination of single structure is quite exact. Various spectrometric instruments are employed in nanoscale chemical analysis to incorporate information obtained from physical techniques like as atomic force microscopy, tunnel microscopy, & electron microscopy. X-ray diffraction spectroscopy (XRD), scanning field emission electron microscopy (FES EM), energy dispersive X-ray analysis (EDX), & microscopy may all be used to analyse nanomaterials. Electronics with excellent transmission. Decision (HRTEM.) Photoluminescence Spectroscopy & UV-Vis Absorption Spectroscopy This chapter covers nanomaterial imaging (microscopy), analysis (spectroscopy), & JV characterization procedures for solar cells under standard illumination conditions.

APPLICATION OF SELENIUM NANOPARTICLES -*Enterococcus faecalis*-derived selenium nanoparticles are effective against *Staphylococcus aureus*. Disc diffusion technique is used to evaluate selenium nanoparticles for antibacterial activity against gram-positive bacteria *Bacillus subtilis*, *Staphylococcus aureus*, & gram-negative bacteria *Pseudomonas aeruginosa* & *Escherichia coli*. results reveal that selenium nanoparticles have 8 mm zone of activity against *Staphylococcus aureus*. Multidrug-resistant superbugs pose serious threat to humanity. To combat this, surface of selenium nanoparticle is painted with quercetin & acetylcholine, causing persistent damage to cell membrane of methicillin-resistant *Staphylococcus aureus*.

Table-1- Application of Selenium Nanoparticles

Field	Application	Remarks
Antibacterial	Selenium NPs act against <i>Staphylococcus aureus</i> which is used in catheterization & prosthesis	8 mm zone is obtained in disc diffusion test

	Multidrug-resistant superbugs	Quercetin & acetylcholine decorated on surfaces of Se NPs act as antibacterial against MRSA
Drug delivery	HepG2 hepatocellular carcinoma breast adenocarcinoma cells are tested with doxorubicin	Cell apoptosis is promoted by activating p53 pathway
	Human breast carcinoma cells, murine colon carcinoma cells are inhibited by epirubicin	Human breast carcinoma cells, murine colon carcinoma cells are inhibited by epirubicin
Cancer	Therapeutic agent	Several biomacromolecules, polymers, & metals are conjugated with selenium NPs to achieve maximum efficacy for human cancer
Dye degradation	Degradation of model dye trypan blue	ROS generated by selenium doped zinc nanoparticles are efficient in degrading trypan blue
Inhibits biofilm	Staphylococcus aureus biofilm formation is inhibited	SeNPs synthesized using Bacillus licheniformis are used for inhibiting growth of Staphylococcus aureus adherence on surfaces
Cancer	Chemoradiation for cervical cancer cells, mouse embryonic fibroblast	Selenium NPs with PEG surface decorated possess X-ray sensitive property & act as therapeutic agent for cancer
Anti-leishmaniasis	Selenium nanoparticles & selenium dioxide are tested against <i>Leishmania infantum</i>	Selenium nanoparticles are more efficient than selenium dioxide



Figure-1- Various Application of Selenium Nanoparticles

Selenium nanoparticles have received lot of interest in field of cancer treatment. Nanoparticles are commonly employed to target specific target while minimising impact on regular cells. Use of nanoparticles for medicine delivery is becoming increasingly popular due to its numerous benefits. cancer medication doxorubicin is placed into transferrin conjugated selenium nanoparticles. Transferrin conjugated SeNPs mediate cell death via activating p53 & MAPK pathways. This method of medicine administration reduces negative effects while increasing efficiency. Oxidation process carried out by selenium doped zinc nanoparticle for degrading trypan blue dye improves dye degradation. Selenium doped zinc nanoparticles are degraded by ROS oxidative system. Selenium nanoparticles produced using Bacillus licheniformis are used to prevent Staphylococcus aureus biofilm development on surfaces such as glass, catheters, & polystyrene, & can be used to prevent biofilm formation on medical equipment. Chemoradiation is used to treat chemoresistant & radioresistant cancer cells. Cell death inhibits cancer development, & selenium nanoparticles coated with PEG have X-ray sensitive property.

SeNPs' potential uses in biomedicine & food science -Years ago, elemental selenium was thought to be physiologically inactive, but recent study has shown that nano -Se has similar bioavailability to other selenium forms, & that nano -Se not only has better efficacy in up -regulating seleno-enzymes than selenite, but also appears to be less hazardous. These findings suggested that nano -Se may be used as antioxidant with lower risk of Se toxicity, as well as greater absorption into plants, animals, people, & microbes. Furthermore, one of most important uses of selenium nanoparticles is their immune activation for chemoprevention. Like result, finding adequate matrix as floating microspheres to get extended & sustained selenium release in gastrointestinal system is difficulty when using nano -Se as dietary supplement. Alginate & chitosan were used for this purpose in recent study to produce several formulations based on alginate & alginate/chitosan as controlled delivery matrices for nano-selenium. Nano-selenium had low level of crystallinity in final composites, indicating that it was effective formulation for controlled release. These findings showed that nano -Se release is influenced by type of polymer matrix as well as pH of media, with alginate/chitosan being useful matrix for nano -selenium delivery in duodenum, caecum, & colon. Se NPs that have been loaded with anticancer chemical offer novel cancer therapeutic method. Anisomycin-loaded selenium nanoparticles (SeNP-Am) produced by conjugating anisomycin to surface of SeNP were used in recent study to improve anisomycin's anticancer activity against human hepatocellular carcinoma (HepG2) cells. Se-enriched *Lactobacillus* has been reported as immunostimulatory agent that can help cancer-bearing animals live longer. Lactic acid bacteria may convert Se ions to elemental SeNP & deposit them in intracellular regions. As result, this feature may be utilized in food science to create functional foods that act as powerful antioxidants. Another use is preventive effect of SeNPs against heavy metal toxicity, such as lead, cadmium, & mercury, as well as arsenic compounds. One of our novel approaches was to create & characterise nanostructured surface on titanium mesh for cranioplasty using in situ adhesion of selenium nanoparticles (SeNPs) in hydrothermal reaction, revealing that selenium nanoparticles adherence on titanium mesh surface was best in case of starch -derived SeNPs, as demonstrated by SEM/EDX analysis. Suggested surface enhancement in case of titanium mesh for cranioplasty might provide significant benefits in terms of osteointegration without need for extra screws for fixing & closure. When polymeric substrate was utilized, adhesion capabilities of SeNPs were also proven, according to literature. In order to produce unique antimicrobial coating to limit bacterial growth on polyvinyl chloride, polyurethane, & silicone -based medical equipment, selenium nanoparticles can be coated in situ on medical polymeric substrates. Density of Se nanoparticles on coated substrate surfaces is directly proportional to suppression of bacteria growth. Furthermore, surface of nanoparticulate selenium can improve osteoblast adherence to surface of orthopaedic implants.

CONCLUSION-The biotherapeutic significance of SeNPs has opened up new biotechnology & engineering prospects in terms of developing better & more effective diagnostic, therapy, & restorative devices for biomedical functions. Data allows for development of novel selenium redox active chemicals that may be combined to current medications or targeted with specialised molecules like monoclonal antibodies. New technique of nanotechnology appears to be strategically promising answer for boosting Se's efficacy & minimising its toxicity. Nanoscience & nanotechnologies, on other hand, are widely regarded as vital sectors with enormous potential to provide numerous benefits, not only in areas of drug development, water decontamination, & information & communication technologies, but also in development of stronger, more reliable, durable, & useful life-saving materials.

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Effectiveness of a lifestyle management program on knowledge of holistic health with relation to healthy lifestyle practices among adolescents in selected colleges at Hassan (Karnataka)

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ABSTRACT: The word adolescence comes from the Latin word *adolescere*, which means to grow up. One out of every five people is an adolescent. There are now 1.2 billion teens between the ages of childhood and adulthood. Out of a total population of 7.5 billion people, India has 243 million adolescents. Adolescence is a period of psychological, social, and physical transformation that lasts from puberty to adulthood. Adolescence is often viewed as a period of peak health. In today conditions, however, research suggests the exact opposite. Globally and in the United States, adolescents encounter a number of health challenges, including infectious and non-communicable illnesses.

Keywords: -Lifestyle management program, Knowledge, Holistic health, Adolescents, colleges.

Introduction: -Adolescents are not a monolithic group. They may be found in a variety of locations and have a diverse set of needs. Significant physical, sexual, psychological, and social developmental changes occur concurrently as a person grows from infancy to maturity. This transformation, although giving opportunities for advancement, also poses a danger to their health and well-being. When it comes to themes like drug use and sexuality, it's important to remember that the information given to teens should be used as a preventive and health-promoting tool, and it should be given with prudence so as not to encourage early intake or use. Information must be presented clearly and comprehensively, to be recognized as a factor in health protection and promotion. This not only refers to the negative repercussions, i.e., the drug use and unprotected sex. When confronted with external influences, teenagers are meant to respond more consciously. Adolescence is derived from the Latin word 'adolescere', which meaning to mature. One out of every five people is an adolescent. There are now 1.1.2 billion teens between the ages of childhood and adulthood. 2 and 3 Out of a total population of 7.5 billion people, India has 243 million adolescents. Adolescence is a psychological, social, and physical transition from puberty to adulthood. It is often assumed that adolescence is a period when one's health is at its optimum. In today conditions, however, research suggests the exact opposite. Globally and in the United States, adolescents encounter a number of health challenges, including infectious and non-communicable illnesses. NCDs have swept the world, impacting individuals of all ages, especially children and adolescents. On the other hand, the younger age group affected by NCDs is often disregarded. According to the WHO Global Status Report on NCDs for 2014, NCDs kill over 1.2 million people under the age of 20 worldwide each year, with NCDs accounting for more than 60% of deaths in India. Adolescents are those who are between the ages of ten and nineteen, whereas youth are those who are between the ages of fifteen and twenty-four, and young people are those who are between the ages of ten and twenty-four. In 2012, a systematic review of existing studies that evaluated Brazilian adolescents reported smoking prevalence in the range of 2.4% to 22%. On average, the prevalence was approximately 10%; however, in 20% of the investigations, it was higher than 15%. In the studies that presented results stratified according to sex, 55% showed higher prevalence in females for various patterns of cigarette consumption.

It must be remembered that information provided to youth should be used as a tool to promote prevention and health, and that it should also be given with precaution, in order not to encourage early intake or consumption²⁸. When dealing with topics like drug use or sexuality Information must be properly and comprehensively presented to be regarded a health and protection aspect, not only mentioning negative implications – drug use and unprotected sex -, but also highlighting the transient joys which may lead to future misery and pain. Teenagers are supposed to act more deliberately when challenged with external stimuli.

Scope of Research Work:

- 1) This study will help to identify lifestyle practices of adolescents. This study will enrich the adolescent's awareness to inculcate useful, necessary positive healthy practices to improve their way of living.
- 2) NCD-related health-care costs may be minimized.
- 3) Adolescents and quality of life should be promoted and improved.
- 4) By pointing the present scenario which affecting life of adolescent's in a wide range will make parents to be good observer about their children's life. NCDs have been discovered among teenagers by the WHO, which will help them improve their lifestyle habits and, as a result, develop effective prevention methods.
- 5) Health education will be founded on health promotion assumptions that have strived to refresh and alter educational methods in the health care area during the previous three decades.
- 6) Life style management programme as a method of improving the pattern of their living among teen age students is more effective in the present situation.
- 7) Because the most vulnerable ages for starting to smoke, use drugs, and take sexual risks are before the age of 14, health promotion message should start in early adolescence. Rather of focusing on dangers later in life, health promotion message at this time should focus on the "here and now" threat.

As a result, assisting teenagers in creating healthy lifestyles and avoiding the development of health risk behaviours is critical, and should begin before these habits become entrenched.

Objectives & Hypothesis:

- 1). By administering a pre -test, researchers were able to determine the current level of knowledge among teenagers about holistic health in connection to healthy lifestyle habits.
- 2] Implementation of structured lifestyle management programme on healthy lifestyle practices among adolescents.
- 3] To find out the effectiveness of lifestyle management programme on healthy lifestyle practices among adolescents by giving post-test.
- 4] To compare the post test result with pre -test result of knowledge level on healthy lifestyle practices among adolescents.
- 5] The purpose of this study was to see whether there was a link between pre -test knowledge of healthy living habits and certain demographic factors.
- 6). To make the recommendation on the basis of the result for effective implementation of structured awareness programme.

The hypotheses are tested at an importance level of 0.05.

Null Hypothesis:

H₀ : There is no statistically significant change between teenagers' pre - and post-test insight scores on health and lifestyle practices.

H₀₁ : There will be a substantial change in pre - and post-test scores for 1) knowledge of healthy living behaviours. 2) health-related knowledge

H₀₂ : There will be a substantial relationship between pre -test scores on 1) lifestyle habits health knowledge and the demographic factors chosen.

Alternative Hypothesis:

H₁ : Adolescents' insight scores on health and lifestyle practice change significantly between pre- and post-test.

H₂ : There will be a substantial change in pre - and post -test scores for 1) knowledge of healthy living behaviours. 2) health-related knowledge

H₃ : There will be a substantial relationship between pre -test scores on 1) lifestyle habits health knowledge and the demographic factors chosen.

Materials & Methods: For the study, the research scholar used a quantitative evaluative strategy using a quasi - experimental pre- and post-test design. A total of 500 teenagers were picked from the designated colleges using a non -probability handy sampling methodology. The research scholar used the tools for data collection was structured knowledge questionnaires. Structured Lifestyle management program content was developed after reviewing the literatures and opinion from the experts. Development of the tool and structured lifestyle management program involved the following steps of preparing lesson plan, content validity and reliability and both were found valid and reliable.

Data collection procedure: In the present study data collected for main study was for the period of 1st December 2019 to 30th December 2019, research scholar collected data related to objectives of the study which are well defined. Researcher also obtained administrative permission from concerned authority. The research scholar personally explained the participants regarding the need for the study and assured them confidentiality of their responses. Research scholar has understood the objectives thoroughly and the responses were recorded for meeting the expectations to reach a logical conclusions and interpretations drawn in the right perspectives void of bias, partiality, disparity, favoritism etc.

Results of the main study:Demographic variables: Majority 203(56.6%) of adolescents were belonged to 15 -17 years, the maximum respondents were female 276 (55.2%), majority 232 (46.4%) of participants were belonged to Hindu religion, majority 412 (82.4%) of participants were belonged to nuclear family, majority 161 (32.2%) of participants were single child, majority 244 (48.8%) of respondents monthly family income was 10,000/- - 15000/-, majority 188 (37.6%) of participants mothers were illiterates, majority 231 (46.2%) of respondents fathers were illiterates, majority 190(38%) were laborers, majority 190(38%) of participants were studied in co -education colleges, majority 198(39.6%) of respondents belonged to urban area, majority 169(33.8%) of respondents were staying with their relatives, and majority 340(68%) of participants were not had any information about healthy lifestyle practices.

Knowledge Score: Pre-test, 287 (57.4%) of respondents had insufficient knowledge, 213 (42.6%) had intermediate knowledge, and none had good knowledge. where maximum mean knowledge score is 4.51 was for diet and minimum mean knowledge score 2.30 for physical activity. The overall pre -test knowledge scores mean obtained was 21.19. In post test score 297(59.4%) exhibit adequate knowledge level regarding healthy lifestyle practices, 203(40.6%) of respondents had moderate level of knowledge on healthy lifestyle practices and inadequate knowledge was nil. where maximum mean knowledge score 9.03 was on sleep and minimum knowledge score 5.07 was on personal hygiene. The overall mean of post-test knowledge scores obtained was 39.84.

Interpretation:As a result, the researcher & intervention, i.e., a lifestyle management program on healthy living practices, was shown to be helpful in boosting teenagers' understanding of healthy living practices in several areas. Because there have been few studies on this issue in India, the research scholar has chosen it as the subject of his research.

Conclusion:-Inculcating a modified, well accepted and healthy lifestyle, which includes promoting non -smoking, eating a healthy balanced food, and actively participating in organized physical activities, is an important component in the prevention and treatment of

illnesses. Adolescents are more likely to comply with targeted lifestyle treatments delivered via colleges than with those delivered in a health care environment because the college environment is an ideal environment for acquiring new attitudes and behaviours. As a result, the goal of this research was to look at lifestyle determinants while implementing and evaluating an intervention program aimed at lowering unhealthy behaviours among teenagers and also encouraging youth to practice healthy habits.

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REVIEW OF LITERATURE RELATED TO HEALTHY LIFESTYLE PRACTICES

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ABSTRACT:-A person's lifestyle is determined by the decisions they make in their daily life. Having a good way of life promotes physical and mental health, whereas an unhealthy way of life may lead to lifestyle it is now widely accepted that lifestyle -related illnesses, which were previously thought of as pathological in origin, are in fact affected by Lifestyle -related illnesses are affecting both developed and developing cultures throughout the globe (World Health Organization [WHO], 2011). Diabetes, cancer, cardiovascular and respiratory illnesses are the most prevalent lifestyle -related diseases. In almost all nations, lifestyle -related illnesses are on the rise, both in terms of incidence and death. In order to determine the existence of different risk factors producing lifestyle -related illnesses, it is necessary to look at the people's lifestyle Tobacco use and excessive alcohol use are considered the most significant risk factors by the World Health Organization (WHO).

KEYWORDS: - Lifestyle, physical health, illness.

INTRODUCTION:"Lifestyle" refers to a person's or a group's attitudes, views, hobbies, and actions. In terms of 'lifestyle' there are differences based on factors such as gender, age and education as well as location of residence (rural or urban). When it comes down to it individuals from various age groups or genders or socioeconomic classes or religious backgrounds or who live in rural or urban regions vary in terms of their views on things such as eating habits or clothing styles or how they live their lives. Lifestyle becomes a means of projecting one's position in the status hierarchy.' Overall, we may conclude that various groups of people have their own "style of life." As Bourdieu (1984) explains, lifestyle is a set of social behaviours that are entrenched in social structure.

METHODS OF REVIEW:

SOURCES OF REVIEW OF LITERATURE : Source for this review are journals, books, dairies, printed articles, Google searcher and Pub Med.

STUDIES ARE SUPPORTED SELECTED CRITERIA:

- Studies main focus is on adolescents' quality of life.
- Studies gave information that, non -communicable diseases cause major drawback for present teenage group to progress in their carrier. These hinder the open communication, sharing and caring of an individual.
- Studies identified that, health education will be founded on health promotion assumptions that have strived to refresh and alter educational methods in the health care area during the previous three decades.
- Studies had been led from 2010 to 2021.

Aggregate of 20 investigators have met, models were chosen for survey. Among five were identified with improper diet, 5 investigations were identified with poor physical activities, 5 examinations were about irregular sleeping pattern, 5 investigations were concentrating on poor practices of personal hygiene and no recreational activities, and 5 were focused on alcoholism, substance abuse, suicide and mental illness.

REVIEWS ARE PRESENTED ON FOLLOWING HEADINGS:

1. Non-nutritious diet& Irregular physical activity
2. Irregular sleep cycle, poor personal hygiene& recreational activities
3. Alcoholism, substances abuse, suicide& mental health

[Singh Sunitha](#) ,et.al.,(2014), The main health effects, include under -nutrition and over - nutrition among young people, mental illnesses such as strain and anxiety, suicidal trends,

higher suicide death rates, a higher use of cigarettes and alcohol. Health behaviour & issues among young people in India : causal factors. The community of public health must identify, integrate and implement programs to enhance the health and lifestyles of young people as well as construct mechanisms for the provision and monitoring of population-based therapies [Tee JYH,et al \(2018\)](#), Obesity and unhealthy lifestyles linked to impaired executive function in Malaysian adolescents demonstrates that a rising trend of obesity and bad lifestyles in teenagers is linked to lower executive function. A study should be conducted to see how lifestyle changes might help teenagers improve executive function while also alleviating the burden of obesity.

[HazzaaMAI-Hazzaal et.al.\(2011\)](#), Teens' physical activity, sedentary behaviour, and dietary habits, broken down by age, gender, and region. A nationwide program promoting active living, nutritious eating, and reducing sedentary behaviours among children and adolescents is badly required in Saudi Arabia. Future research should concentrate on the variables that impact sedentary behaviour, physical activity and inactivity, and unhealthy dietary habits among Saudi Arabian children and adolescents, as well as the creation of intervention programs to combat hazardous lifestyle behaviours.

[Ekblom-Bak E , Ekblom Ö et al, \(2018\)](#), Leisure and physical education Youth physical activity, Physical performance and Health are important for adult activity, and 49 More and more favourable relationships showed increased PA outside school hours. Both young and current PA was relevant in combined analyses for decreased ORs of ill health and obesity in adulthood. Physical training and extra post-school PA were both essential for health perceptions, PA, VO2max and adult metabolism up to 70 years.

[Sharma B¹, Chavez RC¹ et al,\(2018\)](#), in their article titled, Among Peru sex in school teenagers, after-school work, perceived body weight, physical education, parental support and good diets in Peruvian School teenagers are all associated with inadequate physical activity, depending on the prevalence and correlations of inadequate physical activities. Integrated family and school work should investigate methods to encourage physical activity to increase leisure, childbirth, physical education, adequate nutrition and proper body weight control for adolescents.

[Buboltz et al. \(2016\)](#), another important part of a person's health is sleep. It has been shown that college students do not get as much sleep as the average adult population. When people are exhausted, they go to sleep, which is a natural condition for them. Students who had not had enough sleep for 24 hours complained of headaches and felt weak and exhausted. Sleep deprivation reduces a student's capacity to pay attention and has a negative impact on their capacity to do well on tests.

[Bindu John,\(2014\)](#), in their article titled, Age and gender differences: Sleep, duration and Hygienic practices in adolescents that concluded, The mean index values for sleep hygiene were 28.59 ± 6.71 . Although men had somewhat better sleep hygiene rates than females, they were not statistically significant. Teens who have slept for their age on school days received fewer than suggested hours in the research. Practices of sleep hygiene among teenagers were relatively inadequate. In order to address sleep issues in teens, emphasis should be placed on proper practice of sleep hygiene and integration of sleep promotion programs in everyday routines.

[Sarahjane Belton et al, \(2014\)](#), JPA Towards Health: Proofs and context for the creation of the intervention Y-PATH in teenagers It was stressed, The results suggest that most young people (67%) did not accumulate at least 60 minutes of required health physical exercise daily, and 99.5% did not attain the basic motion skills needed for the kids of their age.

[Anthony D. Okely et al,\(2017\)](#), Promotion of teens' physical activity found that intervention by the girls in sport did not reduce the decrease in teenage girls' physical activity. The key explanation for the zero impact was the lack of implementation in most

intervention schools. To determine the real potential of this intervention strategy, it is important to identify techniques for improving the implementation level. Interventions developed which will encourage school employees to perform for the course of the intervention time and which encourage the women concerned to support them are urgently needed. This research suggests that a decrease in MVPA among young girls may be prevented if schools follow completely their action plans. The problem for schools and scientists is how collegiately and profitably we work together to maximize the chance of a high degree of school intervention.

Swendsen et al., (2012), the average age for or without alcohol usage was 14 at the beginning. This was a nationally representative research in which 10 000 young individuals aged between 13 and 18 were assessed in an amended version of the Composite International Diagnostic Interview. Alcohol rates were lower than those of white or Hispanic teens for Black, and other racial/ethnic groups. The rise in the prevalence rates between 13 and 18 years suggests that this is a critical time in developing alcohol consumption problems (AUDs).

Gruber Reut1, ET. AL. (2013), Factors affecting the sleep of young people and strategies to guide patients and their families toward healthy sleep, 63 found that lifestyle patterns, consisting of recurrent everyday behaviours, can impact the capacity of a kid to acquire adequate high-quality sleep either favourably or adversely. Sleep regulation may have a considerable effect on lifestyle habits, which are parts of daily living. Since these habitats are adjustable, simple and cheap actions may be taken to allow families to sleep safely and adequately.

[Tamar Shochat, \(2012\),](#) Impact of sleep on lifestyle and technology the report indicated that further components of behavioural lifestyle related to bad sleep include growth in weight, poor physical practice and intake of drugs such as coffee, alcohol and nicotine. It is necessary that treatments for health should be developed to address distinct lifestyles related with poor sleep, customized to various age groups. Habits to expose, eat and physically active electronic media in children and risk behaviours in teenagers and young people, with properly scheduled light exposure.

ZairaAndressa Alves de Sousa² et.al.(2014) Teenagers' health knowledge and practices: implications for lifestyle and self-care, it is determined that teenagers have knowledge about their health and the difficulties that might arise as a consequence of unhealthy behaviours, but that this knowledge is more closely linked to cultural behaviours than to real facts.

[WarisQidwai, Sidra Ishaque, et al \(2010\),](#) Youth Lifestyle and Behaviour : A Country Development Study attempted to highlight several areas of concern for young people's lifestyles, and indicated that it is only to promote a patient-centred atmosphere for adolescents and fuel patients that can meet their needs.

[Wasserman D.,\(2016\),](#) The student empowerment initiative, termed Mental Health Youth Aware (YAM), has shown substantial effectiveness in avoiding new suicide attempts, severe suicidal ideations and sadness. Over 50 percent of cases in which suicide attempts were incidents (OR: 0,45 [0,24 - 0,85]; p=0,014) as well as of incidents in which suicidal ideations and plans were severely incurred (OR: 0,50 [0,27 - 2,92]; p=0,025) and a significant reduction in cases in which moderate to severe depression had a significant effect of 30 per cent (OR: 0,71 [0,52- 0,97]; p=0,031).

Rose et al., (2001), approximately half the risk of developing alcohol dependency is due to genetic predisposition. Young persons with a positive family history of alcohol problems are more likely than their peers with a negative family history to develop an alcohol problem at a younger age. In late than early adolescence genetic variables could have higher effect on drinking behaviours.

MacArthur et al., (2012), A recent research of the prospective UK cohort of birth indicated that more than half children had tasted alcohol at the age of ten, thirteen and fifteen was drunk by the age of fifteen. In drinking behaviour, there were no gender differences. Greater alcohol use at 15 was connected, in particular, to a considerably higher prevalence in other risk-taking behaviours at 16 years of age. Those who satisfied hazardous drinking standards at age 16 were six times more likely than those who didn't comply with these requirements to participate in conduct.

Lund I¹, Scheffels J,(2018), More dry tobacco and alcohol abstainers from 15 years old: The results of a Norwegian cross-sectional sample suggest that abstainers – not tobacco or alcohol use – usually have less unorganized hobby activities, more smoking risk and emotionally pleasant parents. The results of this sample are more effective. Increased links with her closest pal and less drinks and cigarettes amongst friends and siblings were rarer. Results also suggest a helpful approach for the prevention of alcohol and the use of cigarettes in young people to promote hobby-based activities.

Erin Hurle,et.al.(2019),A thorough examination of parental alcohol prevention and/or youth reduction programs found that parent alcohol programmes, in order to avoid and reduce the use of alcohol by adult youth, are useful for influencing positive parenting-specific behaviours linked with smaller intakes. However, in the light of the combined evidence base, research quality difficulties and inadequate use of parent-specific outcome measures, more evaluations are needed to improve the evidence basis.

Rodelli M, De BourdeaudhuijI,et al(2018), What are the healthy lifestyles of teenagers facing cyber-bullying with a decreased incidence of suicide ideation? 83 findings revealed that cyber-bullying, crime and standing were linked to a greater suicidal notion, but the cyber-bullying relation faded once other cyber-bullying forms were rectified. More physical activity, longer sleep, healthier food, and lower smoking levels were related with decreased suicidal ideations. At a greater degree of cyber-bullying engagement certain connections of healthy lifestyles of cyber-bullying involvement.

I. García-Moya , et al (2017), School factor connected to the teacher: multilevel research on the structural and connection school determinants of the health of young people states that attempts to promote health directed at interaction between the students and the teachers must take into account the evolution of TC by age and SES.

Walther J, et al, (2014), A sample of Austrian teenagers and young people with bad eating habits (n=86), insufficient physical activity and smoking has demonstrated food, lifestyle and mental wellbeing to be significant in young and young. In addition, this group is also concerned with stress and weariness.

CONCLUSION: Review of literature over the previous two decades that was relevant to the present lifestyle of adolescents. There is a view that adolescence is the period to build and integrate different habits and behavioural patterns and to transfer these habits and behaviours into adulthood, making it harder to change. According to the World Health Organization, lifestyle is associated with 60 percent of the factors that influence individual health and quality of life. The following bad lifestyle habits are examples of poor lifestyle behaviours: malnutrition, a sluggish diet, smoking, alcohol use, drug addiction, stress, and other hazardous lifestyle behaviours.

Furthermore, the lives of the inhabitants are being complicated by new challenges.

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CHILD ABUSE –A Review

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Abstract- The term child abuse has come to mean any intentional act of physical, emotional, or sexual abuse, including acts of negligence, committed by a person responsible for the care of the child. According to UNICEF violence against children can be "physical and mental abuse and injury, neglect or negligent treatment, exploitation and sexual abuse. Violence may take place in homes, schools, orphanages, residential care facilities, on the streets, in the workplace, in prisons and in places of detention." Such violence can affect the normal development of a child impairing their mental, physical and social being. In extreme cases abuse of a child can result in death. The Child Abuse Prevention and Treatment Act defines child abuse and neglect as: "at a minimum, any of recent act or failure to act on the part of a parent or caretaker, which results in death, serious physical or emotional harm, sexual abuse or exploitation, or an act or failure to act which presents an imminent risk of serious harm."

Keywords: Child abuse, Sexual abuse, neglect; Battered Child Syndrome.

What is CHILD ABUSE?

Child abuse" can be defined as causing or permitting any harmful or offensive contact on a child's body; and, any communication or transaction of any kind which humiliates, shames, or frightens the child.

Child abuse: The term used to describe child abuse includes battered child syndrome and non-accidental injury to children.

Abuse is considered as an act in which intentionally physical, mental or emotional harm is inflicted on a child by parent or any other person. It may include repeated injuries, unexplained cuts, fractures, burns, scars, harm, punishment, sexual abuse, etc.

Levels of child abuse:

- **Home:** Abusers are parents or parents' substitutes.
- **Institutions:** Schools, day care centres, boardings, hostels, residential centres.
- **Society:** Which allow children to live in poverty or to be denied of basic necessities of life.
- **Discipline and neglect:**

Discipline is a purposeful action to restrain or control child behaviour and not intended to hurt the child or result in injury.

Neglect is an act of omission and refers to child failure to meet dependent basic needs of food, shelter, clothing and rights of them.

Causes of Abuse:

- ✓ Marital problems
- ✓ Financial difficulties
- ✓ Frustration
- ✓ Stress due to illness
- ✓ Parent child conflict
- ✓ Losing control over anger

Types of abuse:

1. Physical Abuse
2. Neglect Abuse
3. Sexual Abuse
4. Emotional Abuse

1. Physical abuse: In this bruises, burns, injuries, rope lying, fracture may be included.

Characteristics:

- Fear of parents,
- extremes in behaviour,
- learning problems,
- fatigue,
- sleep in the class,
- Injuries, etc.
- Truancy and tardiness in school,
- Hurting other children, etc.

2. Neglect: It is condition in which child's basic human needs are neglected. Financial status, cultural values, parental capacity should be considered before a parent is accused of neglecting a child.

3. Sexual abuse: It is not easy to identify because the physical / signs of sexual abuse are not seen outside a clinical or hospital setting. The child victim is usually, reluctant to share information about abuse.

Characteristics:

- Itching, pain, bruises or bleeding in the external genitalia,
- bloody or stained undergarments,
- stretched hymen at very young age,
- urinary bladder infection,
- changing sleeping patterns,
- nightmares,
- Use of drugs/alcohols, etc.

4. Emotional maltreatment: -It may consist of verbal assaults or threats that provoke fear, poor communication in the child. Parents that foster love, belonging and enhanced self-esteem.

Characteristics:

- Stuttering enuresis,
- delinquency,
- truancy,
- overeating,
- Childhood depression, etc.

Prevention of Child Abuse:

1. Never leave child unattended especially outside home.
2. Beware of changes in child's behaviour or attitude.
3. Teach child the difference between good touches and bad touches.
4. Participate in child's activities and know about child's friends.
5. Never discipline child when you are extremely angry.

Management of child abuse:

- ✓ Protective services for children: Emergency shelter, day care centre, telephone hot lines etc
- ✓ Parent education.
- ✓ Counseling.
- ✓ Financial assistance.
- ✓ Foster home care.
- ✓ School guidance.
- ✓ Assertiveness training.

Role of nurse in child abuse:

- The nurse can meet the family therapeutic needs in variety of ways.

- Nurse often teach mothers children-care skills such as proper -feeding, effective discipline and constructive communication.
- The nurses demonstrate good communication skills and discipline by teaching both parents and children in calm, respectful and informative manner.
- Nurse can show how to physically and psychologically care for relative during home visits.
- Advise parents not to neglect or ignore their children.
- Nurse should have to advise parents to fulfill all the basic needs of their children.
- Nurse should have to advice teachers to treat the students with love in school, and provide health care programmes.
- Nurse should advise the parent that they should not send their children alone.
- Nurse should have to advise parents that they should not send their girl children with strange person. Send them in auto and never send them alone. If they send them with any other person then that person should be known to them.
- In school health programmes, the nurse should have to advice the teacher that they should have to give education about activities like snorting to save themselves.
- Nurse should have to advise the teachers in school to give them sex- education.
- *Nurse* should have to advise mother to be -franks with her girl children to know their feeling so that she does not feel alone.
- Community health nurse should have to advice the mother to take proper care of their children like bathing, brushing, etc.
- CHN advice the family members not to abuse the child in case of wrong work instead of abusing and scolding, teach them in a right way to do the household work.

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To assess the knowledge on sedentary lifestyle of childhood obesity among mothers of primary school children of Pune city

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ABSTRACT

Background: Obesity is one of the very common and serious problems of the Children due to eating habits, inadequate physical activity, sedentary lifestyle and mostly behaviour of the parents. Childhood obesity spreads in developed and developing country as well. India reported highest cases of Childhood Obesity after USA and China due to changing lifestyle and food habit. (WHO, 2019) National Family Health Survey (NFHS -4) highlighted that urban population witnessed high number of Obesity in Children as compared to rural population. **Methodology:** A descriptive study was conducted in selected schools in Pune, Maharashtra, India on 60 mothers of primary school going children. Result: Demographic data of the study stated that most of the children (42%) age are 9-11 years and greater number of female children (54%). Most of the mothers (83.33%) mentioned that inadequate physical activity causes obesity in children. Meanwhile 75% of the samples illustrate that spending time in sedentary activities like watching TV; mobile etc. contributes obesity in children. **Conclusion:** Childhood Obesity is global health problem in developed and developing country. It has to track early otherwise consequences of obesity increase the morbidity and mortality among children and adult

INTRODUCTION:-Childhood Obesity is one of the greatest health challenges of 21st century for public and prevalent global public health issue as children. Childhood obesity spreads in developed and developing country as well. The World Health Organization states that worldwide around 340 million children and adolescents are Obese and overweight under the 5-19 years of age group. India reported highest cases of Childhood Obesity after USA and China due to changing lifestyle and food habit. (WHO, 2019) National Family Health Survey (NFHS-4) highlighted that urban population witnessed high number of Obesity in Children as compared to rural population. Obesity is one of the very common and serious problems of the Children due to eating habits, inadequate physical activity, sedentary lifestyle and mostly behaviour of the parents. Health behaviours are very difficult to sculpt in adult than childhood. Increasing possibilities of morbidity like diabetes, heart disease, hypertension, musculoskeletal problems, fatty liver disease along with poor self-esteem, and depression would be the condition face during adult if it is untreated in the Childhood. Environment at home so here orchestrates someone healthy life but also sculpting sure weight-related behaviours and attitudes (such as nutritional, exercise, moderately active, as well as nap habits, 8-12 and also parental approach (structured rather than controlling) seem to be powerful determinants of kid strenuous fitness but instead eating behaviours, and hence BMI throughout small kids or early childhood. Present major challenges ergo, family-based initiatives, and that are trying to address all broad sense as well as care behaviours but rather bolstering child rearing implications, were also trick methods e.g. treatment and control like children high obesity, etc as application of sustainable healthy food formations between young kids

RESEARCH METHODOLOGY:-A descriptive study was conducted in selected schools in Pune, Maharashtra, India on 60 mothers of primary school going children. The mothers were randomly selected and with the help of dichotomous questionnaire mothers' from selected age

group were interviewed. Research tool comprised of questions about demographic characteristics, lifestyle of the children.

RESULT:-Demographic data of the study stated that most of the children (42%) age are 9-11 years and greater number of female children (54%). Many mothers have 2 children with birth order of first (52%). Large number of participants is the home makers (62%) and educational status of mother is higher secondary school. 87% children dietary pattern is non-vegetarian and only 27% children consumes fruits/ vegetables daily.

Table No.1

Sedentary Lifestyle	Frequency	%
Inadequate physical activity causes obesity in children	50	83.33%
Spending time in sedentary activities like watching TV, mobile etc. contributes obesity in Children	45	75%
Watching television more than 2hrs cause obesity in children	35	58.33%
Frequently using lift instead of stairs causes obesity in children.	42	70%
No movement after food causes obesity in children.	52	86.66%
Poor sleep < 8 hours contributes obesity in children	15	25%

Above findings depicts that most of the mothers (83.33%) mentioned that inadequate physical activity causes obesity in children. Meanwhile 75% of the samples illustrate that spending time in sedentary activities like watching TV; mobile etc. contributes obesity in children. Half (58.33%) of the subjects were aware that watching television more than 2hours cause obesity in children and 70% of the samples explained about Frequently using lift instead of stairs causes obesity in children. Many of the mothers 86.66% stated that No movement after food causes obesity in children whereas only 15% aware about Poor sleep < 8 hours contributes obesity in children.

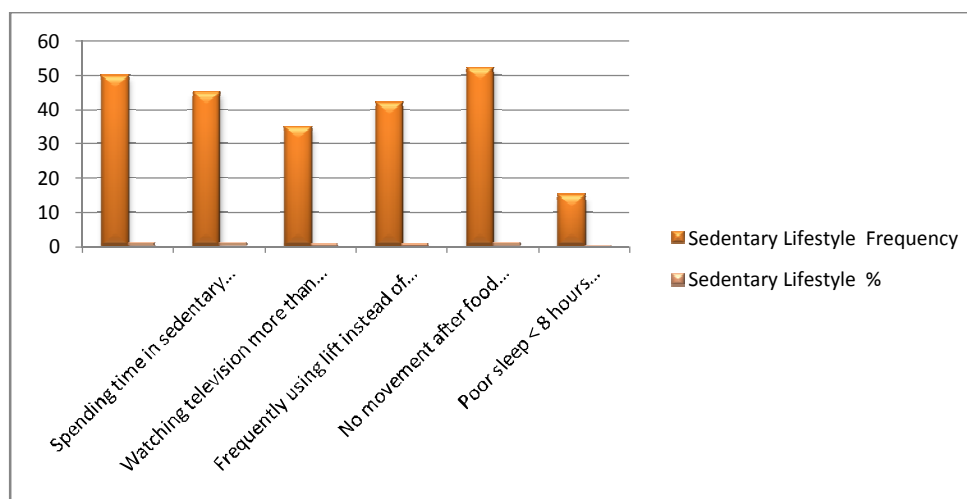


Figure no. 1 Sedentary Lifestyle

CONCLUSION-Childhood Obesity is global health problem in developed and developing country. It has to track early otherwise consequences of obesity increase the morbidity and mortality among children and adult. Prevention is important aspect in childhood obesity; it starts from Home, School and Community. Parent is the pivotal role to tackle obesity in children and their knowledge is very important aspect towards Childhood Obesity.

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EFFECTS OF COVID-19 PANDEMIC LOCKDOWN IN INDIA

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INTRODUCTION:-The across the country lockdown that carried 1.3 billion individuals to a stop has evidently caused constructive outcomes as well as negative impact on India. The progress out of lockdown is set to be a perplexing and dubious stage. Difficulties and conditions shift from nation to nation and there is nobody size-fits-all methodology.

POSITIVE EFFECT

1.Impact on Environment: -The lockdown clearly caused positive changes in the earth. Skies are more clear and numerous stream water like Ganga,Yamuna appears cleaner than previously. The away from of water is a consequence of the shutdown of the majority of the substance enterprise s. Indeed, even a few fishes are appear to be exceptionally clear in Varanasi.



The Lockdown Cleaned the Ganga More.

According to the report the lockdown has likewise prompted better air quality, the normal convergence of molecule contamination is 2.5 i n New Delhi descended by 71 percent for seven days a month ago. Nitrogen Dioxide, a poison, has likewise seen a decrease of 71 percent. The infection put an impact to eliminate any confusion air contamination to make the away from of Himalayas from Jalandh ar. The contamination level over the globe has prompted a beneficial outcome even on the ozone layer. These lockdown not just roll out the above improvements it likewise brings expanded water stream because of unseasoned precipitation and snow fall in cert ain areas. Likewise the heap of plastic and non biodegradable waste has been diminished these days, which cause revival of mother earth itself.



Perspective on Himalayan range from Jalandhar

The momentum changes should shape our future methodology of h ow specialists should diminish mechanical effluents in the water and air medium.

2.Impact on Wildlife: -With decreased human obstruction and contamination, winged creatures are remaining in havens somewhat more and at similar wounds to marine and woodland creatures have descended. Many winged animal species which relocate from different pieces of the nation have now broadened their stay at India.



A Flock of flying creatures at Theerthangal haven in TamilNadu

Absence of grand marriages and other functions makes clamor contamination is negligible. This has likewise profited the winged animals to endure. We can likewise saw the expanded nearness of natural life, even in urban territories. Foxes are getting progressively inquisitive and winged animals, butterflies and honey bees are in plenitude. It took a national check in time to let individuals see creatures outside of national parks.

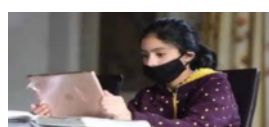
3.Impact on Family: -Four out of five guardians accept the crown infection lockdown has united their family. The lockdown has prompted individuals telecommuting and therefore, investing more energy with their families and accomplices. Numerous Parents keeping their childrens participating in innovative exercises. Men's proceed onward to kitchen for cooking unique dishes for their childrens and to save their life partners trouble. A considerable lot of them getting a direct exercise in home administration for the absolute first time. Simultaneously the pace of household misuse additionally bit by bit expanded in India.



Parents keep their children creatively engaged during lockdown

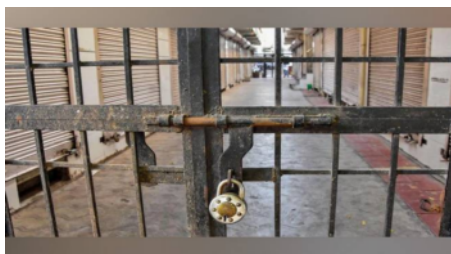
NEGATIVE EFFECT

1.Impact on Education:-As indicated by the study by Indian government assistance trust, 89 percent of people groups accept that their youngsters' instruction will be influenced by crown infection lockdown. It ought to be noticed that the terminations of schools delayed the test are probably going to broaden the taking in hole between youngsters from lower -pay and higher-salary families. Despite the fact that numerous guardians are getting to innovation and web are progressively going to online instruction to keep their children learning at home while rustic childrens will be unable to do as such. Guardians can't capable manage the cost of energizes and some family may not claim a PDA.



Biggest victims of corona virus lockdown

2.Impact on Economy:-The crown infection pandemic has influenced numerous divisions in India. brought as much as 70 percent of financial movement, venture, trades and optional utilization to a freezing state. It likewise bestows its impression in assembling, transport, lodging, café, and land exercises. This may prompt sharp fall in nation GDP. In any event, when the lockdown time frame closes, it will set aside effort for the economy to be rise once more.



The economy is on complete bed rest

3.Impact on Healthcare system-Tolerant with long haul ailment such Renal failure coronary illness and Chronic respiratory diseases had endure an enormous due to non accessibility of demonstrative and satisfactory treatment facilities. Individuals endured in moving the patient to medical clinic because of absence of transportation and fixing of between state fringes. Numerous emergency clinic won't concede or treat the patient because of reasons like dread of swarming on their medical clinic premises and ensuing spread of disease and so forth. The brief timeframe bound is n't adequate for the human services areas to set them up for confronting such a colossal emergency. Many staff medical attendants endured because of expanded outstanding task at hand and absence of PPE. Numerous specialists and medical caretakers are presented to crown infection and even a few faces horde assault.



4.Impact on Employment/ people mobility -The present lockdown has impacted the livelihoods of a huge proportion of the country's nearly 40 million internal migrants. They walk away a long distance to home as they lost their jobs due to shutdown of industries and lost their daily and monthly wages due to pandemic lockdown. Besides many people suffered with hunger, dehydration, heat strokes and even some people lost their lives on their migration.



Stranded migrant workers on the way to their home

5.Impact on Mental Health -Different general wellbeing methodologies, for example, isolation of tainted or in risk people, social separating and incessant hand wash, have been given as a guidelines by the nation to decrease the danger of disease. Despite the fact that isolate helps in decreasing contaminations, absence of access to family, companions, and other social emotionally supportive networks causes forlornness expanding mental issues like nervousness and discouragement. In this way, Mental wellbeing is a pivotal angle that should be tended to during this lock -down as all methods of correspondence spin around the crown infection.

Conclusion-Besides positive effects, Negative stands high on the impact parameters. More and more precautions strategies and broad plans to be designed in order to fight the pandemic in future. Even though this lockdown reduce the death rate and save lives, but poor policies raises the biggest question on human survival.

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PAIN MANAGEMENT IN PHYSIOTHERAPY

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Abstract:-Whenever any person suffers with an ache or pain, it does not always heal up quickly. Either he writhes in pain or has to endure it and get over a momentary blow, but when the same pain emerges over and over again, something needs to be done. Most of us can probably remember a time when we felt the wrath of aching joints and strained muscles. The most common thought that arises in our mind is... How I can get over with it very soon. Physiotherapy helps speed up the healing process for a broad range of physical complaints. From feeling a strain in the shoulder, to recovering from accident related surgery, and even getting over the symptoms of concussion, the physiotherapists are equipped to guide people through recovery processes that bring about quick, correct healing.

Key words:-Pain management, physiotherapy, symptoms, recovery, physical complaint, and physical stress

Introduction:-People often get confused and are afraid to use the services of a Physiotherapist and often the question is in the forefront that how physiotherapy can aid the entire healing process. The process of healing is a multi-faceted concept. It involves the environments in which we live, our dedication to following prescribed regimens and remedies (whether physical or medicinal) and even our positive psyches. As the concept of Physiotherapy revolves around as a science-based profession and takes a whole person's approach to health and well-being and which includes the patient's general lifestyle.

Pain management & techniques used in physiotherapy:-While some people and medical professionals see physiotherapy as a "last ditch effort," others promote early intervention. According to scientific studies and experiences shared by 'Spine' which is a Medical Journal associated with Physiotherapy practices, it has pointed out the difference between people who receive physiotherapy two weeks after injury as opposed to those who waited 15-90 days after the occurrence. The individuals who received prompt care required less medical services for the next year and a half following physiotherapy treatment. Therefore, it seems that people who use physiotherapy at the first signs of pain have good chances at healing quickly and correctly. Beyond physical healing, physiotherapy may help people recover faster after suffering concussions. Another instance shared by the studies conducted in Calgary, there is a striking difference which exists between patients who receive cervical spine physiotherapy and patients who only receive vestibular rehabilitation. Their study has revealed that 73 per cent of participants who received physiotherapy were medically cleared within eight weeks, while only 7 per cent of those who received standard rehabilitation were cleared in that same time. Thus, Physiotherapy can aid the recovery process for several conditions, even concussions. Connecting with a physiotherapist soon after injury occurs or pain appears may be the best way to accelerate healing. However, any time as the patient experiences pain that won't go away, the best way is to consult an Orthopaedician or a consider consulting Physiotherapist. These professionals can give your whole body the attention it needs to foster quick, correct healing.

Most Common Injuries Experienced By People Today: Athletic Injury:-For the above the Physiotherapists recommend **Athletic Therapy and Massage Therapy.**

In such cases the patients vary from a range of weekend walkers to an individual with a workplace injury.

Though athletic therapists are usually seen as first-responders on the field at major games and tournaments, they also use their knowledge in a clinical setting. With knowledge in anatomy, exercise physiology and biomechanics, athletic therapists are able to effectively prevent, treat, and rehabilitate chronic or acute injuries. While it benefits the injured, the ill and the stressed, the strength of massage therapy in preventing illness and conditions before they develop cannot be overlooked. Massage therapy can be used in the treatment of both acute and chronic conditions, and benefits people of all ages. In line with the Athletic Therapy, Massage Therapy complements the treatment plan. The below mentioned conditions use both and are beneficial to remove ailments related with:

- Back, leg, and neck pain
- Cancer
- Carpal Tunnel Syndrome (repetitive strain)
- Chronic Fatigue Syndrome
- Dislocations
- Fibromyalgia
- Fractures
- Gastrointestinal disorders
- Inflammatory conditions such as Arthritis and Bursitis
- Multiple Sclerosis
- Parkinson's Disease
- Post-surgical rehabilitation
- Sports injuries Stress & stress-related conditions
- Tendinitis

A Physiotherapist is highly trained in hands-on physiotherapy techniques such as:

- Mobilization of the Joints(gentle gliding) techniques,
- Manipulation of Joints with Techniques,
- Muscular Exercises,
- Nervous System and Neural Treatment,
- Massage and soft tissue techniques

In fact, any Physiotherapist has already been trained in techniques used by most hands-on professions such as Chiropractors, Osteopaths, and Kinesiologists.

Physiotherapy Taping

A Physiotherapist is a highly skilled professional who utilizes different methods which include Straps and Taping techniques to prevent further injuries.

Physiotherapy Exercises:

Physiotherapists have been trained in the use of exercise therapy to strengthen the body muscles and improve their functionality.

Such exercises have been scientifically proven to be one of the most effective ways that you can solve or prevent pain and injury.

The Physiotherapist is an expert in the prescription of the "best exercises" for the patient and the most appropriate exercise dose can be offered by them depending on the rehabilitation status. The Physiotherapist will incorporate essential components which also may include other physical exercises including Yoga and Meditation so as to improve the healing process. On-Screen display on the physical improvement of the muscular structure may be displayed by them by using the latest available methods and techniques so that one can watch the developments accordingly.

Biomechanical Analysis:

The above observations and diagnostic skills are paramount to the best treatment.

Any Physiotherapist is a highly skilled health professional with superb diagnostic skills to detect and ultimately avoid musculoskeletal and sports injuries.

Poor technique or posture is one of the most common sources of repeat injury.

Sports Physiotherapy:

Sports Physiotherapist requires an extra level of knowledge and physiotherapy skill to assist injury recovery, prevent injury and improve performance.

In each and every sport's team a Sports Physiotherapist is included for guiding the team members and prevention of injuries associated with that sport or activity.

Workplace Physiotherapy:

A Physiotherapist assists not only in Sports, but other activities as well which include physical wellbeing and lifestyle.

They can also assist you at work. Such activities come under the category of Ergonomics and the Physiotherapist can provide the best postures and workstation set up for the body at work. Whether it is lifting technique improvement, education programs or workstation setups, the Physiotherapist is the ideal person.

Conclusion:

In Pain Management the Physiotherapist is a highly skilled body mechanic.

Every Physiotherapist has expertise in certain injuries or condition.

So for advice regarding any specific physical difficulty it is recommended that one should consult a Physiotherapist to relieve oneself from pain.

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The effect of fly ash and laterite soil on some physiological parameter of strawberry

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Abstract: The complete limit of thermal energy stations starting in, 2021, all over India is 231870.72 MW. The use of fly-ash, delivered by the thermal electric stations in explicit fields to control ecological poisons has given due significance for the leftover few years.

Continuous age of fly ash by the coal -based thermal power vegetation and its unloading has caused steady infringement of valuable land in India. The injurious results of fly ash in the nearby climate are inescapable due to its fine surface and the presence of toxic metals. With the growing population and high demand for energy, in keeping with the capita consumption of power, it isn't feasible to reduce the power generated by way of coal -primarily based electricity plants due to environmental pollutants however pressure may be given to control the identical. Strawberry (*Fragaria ananassa*) is a significant natural product harvest of India and its business creation is conceivable in calm and sub -tropical area of the country. These experiments were conducted to utilize fly -ash on Runners and the Physiological growth of *Fragaria ananassa* accumulated from the Kolaghat thermal power plant, properly by means of extracting its appropriate fertilizer.

Keywords: Fly ash, Runners culture, Physiological parameter

1. Introduction: -However over the most recent forty years, different substitute energy sources have come into the spotlight, the exaggerated utilization of coal as a great energy source can't be offset. Removal of the great measure of fly debris from nuclear energy stations ingests a tremendous measure of water, energy, and land region by debris lakes. To satisfy the developing energy need, different natural, financial, and social issues related to the removal of fly -ash would keep on expanding. Hence, fly -ash the executives would stay an extraordinary worry of the century. Fly -ash has an incredible possibility in farming because of its viability in the change of soil wellbeing and yield execution. The high grouping of components (K, Na, Zn, Ca, Mg, and Fe) in fly -ash builds the yield of numerous rural harvests[1]. Fly Ash (FA), the famous by -product of coal -based thermal energy stations, known for its evil impacts on horticultural land, may now come as a guide for the cultivating local area. As a result of its incredible accessibility and minimal expense, the further chance of its utilization ought to be explored. Fly ash from both coal and lignite goes about as a decent transporter for bio pesticides. It is utilized as a conditioner to capture soil disintegration and to incite plant opposition against infections. Nonetheless, a few examinations suggested that FA can be utilized to work on the physical, substance, and natural properties of the debased soils and is a wellspring of effectively accessible and less expensive miniature, full-scale supplements for crops. Subsequently, utilization of glimmer is a viable method of use of tricky fly -ash squanders in a valuable way [2]. Fly Ash (FA) a coal ignition build-up of thermal energy stations has been viewed as a risky strong waste from one side of the planet to the other. Removal of the great measure of fly debris from nuclear energy stations assimilates an enormous measure of water, energy, and land region by debris lakes. Accordingly, fly ash the executives would stay an extraordinary worry of the century. In any case, a few examinations recommended that FA can be utilized as a dirt enhance that might work on physical, synthetic, and organic properties of the corrupted soils and is a wellspring of promptly accessible plant miniature and full-scale nutrients [3].

2. Materials and Method:

2.1. Sample collection: Fly ash were collected in sterile containers Kolaghat Thermal power station, PurbaMedinipur district (Latitude -22° 25' 58.5192" N north, longitude - 87° 51' 35.5896" E east.), West-Bengal, India.

2.2 Soil Test:

2.2.1. pH: Luster Leaf 1845 Rapitest Digital Soil pH Meter, Model Number 1845

2.2.2. Electrical Conductivity: Soil Conductivity Meter HI 993310

2.2.3. Calcium carbonate (CaCO₃): Calcium carbonate was determined by titration method

2.2.4. Organic carbon: Walkley - Black method Titration and colorimetric method

2.2.5. Nitrogen: Followed by The Kjeldahl method and Ammonia Distillation

2.3. Pot Culture experiment : Runners were collected from Mundumari, Gogram village, Pingla.

Treatments were as follows -

i) Control (No fly ash, only 2 kg soil)

ii) Soil +20% fly ash

iii) Soil + 40% fly ash

iv) Soil + 60% fly ash,

v) Soil + 80% fly ash

Four replicates of 2 kg of each mixture of soil and fly ash were prepared, filled up in pots and Runner was transplanted to each pot in July, 2020. The pots were organized in a totally randomized plan. The following growth parameters were recorded at 15 days intervals Height, No. of leaves, Fruits.

3. Result& Discussion:

Table 1: Laterite Soil Test Result

Laterite Soil	
pH	6.5-7.4
CARBON%	0.66
N ₂	475 Kg/ha
P ₂ O ₅	13.0 Kg/ha
K ₂ O	528.0
SULPHUR (ppm)	13.81
ZINK(ppm)	1.14
BORON(ppm)	0.27
IRON(ppm)	8.11
MAGNESIUM(ppm)	18.13
COPPER(ppm)	2.60

Table 2: Chemical Analysis of Fly ash

Sl. no	Chemical component (% by wt.)	Coal types, from which fly Ash is produced		
		Bituminous	Sub Bituminous	Lignite
1	Alumina (as Al ₂ O ₃)	6-30	25-35	15-50
2	Iron Oxide (as Fe ₂ O ₃)	12-35	5-10	5-15
3	Silica (as SiO ₂)	25-65	45-60	20-45
4	Calcium (as CaO)	2-10	10-30	20-40
5	Magnesium (as MgO)	0-6	1-6	4-12
6	Potassium (as K ₂ O)	0-4	0-4	0-4
7	Sodium (as Na ₂ O)	0-4	0-2	0-6
8	Sulphuric Anhydride (as SO ₃)	0-3	0-4	0-10

Table 3: No. of leaves/plant, under laterite soil and fly ash, of Strawberries as influenced by different concentrations of effluent 60 days

concentra tions	No of leaves							
	Laterite Soil				Fly Ash			
Days	15 th	30 th	45 th	60 th	15 th	30 th	45 th	60 th
Control	4	8	11	15	5	9	12	18
20%	7	8	11	15	5	9	12	18
40%	5	10	12	16	9	11	12	19
60%	11	10	13	18	6	11	13	20
80%	13	10	14	19	6	12	14	20
100%	4	8	11	14	5	10	11	17

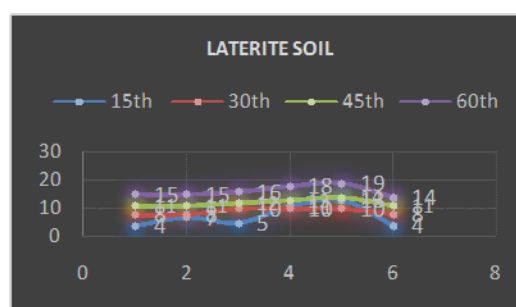
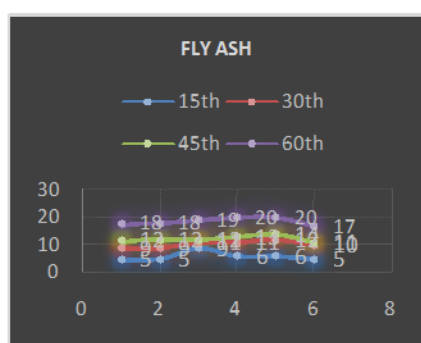


Table 4: The Plant height (cm), under laterite soil and fly ash, of Strawberries as influenced by different concentrations of effluent

concentra tions	Plant Height(cm)							
	Laterite Soil				Fly Ash			
Days	15 th	30 th	45 th	60 th	15 th	30 th	45 th	60 th
Control	2.1	7.3	11.5	19.4	2.7	9.4	17.1	19.1
20%	2.54	10.16	20.1	25.4	3.81	12.7	22.09	26.41
40%	2.54	10.18	20.8	25.6	4.31	13.2	23.11	26.67
60%	2.64	11.1	21.3	25.9	4.57	13.7	23.87	27.6
80%	3.83	11.6	21.5	26.6	4.82	14.7	24.12	30.73
100%	1.5	10.1	18.1	23.1	3.91	12.1	22	26.31

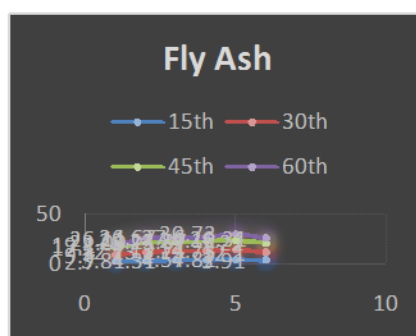
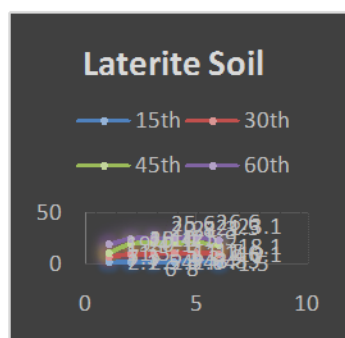


Table 5: No. of fruit/plant, under laterite soil and fly ash, of Strawberries as influenced by different concentrations of effluent 60 days

Concentrations	No. of Fruits							
	Laterite Soil				Fly Ash			
Days	15 th	30 th	45 th	60 th	15 th	30 th	45 th	60 th
Control	-	-	5	10	-	-	8	11
20%	-	-	5	10	-	-	8	11
40%	-	-	5	10	-	-	8	11
60%	-	-	6	10	-	-	8	12
80%	-	-	6	11	-	-	9	13
100%	-	-	5	9	-	-	8	10

Discussion:-Strawberries plant reproduce from runners. Strawberry runners are flat stems that run over the ground and produce new "baby" clone plants toward the finish of the long even stem. These child plants (which are a hereditary duplicate of the mother plant), set roots and develop into the ground encompassing the mother plant. Strawberry sprinters are appropriately named "stolons", however to keep it basic, allude to them by the more regularly perceived term "sprinters". Sprinters are a more dependable and favored strategy for setting up strawberries in Pot. It is important to establish runners at the right profundity. Establishing runners too profound will cause the crown (the piece from where the leaves develop from) to spoil. Strawberries really try to avoid wet feet by any stretch of the imagination. Then again, establishing runners too shallow will allow the roots to remain uncovered. The plant may not set up accurately with uncovered roots. Try not to permit the roots to backtrack, or overlay over when planting. Based on soil test results, Table 1 shows that essential plant nutrients are present in laterite soil. Table 2: A Chemical Analysis of fly ash Bituminous, sub-bituminous, and lignite coal type fly ash are produced. Table 3 shows the development of leaves under laterite soil and fly ash. The height of leaves was found at an 80% concentration of fly ash on the 60th day of showing, which is 20 leaves. In laterite soil at 80% on day 60, 19 leaves were found. Table 4 shows plant height (cm) under laterite soil and fly ash. The plant height was 30.73 cm on the 60th day after being exposed to an 80% concentration of fly ash. On the 60th day, laterite soil with an 80% concentration was discovered at a depth of 26.67 cm. Table 4 displays the number of fruits per plant produced by laterite soil and fly ash after 60 days. On the 60th day, 13 fruits were observed on a concentration of 80% fly ash. With laterite soil at an 80% concentration, 11 fruits are observed in 60 days.

Conclusion:-The study revealed that the fly ash could be beneficial in improving the soil quality and Strawberry growth. Besides being an industrial by-product and being used in cement industry, fly ash can also be used strawberry production. Strawberry (*Fragaria ananassa*) is a significant organic product harvest of India and its business creation is conceivable in calm and sub-tropical area of the West Bengal. Strawberries can use as a staple food for the West Bengal region with special reference to high reach of nutrition.

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Formulation and Evaluation of two Incompatible Anti- Hypertensive Drugs (Telmisartan and Amlodipine Besylate) in a Single Dose

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ABSTRACT:

Purpose of research: -The purpose of the present study is to formulate the bilayered tablet of two incompatible anti-hypertensive drugs (Telmisartan and Amlodipine Besylate) with combination of HPMC K100M and ERS-100 to minimize the dose of the drug for lesser side effect. This invention relates to a solid pharmaceutical composition for preventing or treating cardiovascular disorders comprising amlodipine or a pharmaceutically acceptable salt thereof and telmisartan or a pharmaceutically acceptable salt thereof, which exhibits high dissolution rates of amlodipine and telmisartan even under a low pH condition and improved storage stability.

KEY WORDS: Telmisartan, Amlodipine Besylate, Bilayered Tablet, Polymer, Hypertension

INTRODUCTION: Hypertension is among the most common diseases of adults in industrialized countries and is one of the important modifiable risk factors for cardiovascular and renal disease. The goal of telmisartan potassium & amlodipine besylate (antihypertensive drug) is to prevent complications of hypertension. Specially used for the treatment of patients with stage 1 and 2 essential hypertension in comparison with monotherapy regimens of a calcium channel antagonist or an angiotensin II receptor blocker. Amlodipine, chemically, 2-[(2-aminoethoxy) methyl]-4-(2-chlorophenyl)-1,4-dihydro-6-methyl-3,5-pyridinedicarboxylic acid 3-ethyl, 5-methyl ester, is an antihypertensive and an antianginal agent in the form of the besylate salt, Amlodipine besylate. Telmisartan (4'-[1,4'-dimethyl-2-propyl[2,6'-bi-benzimidazole]-1'-yl]methyl 1,1'-biphenyl-2-carboxylic acid) is a highly selective, orally active, non-peptide angiotensin II receptor antagonist indicated for the treatment of hypertension. When the combined formulation of amlodipine and telmisartan is prepared by simply mixing the two drugs, gelation of telmisartan disadvantageously occurs. Telmisartan readily dissolves in purified water or is very well released at a relatively high pH (e.g., pH 6.8), but it is very slowly released at a low pH (e.g., pH 2.0 or pH 1.2) because of its gelation. In case of Cozaar (trade mark), a commercially available telmisartan preparation, the dissolution rate of telmisartan is below 30% thereof in 30 minutes at a pH range of 1.2 to 2.0. In the combined formulation of amlodipine and telmisartan, amlodipine may be locked in the inside of the formulation due to the gelation of telmisartan. Further, the combined formulation prepared by simply mixing amlodipine and telmisartan has very poor storage stability mainly due to an undesired chemical reaction among amlodipine, telmisartan and excipients. In order to overcome the above-mentioned problems such as telmisartan gelation and stability lowering, the combined formulation of amlodipine and telmisartan must be prepared by physically separating amlodipine from telmisartan. The two drugs in a functional combination preparation herein have different activities. Composition of amlodipine (dihydropyridine-based calcium channel blocker) and telmisartan (angiotensin-2 receptor blocker) can achieve improved preventive or therapeutic effects for cardiovascular disorders, such as angina pectoris, hypertension, artery vasospasm, deep vein, cardiac hypertrophy, cerebral infarct, congestive heart failure and myocardial infarction, as compared with conventional single formulations, while minimizing adverse effects of the two drugs and also lower the risk of circulatory complications.

Method: - bilayered tablet of two incompatible anti -hypertensive drugs (Telmisartan and Amlodipine Besylate) were prepared using two polymers by solvent evaporation technique. Aluminum foil cup method was used as a substrate. Polyethylene glycol (PEG) 400 was used as plasticizer and Dimethyl sulfoxide was used as penetration enhancer.

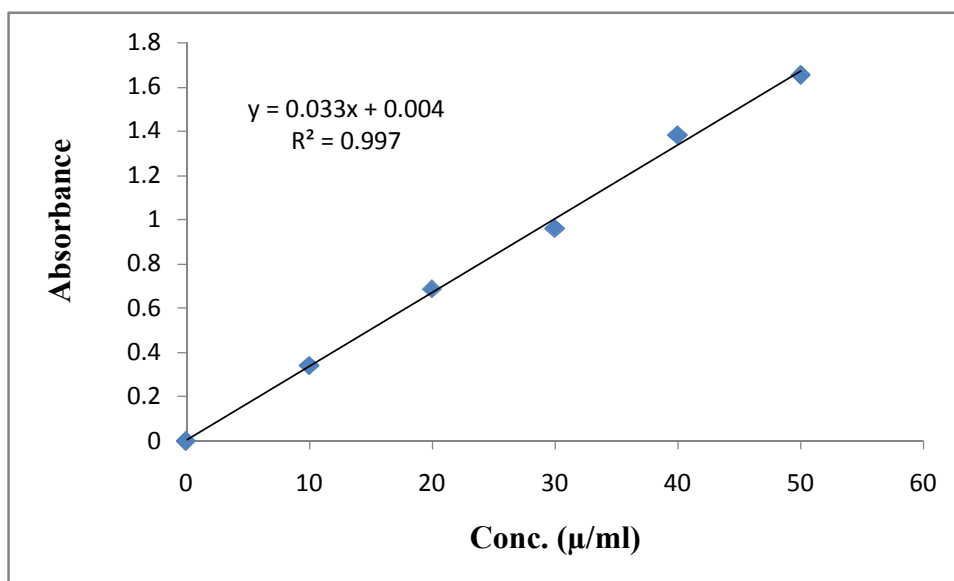


Figure 1 Standard Graph of Telmisartan in pH 2 buffers

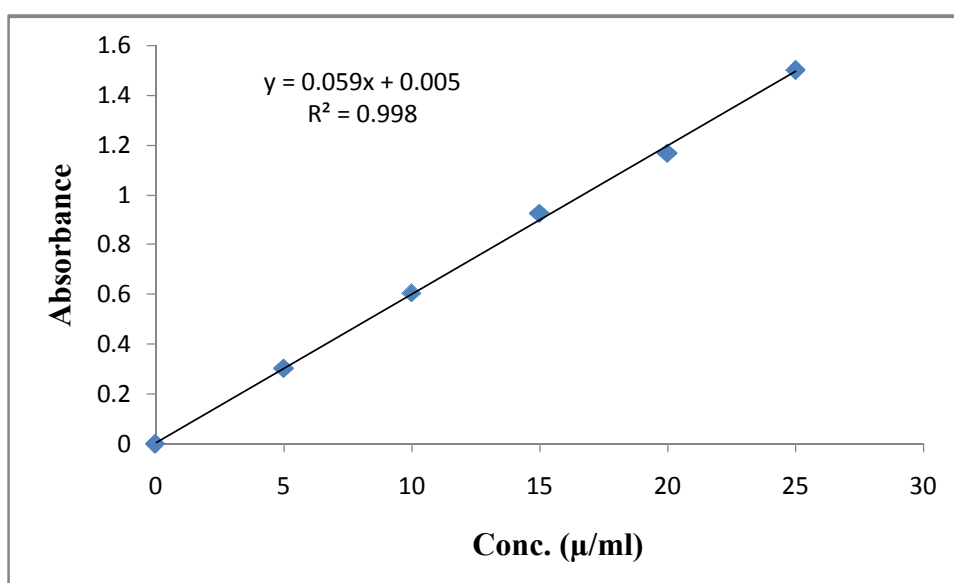


Figure 2 Standard Graph of Amlodipine besylate in pH 2 buffers.

Major Results :- The aim of this project was to design and develop an oral drug delivery system of Telmisartan and Amlodipine besylate. In this regard formulation studies were carried out. The results for the experiment conducted. The physicochemical parameters like weight variation, thickness, folding endurance, drug content, Percentage moisture absorption and Percentage moisture loss were evaluated. All prepared formulations indicated good physical stability and no skin irritation. In-vitro drug release and drug permeation studies of formulations were performed by using Franz diffusion cells. Formulation prepared with hydrophilic polymer containing permeation enhancer showed best in -vitro skin permeation through rat skin (Wistar albino rat) as compared to all other formulations.

In the present Invention development of two incompatible antihypertensive drug Telmisartan and Amlodipine besylate Immediate release tablet were prepared and evaluated for achievement of action of active moiety. In order to overcome the incompatibility problems such as gelation and stability lowering, the combined formulation of amlodipine and Telmisartan must be prepared by physically separating amlodipine from losartan. The tablets were prepared by wet granulation method. These prepared tablets were evaluated for their quality control parameter. The gift sample of Telmisartan and Amlodipine besylate was analyzed by various organoleptic, physicochemical and spectrophotometric methods. The sample of Telmisartan and Amlodipine Besylate possesses similar color, odor, taste and texture as given in officials. The melting point of procured sample was analyzed by capillary fusion method and found 183.5 -184.5⁰ C and 199-201⁰ C respectively. The FT -IR spectrum of drug sample was concordant with reference spectra as given in IP 1996. The absorption maxima of Telmisartan was observed at 254 nm and Amlodipine besylate was observed at 237 nm in 0.01N HCl, which is concordant with the value given in IP 1996. The UV spectra of Losartan potassium and Amlodipine besylate were studied.

The qualitative solubility of Telmisartan potassium was determined in various solvent systems. The maximum solubility was found in methanol, ethanol and distilled water. The solubility of telmisartan and Amlodipine besylate was shown in Table 8, 9. The calibration curve of Telmisartan and Amlodipine besylate was prepared in 0.01N HCl.

Conclusions: - On the basis of in vitro drug release through kinetic release performance, Formulation F1 was found to be better than other formulations and it was selected as the optimized formulation. In the present invention have found that a combined formulation which comprises amlodipine and telmisartan having different pharmacological activities is useful for preventing or treating cardiovascular disorders, and have developed such an amlodipine-telmisartan combined composition having optimized physical and chemical properties. The inventive composition can provide improved preventive or therapeutic effects for cardiovascular disorders such as angina pectoris, hypertension, artery vasospasm, deep vein, cardiac hypertrophy, cerebral infarct, congestive heart failure and myocardial infarction.

- ❖ The preformulation studies like bulk density, compressibility, angle of repose etc were compiled with BP standard.
- ❖ Compatibility study showed that there are physicochemical changes with Amlodipine Besylate and Telmisartan, and there is no physicochemical change with drug and excipient.
- ❖ The FT -IR Spectra revealed that interaction between Amlodipine Besylate and telmisartan and there is no interaction between individual drug and excipient.
- ❖ In vitro drug release of formulation 2(f-2) showed the better release and other parameters in comparison of other formulation and marketed product f-5.
- ❖ Based on mathematical model, it was concluded that the release data was best fitted with first order kinetics. Higuchi equation explains the diffusion release mechanism.
- ❖ By using the separate granulation technique in the case of incompatibility between two drugs this formulation have found successfully to achieve goal. The present inventors have found that the dissolution rates of amlodipine and telmisartan greatly depend on the used amount of telmisartan, especially, at a low pH. Therefore, the present invention also includes within its scope a solid pharmaceutical composition with the specific amount of telmisartan which exhibits optimized dissolution rates of amlodipine and telmisartan.

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CURRENT STATUS OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN EDUCATION SYSTEM OF RURAL INDIA

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ABSTRACT: Every aspect of human life is been influenced by Information communication technologies (ICT). ICT is playing salient role in education, work place, business and also entertainment. There are drastic changes in life style like work from home, teaching online, meetings online hence handling, exchanging and accessing of Information communication technologies has become important. In this era of digital technology teacher, students and classroom use Information communication technologies for effective, integrated teaching and learning programme. But ICT system in developing country like India needs to be improved. We have qualified teachers but we lack in trained teachers to make use of ICT for teaching and learning programme. One third of Indian population are in rural areas and, among them 30% are students and there is lack of internet access in rural areas and this can lead to more literacy gap. This study explores innovative solution that can be used in rural schools including ICT enabled teaching-learning process.

Keywords: ICT-Information and Communication Technology

INTRODUCTION: Information and communication technology (ICT) refers to Information Technologies primarily focusing on telecommunication or communication technologies. This includes communication mediums like cell phones, laptops, tablets, wired or wireless network and internet connection. Since maximum population have one of these mentioned media it can be for ICT based teacher-training and teaching-learning programs. In today's era of learner-centered learning environment where students personally chose to learn using computer and internet connection must meet following conditions

1. Students and teachers must have access to sufficient and upgraded digital technologies and internet.
2. Teacher must have high quality multimedia simulated digital content for students to make the process of teaching easier and learning simpler, effective and attractive.
3. Teachers must be trained to use new digital tools & resources.

Latest Developments in different communication technologies, used by ICT includes E-Learning, E-Modules, Group Chats and Audio-Video conferencing. These services play vital role in education system by allowing greater interaction and higher participation of student-teacher to improvise education system. These services enable self-learning, directed instructions, problem solving, information analysis and seeking, ability to learn, collaborate and communicate with critical thinking.

NECESSITY OF ICT BASED EDUCATION SYSTEM : Information, resources, services, tools and content delivered digitally by managing and enhancing access to them can be defined as Information and communication technology. Day-to-day life activities heavily depends on ICT like banking, tourism, entertainment, sales, purchase and even education. In education system ICT can be more successful if teachers are trained properly to make process real. This can be achieved yet it is challenging. Teachers of 21st century should not only have

knowledge but also the skill to organise and share it properly on different mediums and platforms for productive teaching-learning process. ICT extends educational opportunities to their doorstep for scattered rural population, women & girls, disable peoples, and others for reasons like time constraint and cost to join schools, colleges, training centres and universities by enabling distance education. In countries like India which very diverse economically, socially and culturally, ICT can help more students for learning and enhancing their technical skills for jobs by allowing access to vast treasure of educational services. Teachers also acquire because of ICT initiative for both professional and personal use. Utilization of ICT in teaching makes instructing more creative, intriguing, intuitive, simple and successful. It supplements the conventional instructing learning measure. This process makes students more responsive and receptive with more information in shorter time.

ICT ENABLED EDUCATION IN RURAL AREAS :- Few challenges which are encountered while implementation of ICT based education system in rural areas.

1. The major obstacle while using ICT based education in rural areas is lack of trained teacher in ICT knowledge or skill. This can be due to various reasons like inadequate training opportunities, motivation and awareness, lack of funds can lead to lack of resource access, upgrading and maintenance issues in rural areas, lack of confidence and poor attitude in teachers, technical issues and poor administrative support.
2. Almost all software in world is in language English. And large portion of data on internet is also in English. So, for developing like India where English language understanding capability isn't high, particularly in rural areas becomes serious challenge for utilizing ICT benefits in educational system.

ENHANCING IMPLEMENTATION OF ICT IN RURAL SCHOOLS OF INDIA :- There is lots of difference in adoption of modern technology in schools of urban and rural areas. Due to limited fund rural schools are not able to utilize ICT resources for education. This leads to poor quality education system for rural students. Hence the accreditation boards like CBSE, NBA, NAAC[18], AICTE[19] and others must decide the parameters that can improve the quality of education in rural areas.

1. Boards can decide based on numbers of students in school respective proportion of ICT infrastructure can be allotted. Like one projector, one printer, one scanner, one digital camera, one audio recorder, one computer lab with appropriate software and hardware 20 computers and a portable fire extinguisher, broadband Internet connectivity capable for smooth streaming of audio & video while digital learning programs. Lastly, an internet firewall for security measures against cyber-attack.
2. The school head must make sure regulated and regular supply of electricity for resources used in ICT program. Appropriate ventilation and lighting, adequate large room and durability of resources must also be monitored. School head must also make sure the ICT based resources are used by trained teachers.
3. Annually ICT based education system training program must be conducted by SCERTs, NCERTs[15] and other bodies for implementation and adaption with current technologies specifically to update rural school teachers.

Implementation of ICT based education system is joint work of students, teachers, school, Regional Institutes of education, Education Department of State and Central Government[20] and Ministry of HRD[17].

CONCLUSION:- ICT in education system depends on internet accessibility and classroom based online teaching learning digital format. For internet accessibility, government is speeding up for creating infrastructures like towers and broadbands in rural areas. But

division of terms like urban –rural still creates gap and prioritization in issues like access, resources and equity. Hence closed monitoring of integral tools used must be priority so that improved effective ICT system can be enable in the vast rural India. On –Demand learning is already trend which can be increased with collaboration between teacher and learner in all areas. Effective and cost-effective teacher training program on usage of ICT effectively while teaching must be designed to meet today’s demand. This can help to conduct smooth teaching-learning process for every type of student. This p rogram can help teacher to deliver multimedia simulations while teaching which makes things easier for students to learn and teachers to teach. Pros and Cons of ICT system in education need to be explored yet.

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Physicochemical Analysis and Quality Assessment of Water from Different Sources in Nagaur district of Rajasthan

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Abstract:-To analyse physical chemical characteristics, surface and ground watersamples were collected from ponds and tube wells of various locations of the Nagaur district of Rajasthan. In this study mainly turbidity, temperature, pH, colour, electrical conductivity, alkalinity, DO, TDS, fluoride, nitrate and chlorides were examined. The purpose of this study is to determine the quality of drinking water and for analysis spectrophotometer, polarography and electro -analytical procedures and chromatography techniques were used. The mean values of each parameter of water samples from not only surface water samples but also ground water samples during summer season and winter season in different locations of Nagaur district were analysed and compared. The physicochemical parameters of the drinking water, fall at border line of the standard limits as per the WHO and BIS guideline. The significance of above parameters on groundwater contaminations were validated by analysing of variance approaches. The results may be used to reduce the toxic waste in the ground water by keeping a strong check on the identified polluting source. The result shows the significant level of relation between paired and other contaminating factors. The current study would help out to curb the potential source of water pollution in Rajasthan state of India.

Keywords:-Physicochemical properties, groundwater, surface water, ponds and tube wells, environment pollution

Introduction

Drinking water is an important constituent for all types of living beings and groundwater is one of the most valuable natural resources, which supports human health, economic development and ecological diversity. It is a valuable dynamic replenishable natural resource in present day and limited in extent. Groundwater resource assessment of a region involves a detailed study of the sub-surface water, including geology and hydrogeology, monitoring and production of well data. The water quality guidelines provide a limit value for each parameter for drinking water. It is necessary that the quality of drinking water should be checked at regular time interval, because due to use of contaminated drinking water, human population suffers from various water borne diseases. The availability of good quality water is an indispensable feature for preventing diseases and improving quality of life. It is necessary to know details about different physico-chemical parameters such as turbidity, temperature, pH, colour, electrical conductivity, alkalinity, and BOD, COD, DO, TDS, fluoride, nitrate and chlorides etc. used for testing of water quality. Heavy metals like Pb, Cr, Fe, Hg etc. are of special concern because they produce chronic poisoning in human beings and aquatic animals. Guidelines of different physico-chemical parameters also have been given for comparing the value of real water sample. World Health Organization (WHO), Indian Standard (IS 12500:2012), Environmental Protection Agency (EPA), and Environmental Quality Standards (EQA) etc. are important standard for water analysis. Drinking water quality can be analyzed by various standards and analytical methods. The study on physico-chemical analysis of water has a great significance during this age where pollution is on its high range. Water quality evaluation for wetland leads to information about their misuse by indicating the pollution states.

Review of Literature - Various researchers have carried out extensive studies on Water Quality. (Sim and Tai, 2018) performed a study and demonstrated that tropical rivers in this region are challenged with deteriorated water quality associated with domestic sewage; hence, the microbiological parameter is a crucial discriminant for the calculation of water quality index (WQI). (Kumar et al., 2017) focused on river drinking water status and quality at Lucknow city area, Uttar Pradesh, India. The complex array of potential point and nonpoint source were divided into three major source areas representing liquid manure, dry manure and domestic waste in feed stuff storage areas to river. Assessing the physico-chemical characteristics trend and quantifies the impact from sources. The values of pH, TSS, TDS and turbidity were higher in the post monsoon compared to pre-monsoon and other find out values for hardness, alkalinity were higher in pre monsoon. (Jain et al., (2015) evaluated geochemistry of ground water in DCM Industrial Area Kota, Rajasthan (India). They suggested that the suitability of groundwater for irrigation evaluated on the basis of irrigation quality parameters like Sodium Absorption Ratio (SAR) point out that majority of the samples were in safer limits and can be presumed to be excellent for irrigation purposes. TDS value indicates that the water samples are fresh to slightly saline in nature. (Arif et al., 2014) studied the fluoride toxicity and its distribution in groundwater of Makrana tehsil of south east part of Nagaur district, Rajasthan, India. According the study, 46 samples out of 56 samples were unfit for drinking water because of high concentration of fluoride. (Chauhan and Sagar 2013) have made assessment for physico-chemical parameter and quality of Sutlej River in Nangal area of Punjab (India) from July 2010 to June 2011. Various physico-chemical parameters such as temperature, colour, turbidity, free ammonia, total dissolved solid, pH, dissolved oxygen, free CO₂, total hardness, total alkalinity, chlorides, BOD, nitrates, phosphates, sulphates were studied. The results revealed that there was significant seasonal variation in some physico-chemical parameters and river water was moderately polluted in Nangal area. On the basis of primarily study, it was apparent that water was not potable but can be used for propagation of wildlife, fisheries and irrigation. (Joshi and Seth, 2011) assessed hydro chemical profile for the groundwater quality of Sambhar Lake city and its adjoining area. The standard methods of APHA were used to analysis 15 samples collected from handpumps and tube wells of the specified area. The analytical results showed higher concentration of total dissolved solids, electrical conductivity, sodium, nitrate, sulphate, and fluoride etc. which indicate signs of deterioration but values of pH, calcium, magnesium, total hardness, and carbonate are within permissible limits as per WHO standards. (Mande et al., 2011) studied the evolution processes of groundwater quality in an urban area of Beijing. This study revealed that nitrate concentration was high in groundwater samples. According to them the distribution of soluble ions in the groundwater was stratified in the research area because of clay layers. The clay layers were found to control the concentration of cations and silica, as well as that of chloride ions in the groundwater. (Harish et al., 2006) studied the physico-chemical characteristics of the groundwater at Tarikere Taluk, Karnataka, India. They compared the values with BIS and WHO and inferred that the areas near the industrial estate showed higher, TDS, total hardness and nitrates. (Sharma et al., 2005) studied the quality status of potable water of Sanganer tehsil, district Jaipur, Rajasthan. According to them the water samples were slightly alkaline in nature and contained high amount of fluoride. Analysis indicated that the drinking water, used by the people residing in villages of Sanganer tehsil, was not potable. (Rakesh Kumar and C.P. Singh Chandel, 2008) conducted a study to evaluate the water quality of Jaipur City. The groundwater samples from hand pumps and tube wells of eleven sampling stations were analyzed

LATERITE SOIL

15th 30th
45th 60th

during monsoon session with the help of standard methods of APHA. Their Interpretation of hydrochemical analysis reveals that the groundwater of study area is hard to very hard, fresh to slightly saline and slightly alkaline in nature. (Maheshwari et al., 2007) summarized that long term exposure of fluoride containing water leads to development of fluorosis, which generates crippling and painful disease. Fluoride not only affects the teeth and skeletal systems but also the function and structure of skeletal brain, muscle and spinal cord.

Material and Methods :- Ground water information of Nagaur district Nagaur district is located almost in the middle of the state of Rajasthan and extends between North latitudes $26^{\circ}25'$ and $27^{\circ}40''$ and East longitudes $73^{\circ}10''$ and $75^{\circ}15''$. It covers an area of 17778 sq. km. out of which 17448.5 sq. km is rural area and 269.5 sq. km is urban. Nagaur Region is also known as marwar region of Rajasthan and popular as mining district because there are different mines is present as marble, granite, limestones and tungsten etc. There are 13 tehsil headquarters in the district viz. Nagaur, Khinwsar, Jayal, Degana, Didwana, Ladhun, Parbatsar, Makarana, Nawa, Kuchaman, Riyanbadi and Mundwa. Central Ground Water Board periodically monitors ground water levels four times in a year during the months of January to May (Pre-monsoon), August to November (Post -monsoon). In Nagaur district water levels are monitored through a network of 89 observation wells (National Hydrograph Network Stations). Depth to Water Level Depth to water level in the district varied from 5.00 to 68.46m bgl and 4.97 to 68.06m bgl during Pre -monsoon (May, 2019) and Post -monsoon (November, 2019) periods respectively.

Study Area:-Ground water and Surface water quality of Nagaur district was studied. Ground water samples were collected from 12 different locations and Surface water Samples were collected from four different locations of Nagaur district of Rajasthan. The surface water samples were collected from different ponds i.e. Pratap sagar, Jada talab, Lakholav pond and Basanita lab and groundwater samples were collected from different tube wells of different villages as Gonardi, Idwa, Bhadwasi, Barani, Bhadana, Gagwana, Alay, Chuntisara, Kharnal, Phirod, Surpaliya, and Rohini of the Nagaur district of Rajasthan. The samples were tested for Temperature, pH, Turbidity, Electric - conductivity, Calcium hardness, Magnesium hardness, DO, TDS, F^{-} , NO^{-} Sulphate, Chloride etc. The methods for testing this parameter were prescribed by APHA i.e. American Public Health Association (Baird & Bridgewater 2017) standard method for examination of water and waste sample 23th edition Washington D.C., USA. The sample parameters were determined by the use of titrating spectrophotometric and chromatographic methods. The research work aims to investigate the impact of various chemicals used in agriculture on water quality of surface and underground water of Nagaur district. Samples were collected in good quality polyethylene bottles of one litre capacity. Sampling was carried out without adding any preservatives in rinsed bottles directly for avoiding any contamination and brought to the laboratory. Monitoring was done during pre - monsoon and post-monsoon sessions. Only high pure (AR Grade) chemicals and double distilled water was used for preparing solutions for analysis.

Result and Discussion :-The parameters of surface water and ground water taken from different stations were compared and tabulated in Tables 1 -2. A comparison of the various physical-chemical characteristics of the studied water sample has been made with the WHO (1984) and BIS (1998) standards. The temperature was found to be range between 24 to $27^{\circ}C$ for the surface water and for the ground water found as the range between 23 to $27^{\circ}C$. The mean temperature of the water samples drawn from surface water and ground water are 25.65 and 25.52 respectively. The pH values of surface water samples varied between 6.8 to 7.8 and the pH values of ground water samples 7.2

to 9.1. The mean pH of surface water samples found to be 7.8 and the mean pH of ground water samples were found to be 7.8. This shows that water samples from both surface and ground water is slightly basic. Turbidity values of surface water samples 6.8 to 7.8. The mean turbidity of surface water samples found to be 6.98 and the mean turbidity of ground water samples were found to be 7.05. The observed turbidity values are within the permissible limits. The alkalinity values of surface water samples varied between 144 to 165. The observed alkalinity values are within the maximum permissible limits. The hardness due to calcium of surface water samples varied between 56 to 78 and the hardness due to calcium values of ground water samples 47 to 71. The observed values are within the permissible limits. The hardness due to magnesium of surface water samples varied between 1.2 to 1.9 the hardness due to magnesium values of ground water samples 1.4 to 2.4. The mean hardness due to magnesium of surface water samples found to be 1.6 and the mean hardness due to magnesium ground water samples were found to be 2.05. The observed values are within the permissible limits. The fluoride content of surface water samples varied between 0.6 to 1.2 and the fluoride content of groundwater samples 0.5 to 1.5. The mean fluoride content of surface water samples found to be 0.72 and the mean fluoride content of ground water samples were found to be 1.11. The observed values are within the permissible limits. The chloride content of surface water samples varied between 215 to 260 and the chloride content of ground water samples 212 to 270. The mean chloride content of surface water samples found to be 234.33 and the mean chloride content of groundwater samples were found to be 243.20. The observed values are within the permissible limits. The TDS content of surface water samples varied between 525 to 695 and the TDS content of ground water samples 528 to 810. The mean TDS content of surface water samples found to be 660.5 and the mean TDS content of ground water samples were found to be 727.16. The observed values are within the higher the permissible limits. The DO content of surface water samples varied between 5 to 6 and the DO content of ground water samples 5 to 9. The mean DO content of surface water samples found to be 5.5 and the mean DO content of ground water samples were found to be 7.95. The observed values are slightly above the permissible limits.

Table 1: Physicochemical parameters of surface water samples (pre /post monsoon season)

S. No.	Parameters	Pratap Sagar	Jada talab	Lakholav Talab	Basani Talab
1	Fluoride (ppm)	0.8/1.0	1.3/1.5	0.7/0.7	0.6/0.7
2	Turbidity (NTU)	7.6/7.8	10.3/9.8	6.8/6.9	7.2/7.5
3	Alkalinity (mg/L)	144/149	225/252	164/165	152/152
4	Hardness Mg(mg/L)	1.5/1.9	81/83	1.3/1.8	1.2/1.4
5	Hardness Ca(mg/L)	56/60	95/97	72/78	54/60
6	Temperature	26/27	26/26	24/26	27/26
7	pH	7.7/7.8	8.2/8.4	7.8/7.9	7.2/7.4
8	Chloride (ppm)	260/265	435/440	215/225	222/226
9	Total Dissolved solids (ppm)	690/695	1255/1305	525/550	552/568
10	Dissolved Oxygen (ppm)	6/6	4/4	5/6	5/6
11	Electrical Conductivity (μ S/cm)	650/660	635/648	645/652	628/641
12	Sulphate (mg/L)	5.1/5.5	4.6/4.8	5.8/5.9	5.2/5.4
13	Nitrate (mg/L)	0.5/0.6	48/53	0.4/0.5	1.4/1.6

The EC values of surface water samples varied between 628 to 660 and the EC values of groundwater samples 561 to 833. The mean EC of surface water samples found to be 641.66 and the mean EC of groundwater samples were found to be 770.125. The observed values are within the permissible limits. The nitrate values of surface water samples varied between 0.4 to 1.6 and then it rate values of ground water samples 2.4 to 4.1. The mean nitrate values of surface water samples found to be 1.27 and the mean nitrate value of ground water samples were found to be 2.44. The observed values are above the permissible limits. The sulphate values of surface water samples varied between 4.6 to 5.9 and the sulphate values of groundwater samples 3.3 to 5.1. The mean sulphate values of surface water samples found to be 4.86 and the mean sulphate value of groundwater samples were found to be 3.71. The observed values are slightly higher than permissible limits. Waste water contamination and less of public awareness causes the worst surface water quality of Jada talab other than the three surface areas.

Table 2: Physicochemical parameters of Ground water samples (pre /post monsoon season)

Parameter	G-1	G-2	G-3	G-4	G-5	G-6	G-7	G-8	G-9	G-10	G-11	G-12
pH	7.9	7.8	9.1	7.6	7.5	7.4	7.8	8.0	7.4	7.7	7.6	7.4
	7.7	7.6	9.0	7.4	7.4	7.3	7.5	7.8	7.3	7.7	7.6	7.2
Temperature	24	23	23	25	24	24	25	23	24	25	24	24
	24	23	23	24	24	23	24	23	24	24	24	23
Alkalinity (Mg/L)	161	154	161	162	168	153	158	172	158	182	162	165
	164	155	158	158	149	150	158	168	158	175	155	165
Hardness Ca(mg/L)	55	49	58	58	68	66	71	58	65	48	57	72
	52	50	62	57	65	65	70	57	65	47	56	72
Hardness Mg(mg/L)	2.2	1.6	1.8	1.5	1.7	2.1	2.4	1.8	1.8	1.7	1.5	1.8
	2.0	1.5	1.8	1.6	1.7	2.0	2.3	1.7	1.8	1.6	1.4	1.6
Turbidity (NTU)	8	6	5	7	8	8	5	7	6	8	6	8
	7	6	6	6	6	7	6	7	5	7	6	7
Fluoride (ppm)	1.4	0.5	0.9	1.5	1.3	1.1	1.5	0.9	0.8	0.8	0.5	0.6
	1.3	0.6	0.8	1.5	1.3	1.2	1.5	0.8	0.8	0.7	0.6	0.7
TDS (ppm)	640	655	610	755	790	755	686	618	528	547	790	765
	652	658	614	756	810	765	696	626	535	539	786	775
Dissolved Oxygen	6	7	5	8	9	7	6	8	7	5	9	5
	6	7	5	8	9	7	6	8	7	5	9	5
Chloride (ppm)	265	232	255	248	228	256	223	212	226	245	249	242
	270	241	249	251	238	259	233	222	229	249	252	254
Nitrate (mg/L)	3.6	4.0	3.2	2.6	2.3	3.8	2.4	2.7	2.4	2.5	4.3	2.5
	3.7	4.1	3.5	2.7	2.4	3.6	2.5	2.6	2.4	2.6	4.1	2.6
Sulphate (mg/L)	4.5	4.4	4.9	4.5	5.1	4.8	4.5	4.6	3.8	3.8	3.3	4.7
	4.3	4.5	4.8	4.4	5.1	4.7	4.8	4.7	3.7	3.9	3.5	4.9
Electrical Conductivity (μ /cm)	680	790	550	596	758	755	583	664	694	832	728	715
	685	793	561	598	788	762	575	684	693	833	732	727

Recommendation:- There is a recommendation of traditional methods of harnessing surface water that will provide some alternatives to meet the problem of water demand. A systematic Community awareness programme is needed to make and Filters groundwater recharge structure in the rainy season should be created and managed.

Conclusion:- This detail study is mainly aimed on the surface and ground water quality of Nagaur district of Rajasthan. Most of the parameters such as total dissolved solids and fluoride were found at borderline. In this we found comparatively less contamination in pre monsoon season. The extent of pollution may be because of anthropogenic activities, urbanization and over-exploitation of ground water. Few The surface water quality of Jada talab is being affected from waste water contamination and ignorance of society. Poor environmental management systems have led to discharge polluted water and causes increase in pollution of the surface and groundwater sources. There is a need of detail study to evaluate the contamination causes by organic pollutants, pesticides and PAHs.

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Feature Selection Technique for Massive Gene Expression Data Using Unsupervised Deep Learning-Based Clustering

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ABSTRACT

Cancer is the deadly disease that affects millions of people all over the world, which stimulates unrestricted segmentation of the cell in the affected tissue. The prior determination of the cancerous cells renders on-time health-care service to the affected persons, which promotes easier life-saving. Hence, there is a need for automatic cancer classification methods. Though there are so many conventional classification methods to determine the cancer cells, these methods fail due to their training issues. In this research, a classification model is developed named as, Coyote-Wolf optimization-based Deep Neural network (CoWo-DNN) for the classification of the cancerous cell from the normal tissues. The proposed CoWo-DNN for the classification of cancer cell utilizes gene expression data, which is log-transformed for effective processing. The comparative evaluation of the proposed CoWo-DNN with the conventional methods demonstrates the supremacy of the proposed CoWo-DNN method in terms of the performance parameters, such as Precision rate, accuracy, Recall, F-measure and TRP.

INTRODUCTION

Gene expression profiling based on microarray has appeared as one of the powerful means of cancer treatment and diagnosis. However, cancer classification using gene expressions is extremely challenging due to the computational complexity and high dimensionality of the gene data. At present, there are classification methods that utilize the collected samples from the tissue and apply the feature selection criterion in order to avoid the computational complexity. Hence, in this research, the cancer classification is done using the gene expression data, from which the data will be subjected to pre-processing, which eases further processing of the data associated with cancer classification. The significant information will be generated from the pre-processed data, which minimizes the burden associated with classification thereby, boosting the classification accuracy. The need for a feature selection method is insisted in this step, to minimize the computational complexity and enhance the detection/classification accuracy. The selected features from the gene expression data is utilized for the cancer classification using the proposed deep neural network. Here, the proposed classifier addresses yet another challenge associated with cancer classification methods, which is mainly due to the improper training of the classifier. Therefore, a new algorithm developed for training deep neural network will enhance the classification performance. The methods will be implemented in PYTHON and will be analysed with respect to the existing classification models in order to justify the best performance of the developed classifier in terms of the performance metrics. In cancer disease, cells in some tissues undergo uncontrolled division in the body. Because of this condition, malignant growth occurs in the body and cancer affected cells destroy neighbour's healthy tissues and organs. Nowadays, Gene expression profiling based on microarray has appeared as one of the powerful means of cancer treatment and diagnosis. Analysis of microarrays will result in a large classification of small genes (variables) in patients suffering from the same disease as gene expression data. The World Health Organization reports that cancer is a leading cause of death worldwide accounting for an estimated 9.6 million deaths in 2018. Despite this

dramatic impact, between 30-50% of cancer death cases can be prevented through early detection and treatment. Advancements in cancer classification and prediction play an important role in early detection since a major challenge in cancer treatment is that patients are diagnosed at very late stages where appropriate interventions become less effective and full curative treatment is no longer achievable. When a cancer is diagnosed at an early stage, treatment is very effective. Previously, classification of a cancer relies on the morphological and clinical techniques. The innovations in the technology have made significant improvement in accurate observation of thousands of cancer genes through gene expression data. This approach provided a large amount of data to researchers by whom they can explore a lot of knowledge but it has some issues. The major issues of microarray data are high dimensionality, low sample size, and most of the microarray cancer data is noisy and may not be very informative in the cancer classification. In general, the classification of cancer using microarray data involves data acquisition pre-processing, gene selection and classification. Classification performance obtained through these processes is evaluated, and gene selection is an important aspect in the course of microarray data analysis. The aim of gene selection is to reduce the dimensionality of microarray data in order to enhance the accuracy of classification task. The feature selection methods broadly divided into four categories including filter, wrapper, embedded, and hybrid approaches. Independent of the classifier, filter methods have been widely used because it holds the advantage of high speed and is capable of dealing with large data sets, but they are easily trapped into local optimum. Though the wrapper approach contains a given learning model, it suffers from high computational cost especially for high-dimensional microarray data sets. The main advantage of embedded approach is the interaction with learning model, but training a given classifier with the full gene set is time-consuming especially. The major disadvantage of hybrid approach is that the filter and wrapper approaches are not truly integrated with each other, which leads to lower classification performance. Moreover, the evolutionary algorithms such as genetic algorithm (GA), ant colony optimization (ACO), salp swarm optimization algorithm (SSA), bacterial foraging optimization (BFO), dolphin swarm algorithm (DSA), and particle swarm optimization (PSO) have been successfully utilized for solving various FS problems. These techniques are capable of finding the association between the genes and, hence, lead to better CA. However, the computational overhead of these techniques is very high. Hence, to balance the relationship between the CA and the computational overhead, there is a need for a new selection method.

STATISTICAL TECHNIQUE

This section elucidates the proposed model for the CoWo-DNN for cancer classification using gene expression profiles. In this research, the breast cancer and colon cancer profiles are considered for the cancer classification, which is subjected to the pre-processing of the acquired data from the gene expression files. In the pre-processing the gene expression data is normalized using the log transformation from which the informative genes are selected in order to reduce the dimensional complexity. The effective dimensional reduction is obtained through the Principal Component Analysis, which eliminates the massive data while conserving the most significant data. On the other hand, the feature reduction is obtained through the CoWo, which establishes the informative genes and the proposed optimizations holds the hybrid characteristics of coyote and wolf. The Final phase employed in the proposed model is the Cancer classification using CoWo-DNN classifier in which the susceptibility to the deadly disease cancer is detected based on the selected genes. The block diagram of the proposed model for cancer classification is illustrated in the figure 1.

Gene Expression Profiling: Gene expression profiling is generally utilized to compare the gene variations in the cancer cell with respect to the normal non-cancerous tissues among the numerous quantities of genes. This gene expression enables to recognise the under

expressed and the over expressed genes in the cancer cells. Even though the gene expression profiling is utilized as the analytic tool in current scenario, numerous possible clinical utilizations of the strategy are being created. The prognostic data that are provided by the gene expression is utilized to expose the aggressiveness of the malignant cells, which helps to provide better medication to the cancer. Furthermore, it provides information about the available therapeutic methods, resistivity and sensitivity of the cancer cells with respect to the various chemotherapies. The Breast cancer data and the colon cancer data are considered as the gene expression profiles in this research, which are discussed as follows: Gene expression profiling uses microarrays to simultaneously compare gene transcription in cancer cells versus normal tissues in thousands of genes. This allows for the identification of genes that are over expressed or under expressed in cancers. Although gene expression profiling currently is used primarily as a research tool, many potential clinical applications of the method are being developed. The expression profile may provide prognostic information addressing the aggressiveness of a tumour, including biomarkers tracing disease prognosis and its response to therapies. It may also give information about potential therapeutic targets, as well as sensitivity and resistance to different chemotherapies. The Breast cancer data and the colon cancer data are considered as the gene expression profiles in this research, which are discussed as follows:

Breast cancer in gene expression profiling: Assessments of atomic subtype characterization and prognostic quality marks were determined for 16,130 patients from 70 breast disease datasets. The aggregated patient clinical attributes and the demographics were exposed to various evaluations for the prior determination of the breast cancer. Significant variations are accomplished in the dataset size, understanding/tumor attributes, and sub-atomic piece.

Colon cancer in gene expression profiling: The oligo nucleotide microarrays are utilized for determine the articulation of about the 6,800 standard genes and 35,000 expressed sequenced tags on five pools of entire RNA from sporadic colorectal carcinomas. The colorectal carcinomas to the normal tissues are compared to determine the colorectal or colon cancer the artificial neurons, which convey the underlying information to the framework for additional processing through ensuing layers of artificial neurons. The hidden layer is the subsequent layer to the input layer in the DNN framework. The non-linear transformation implemented in the outcome of the input layer through the hidden layer. The number of layer in the hidden layer depends on their neural organization and their resemblance. The output layer is the last layer employed in the DNN and this layer is directly associated to the target value, in which the framework attempts to generate the corresponding output. The architecture of DNN is demonstrated in the Figure 2. Normally, the essential layers of neural organizations are utilized for the feature extraction, every neuron in the input layer and the adjacent layer of responsive field is connected together, and concentrates on the nearby qualities, as indicated by neighbourhood attributes to decide the area of the connection among it and other element space. To explore the structure of DNN, the propagation function and the energy is considered. It is mathematically expressed as,

$$\alpha(g) = \sum_{i=1}^M \theta_i^J \kappa(\theta_i^{h^T} Q) + \theta_j^J \quad (1)$$

CoWo optimization for training the DNN

The DNN declares the output as cancerous and non-cancerous and the accuracy of classification is based on the effective training of the tuneable parameters for which the CoWo algorithm is used. The detailed explanation of the CoWo algorithm is given in section 3.

CONCLUSION

This research enumerates the cancer classification based on the proposed classifier named as CoWo-DNN, which ensures the effective classification of the cancerous and non-cancerous patients. The data from the gene expression is gathered and these data are pre-processed utilizing the log transformation. The selection of the genes is carried out using PCA and proposed CoWo algorithm. Then, the classification using the proposed CoWo-DNN is done such that the training process is restrained through the CoWo algorithm. The comparative analysis is accomplished in the research to prove the effectiveness of the proposed CoWo-DNN based on the accuracy, precision, Recall, and F-measure.

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A study to assess the knowledge & practices about self care of antenatal mothers with diabetes mellitus in selected hospitals of Mumbai

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Abstract:-The day man emerged on this earth, diseases followed him. But man being a rational animal has found ways to fight with diseases. The rapid rise of non communicable diseases represents one of the major health challenges to global development in the twenty first century. Diabetes is the single common disease which affects nearly every organ in the body. It has been projected that by the year 2025, 300 million individuals would be affected with diabetes mellitus globally. Pregnancy is a crucial phase of life for a woman. It is an exciting, fulfilling and an enriching experience of one's own bodily functions. It can also be a period of uncertainty & changes so by providing correct and timely information, reassurance and care we can nurse these mothers for healthy outcome of pregnancy. Gestational diabetes mellitus occurs only in pregnancy due to the increased demand of Insulin and also increased resistance to insulin. It usually disappears after delivery. Acute complications of GDM are hypoglycemia, ketoacidosis and chronic complications are increased susceptibility to fungal infections and bacterial infections. In order to prevent all these complications in antenatal mother and newborn, this study was undertaken in selected government hospitals of Mumbai city.

FINDINGS OF THE STUDY:-With regard to the age of the samples, majority of samples 43.3 % belonged to the age group 20-25 years. In obstetric data it was found that 83.3% samples were in third trimester of pregnancy. History of abortion was found in 23.3% samples and 10% had history of still birth. Medical data reveals that 26.7% samples had history of diabetes mellitus before pregnancy & 73.3 % samples had suffered from D.M. after pregnancy. Out of the 30 samples only 2 samples i.e. 6.7% of the samples achieved poor grade and 16 samples i.e. 53.3 % achieved average grade whereas 12 of the samples i.e. 40% achieved good grade. This shows that samples had knowledge deficit in most of areas which are vital in self care management of antenatal mothers with diabetes mellitus.

- **AREA A - SELF EXAMINATION OF URINE SUGAR BY BENEDICT'S SOLUTION.**

The data reveals that regarding self examination of urine sugar by Benedict's solution in 1st observation 17% samples showed correct practices whereas in 2nd observation 15% samples showed correct practices & in 3rd observation 14.6% samples showed correct practices.

- **AREA B- SELF EXAMINATION OF URINE SUGAR BY UROSTICKS**

The data reveals that regarding self examination of urine sugar by Urosticks in 1st observation 27.1% samples showed correct practices whereas in 2nd observation 28% samples showed correct practices & in 3rd observation 30.4% samples showed correct practices.

- **AREA C- SELF ADMINISTRATION OF INSULIN INJECTION.** This data reveals that regarding self administration of insulin injection in 1st observation 31.2% samples showed correct practices whereas in 2nd observation 33.7% samples showed correct practices & in 3rd observation 32.4% samples showed correct practices.

CONCLUSION:-In the study, it was observed that in antenatal mothers with diabetes mellitus, being a chronic disorder, a knowledge regarding self care is of average category but practices of self care are of poor category. Also it is observed that there is significant difference between knowledge scores and practice Scores, knowledge scores are higher than

practice scores. It is also observed that antenatal mothers with DM who are educated have more knowledge than uneducated antenatal mothers with DM.

OBJECTIVES OF THE STUDY:-

- 1) To assess the knowledge of antenatal mothers with diabetes mellitus about DM in pregnancy.
- 2) To find out the practices of self care management of DM in pregnancy among antenatal mothers with diabetes mellitus.
- 3) To determine the relationship between selected demographic variables & knowledge of antenatal mothers with DM.
- 4) To co-relate knowledge and practices of antenatal mothers about self care of antenatal mothers with DM.

ASSUMPTIONS:-

- 1) Antenatal mothers may have some knowledge about diabetes mellitus.
- 2) Level of knowledge differs from patient to patient.

HYPOTHESIS:-Antenatal mothers with DM who are educated will have more knowledge than uneducated antenatal mothers with DM.

DELIMITATION:-This study was limited only to antenatal mothers with DM admitted in maternity ward in selected hospitals of Mumbai.

RESEARCH METHODOLOGY:-

Research approach: Descriptive & explorative type.

SETTING OF THE STUDY: -A study was conducted in Sir J.J. Group of hospitals, Cama & Alpbless hospital & St. George hospital in Mumbai.

SAMPLING TECHNIQUE:-A non-probability purposive sampling technique was utilized for the study. The sample size in this study consisted of 30 antenatal mothers having diabetes mellitus in pregnancy.

SAMPLING TECHNIQUES AND TOOLS:-

The technique used for the study was interviewing.

The tools used were:

- A semi structured Interview schedule.
- An observational checklist.

VALIDITY OF THE TOOL: -Validity of the tool was done by experts comprising 2 Obstetricians, 9 nursing lecturers, 1 Statistician & 1 Sociologist who scrutinized it individually. Suggestions given by the experts were incorporated into the tool and appropriate changes were made.

RELIABILITY:- In this study, reliability of semi structured interview schedule was tested on 20 samples selected according to the predetermined criteria. The reliability coefficient of correlation using Karl Pearson's formula was found to be 0.95 and thus reliability of the tool was confirmed. Reliability of observation checklist was calculated by Scott π method and it was found to be 0.99.

PILOT STUDY:-A pilot study was conducted on five patients admitted in selected hospitals in the obstetrics wards from 5th April to 10th April 2010. The samples suited to the selection criteria were selected for the pilot study. The pilot study helped the investigator to improve the tool and it provided better insight and clarity regarding the different aspects of study. The study was found to be feasible, practical and convenient.

DATA GATHERING PROCESS:-The period of data collection was from 11th April to 2nd May 2010. Prior to the commencement of the study, permission for conducting the study was obtained from the concerned authorities.

The data collection was done in 2 stages:

Stage I: Collection of data about self care on antenatal mothers with diabetes mellitus by using semi structured interview schedule.

Stage II: observation of self care practices of antenatal mothers with DM by using observational checklist.

FINDINGS OF THE STUDY:

➤ **SECTION – I:**

• **DEMOGRAPHIC DATA –**

Age:-With regard to the age of the samples, majority of samples 43.3 % belonged to the age group 20-25 years. 20% samples belonged to the age group of 26 –30 years. 10% samples belonged to below 20 years age where as 16.7% samples belonged to the age group 31 –35 years and 10% belongs to 36-40 years of age.

Education:-With regard to the educational status of the samples, 10% are illiterate, 10 % had completed their primary education, 56.7% samples had completed their education up to secondary level, 10% samples are educated up to higher secondary, 6.7 % of the samples completed their graduation and 6.7 % of them were educated up to post graduation.

Occupation:-70% of the samples under study were unemployed whereas 30% were employed. A health survey done by WHO 2004 showed that non working people contributed to diabetes more, which was also found in the present study.

Religion:-Majority 60% of samples in this study belonged to Hindu religion. 26.7% of samples were Muslim and 10% belonged to Christian religion. 3.3% belongs to any other religion. The higher percent of Hindu samples can be attributed to the fact that people from Hindu dominated area around the hospitals were undertaken for the study.

Monthly Income:-46.7% of the samples having monthly family income below 5000 Rs. per month, whereas 36.7% samples were having monthly income Rs. 5001 to 10,000. Above Rs. 10001 income was found in 16.7% samples.

OBSTETRIC DATA: -In obstetric data it was found that 83.3% samples were in third trimester of pregnancy whereas 16.7% samples were in second trimester of pregnancy. 40% samples were primigravida and 60% samples were multigravida in which 23.3% samples were having second gravida and 36.7% were having gravida more than 2. History of abortion was found in 23.3% samples and 10% had history of still birth. None of the sample had history of unexplained neonatal death and 3.3% samples had history of difficult vaginal delivery. 3.3% samples had history of given birth to a child with congenital malformations whereas 3.3% had history of given birth to large infant (more than 3.5 kg birth weight). 16.7% samples had history of gestational diabetes mellitus and 6.7% samples were having history of polyhydramnios. These findings were supported by literature review done by Dr.D. C. Datta.

MEDICAL DATA -This data reveals that 26.7% samples had history of diabetes mellitus before pregnancy & 73.3 % samples had suffered from D.M. after pregnancy. Majority i.e. 56.7 % samples had a family history of diabetes mellitus and many of them had maternal history of D.M. (26.7 %). 13.3 % of samples had a history of obesity and 10% samples had history of hypertension. 16.7 % samples had history of previous Type I Diabetes Mellitus. 20 % samples had a history of planned pregnancy and 23.3 % samples had taken treatment for diabetes mellitus before conception. 26.7 % samples had done modification in treatment for diabetes mellitus before pregnancy as per advised by physician (10 %), obstetrician (3.3 %) and endocrinologist (13.3 %). 26.7 % samples were checking blood sugar level regularly before conception. This data reveals that diabetes is more common for those who had family history of diabetes, history of hypertension and history of gestational diabetes. These findings are also supported in the study done by Dr. Ramchandra Naik. (2006)

➤ **SECTION –II**

❖ **KNOWLEDGE SCORES OF THE SAMPLES –**

• **OVERALL KNOWLEDGE GRADES ABOUT D.M.:**

Out of the 30 samples only 2 samples i.e. 6.7% of the samples achieved poor grade and 16 samples i.e. 53.3 % achieved average grade whereas 12 of the samples i.e. 40% achieved good grade. This shows that majority of antenatal mothers have knowledge about self care management of diabetes mellitus in average grade.

- **OVERALL KNOWLEDGE AND KNOWLEDGE DEFICIT:**

The data also shows that the areas in which samples had knowledge more than 55 % are as follows:

- Concept of DM
- Effects of pregnancy on DM
- Diet regime
- Exercises during pregnancy
- Regular checkup and maintenance of record

Out of the selected areas majority of samples had knowledge deficit below 55 %, they are as follows:

- Effects of diabetes mellitus on pregnancy
- Self monitoring of blood & urine sugar levels
- Self administration of Insulin injection
- Skin care
- Self monitoring and reporting of complications

This shows that samples had knowledge deficit in most of areas which are vital in self care management of antenatal mothers with diabetes mellitus.

- **KNOWLEDGE GRADES IN DIFFERENT AREAS:**

The data shows that the samples had average knowledge in management of Diabetes mellitus, exercise and self monitoring and reporting of complications. The samples had average knowledge in the areas like self administration of injection insulin, diet regime and skin care and about regular checkup and maintenance of record etc. It was also found that samples had also average knowledge in areas like self monitoring of blood and urine sugar and effects of diabetes on pregnancy. The samples had good knowledge about concept of Diabetes mellitus and effect of pregnancy on Diabetes mellitus.

- **SECTION-III**

SAMPLES SCORES REGARDING SELF CARE PRACTICES IN ANTENATAL MOTHERS WITH DIABETES MELLITUS:

- **AREA A - SELF EXAMINATION OF URINE SUGAR BY BENEDICT'S SOLUTION.**

The data reveals that regarding self examination of urine sugar by Benedict's solution in 1st observation 17% samples showed correct practices whereas in 2nd observation 15% samples showed correct practices & in 3rd observation 14.6% samples showed correct practices. This shows that very few samples knew about correct procedure of self examination of urine sugar by Benedict's solution.

- **AREA B- SELF EXAMINATION OF URINE SUGAR BY UROSTICKS**

The data reveals that regarding self examination of urine sugar by Urosticks in 1st observation 27.1% samples showed correct practices whereas in 2nd observation 28% samples showed correct practices & in 3rd observation 30.4% samples showed correct practices. This shows that few samples knew about correct procedure of self examination of urine sugar by Urosticks.

- **AREA C- SELF ADMINISTRATION OF INSULIN INJECTION.**

This data reveals that regarding self administration of insulin injection in 1st observation 31.2% samples showed correct practices whereas in 2nd observation 33.7% samples showed correct practices & in 3rd observation 32.4% samples showed correct practices.

This shows that average samples knew about correct procedure of self administration of Insulin injection. The data regarding self care practices shows that few samples knew about correct practices of self examination of urine sugar and average samples knew about correct practices of self administration of insulin injection.

➤ **SECTION-IV**

❖ **CHI-SQUARE TESTS FOR KNOWING RELATIONSHIP BETWEEN
SELECTED DEMOGRAPHIC VARIABLES AND KNOWLEDGE &
PRACTICE GRADES OF SAMPLES:**

By calculating these values we conclude that Knowledge Grades of the respondents are influenced by education and not by age, occupation, religion and monthly income. Also we conclude that Practice grades of the respondents do not depend on age, occupation, Income and religion but depend on educational status of the samples.

IMPLICATIONS:-The findings of the study have implications could be discussed in following broad areas that is Nursing service, Nursing education, Nursing administration and Nursing research.

Nursing service:

- This study highlighted the importance of exploring knowledge about self care in antenatal mothers with diabetes mellitus.
- This study also highlighted the importance of assessing the self care practices of antenatal mothers with diabetes mellitus.
- Findings of this study will help the staff nurses to plan the health teaching regarding self care practices of D.M. as patient has to perform it at home and they have very poor knowledge and practices.

Nursing Education:

- The nursing students can utilize these findings during their study as a ready reference.
- These study findings can be availed by the nursing teachers in guiding the nursing students for planning & implementing health teachings for the antenatal mothers with diabetes mellitus regarding self care.
- The course content should be extended to include preparing self learning material for the patients in the nursing curriculum.

Nursing administration:

The finding of the study can be used by the nurse administrators to improve the nursing care.

- Various policies & protocols can be formulated by the nurse administrators regarding the health teaching programs of the patients.
- In-service education programmes can be planned for the nurses, emphasizing their role in imparting health education to the patients.
- The nurse administrator should encourage staff nurses to assess knowledge and practices of other patients.

Nursing Research:

- The methodology, tools & findings of the study have added to the existing body of knowledge in the nursing profession and can be used as avenues for further research.
- Other researchers may utilize the suggestions & recommendations for conducting other types of studies.
- The present study may serve as a guideline in preparing information booklet or planned teaching for patients with D.M.
- The present study may also serve as a guideline in preparing information booklet or planned teaching for patients having disease other than D.M.

SUGGESTIONS FOR IMPROVEMENT OF THE STUDY:

- The same study could be done along with a teaching method or by providing an information booklet.

- A practical demonstration of technique of self administration of insulin injection or urine sugar testing could have also been helpful.
- More number of observations could have given more accurate findings.
- The more aspect of practices regarding self care of antenatal mothers with diabetes mellitus could have been taken for the study.

RECOMMENDATIONS:

- A comparative study can be undertaken on the effect of three different methods of teaching viz. lecture method, use of information booklet and displaying video film on self care of antenatal mothers with diabetes mellitus.
- Experimental study can be done with a control and a study group to see the effect of any experiment used.
- A study can be done to find out effect of information booklet or planned teaching on knowledge and practices of self care of antenatal mothers with diabetes mellitus.
- A study can be done to assess the knowledge and practices of staff nurses regarding self care of antenatal mothers with D.M. by giving planned teaching and comparing pretest and posttest results.

A study can be done to find correlation of knowledge & practices of self care of antenatal mothers with diabetes mellitus.

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Disseminating Knowledge and Impart Awareness against Covid -19 Health concern in Slum Areas of Bhiwandi Metropolitan City.

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ABSTRACT: Corona virus is a deadly and life -threatening pandemic initiated in December 2019. The health risk was declared as an emergency health concern by WHO (World Health Organization) on January 2020. At this stage impart of education against Corona virus illness in slum communities is very essential. Awareness creates inter -personal communicating relationship among people of local areas . In this research study, we inculcate maximize efforts to disseminate knowledge about emergency health concern against Covid -19 pandemic in slum areas of Bhiwandi Metropolitan City. This research was tested under 15 health-posts of Bhiwandi city and from each health post 100 people were took under this research. Overall, 1500 people were included. Each 100 people were observed for 3 criteria i.e., Illiteracy, Low Income and Unhygienic condition. This research study was completed by 1500 people from slum ar eas where Illiteracy was observed in around 1385 which do not have any knowledge regarding covid -19 pandemic however 115 was educated with higher education but was not aware about seriousness and health risk about corona virus. Second criteria of Low income show under privileged. Around 1000 were unable to buy protective gears (Sanitizer and Masks). 500 were able to buy however due to unawareness about health risk and illness they couldn't buy. Bhiwandi MahanagarPalika provided all such protective gears in all Health Post however due to lack of seriousness and UN -education only 60 % of people used the facilities and rest of 40% were counted in super spreader of virus. Unhygienic status of people revealed that they were consider under high risk in spreading o f illness. Poor hygienic condition was a major reason of communicating illness without following pandemic norms. This research method was helpful in spreading awareness of illness caused by Corona virus in slums areas were effective.

KEYWORDS: Disseminate, awareness, metropolitan, illiteracy, low-income, unhygienic

INTRODUCTION: Corona virus are group of RNA viruses can affect mammals and birds too with severe respiratory tract infection. It can start infection from to severe (lethal) illness. On December 2019, thousands of rapid raises in pneumonia patient with unaware aetiology was started from (Wuhan) China and reported to WHO China Health Bureau in Beijing. On January 2020 complete genomics sequence of new corona virus SARS CoV -2 had successfully sequenced by Shi -Zhengli -a virologist at institute of virology in China and passing a single week sequenced had been published at Chinese national health commission. This virus was referred as" novel corona virus 2019"(2019nCoV) by WHO and on February 11 2020 it was officially declared on SARS-CoV-2 by International Committee on Taxonomy of Virus. SARS -CoV-2 causes severe acute respiratory syndrome which cause corona virus disease the greatest life -threatening pandemic of this decade in our generation. Gradually it starts from China and globally spread to every corner and part of the world. This virus has been named on the crown like spikes on their surface covering, having 4 sub -grouped of Corona virus are alpha, beta, gamma, delta. Similarly human corona virus was first identified in 1960 and since then different were came into existence which can affect humans. Humans' corona viruses are:

229E (Alpha- corona virus)
NL63 (Alpha- corona virus)
HKU1 (Alpha- corona virus)
OC43 (Beta- corona virus)
MERS-CoV (Beta- corona virus that cause middle east respiratory syndrome) or MERS
SARS-CoV (Beta- corona virus that cause severe acute respiratory syndrome SARS)
SARS-CoV-2 (the novel corona virus that cause corona virus disease 2019 or COVID-19).

This super-fast spreading pandemic was reported with clinically multiple symptoms like cough, cold, fever, body pain, body aches, headache, dyspnea, malaise, fatigue, and starts from mild to severe. On incubation of virus in the body, prognosis of disease, viruses severely affect the upper and lower respiratory syndrome leads to complete damage of lungs which can cause shock and death. Respiratory infection caused by corona virus leads to other co-morbidities and multiple organ failure due to low immune mechanism. Different co-morbidities which can cause death like lungs and liver cirrhosis, tumour, hypertension, high blood pressure, CAD, diabetes etc. A sudden increase in mortality rate among the communities was major concerned. However, there is not any specified medication that can rapidly control the pandemic and health issues of patients. The only efforts through which we can maximize the better health among the communities is spread of awareness against the seriousness and ill effect of virus. Corona virus is highly communicable virus that can spread from person to person via touching, close contact, talking etc. knowledge and awareness against the illness in urban areas to rural and slums areas are very low, so this become the primary reason that slum areas of rural communities were having a greater number of covid -19 positive patients than urban city. Due to lack education, illiteracy and socio-economic facilities, personal interacting communities among the people of rural areas covid-19 rates were on high spike as compared to urban communities. According to WHO, they recognized that there are wide differences among the health inequalities just due to weaker health system and adverse social and environmental factors faced by rural communities. To impart awareness and distribution of knowledge against covid -19 health emergency should highly spread among slum areas of rural communities is very efficient. To delivering messages and forming standard norms and regulations of disease precautions against corona virus illness is more challenging in slum communities of society. According to general director of WHO Tedros Adhnom Ghebreyesus at the Munich Security Conference on 15th February 2020 said that “we are not just fighting an epidemic; we are fighting an infodemic”. Conditions in slum area like high rate of illiteracy, lower poverty line and poor hygienic conditions, congested housing area among the populations, lack of understanding, lack of adjustment mature and poor socio-economic status all such conditions lead to more and serious effect of pandemic situations.

METHODS:-It is a kind of social awareness research study where “social awareness is the ability to understand others, the relationship you have with them and relationship they have with each other. Element of awareness used in this research are self-concept, thoughts, feelings, body, emotions. Types of research used in this study is explanatory and comparative study. As by observing the rapid rise in covid -19 cases, increase in illness, and rapid mortality, and critical situations of pandemic in Bhiwandi city, hence spread of awareness against covid-19 in area is become very essential and mandatory.

Data of positivity of Bhiwandi Metropolitan City

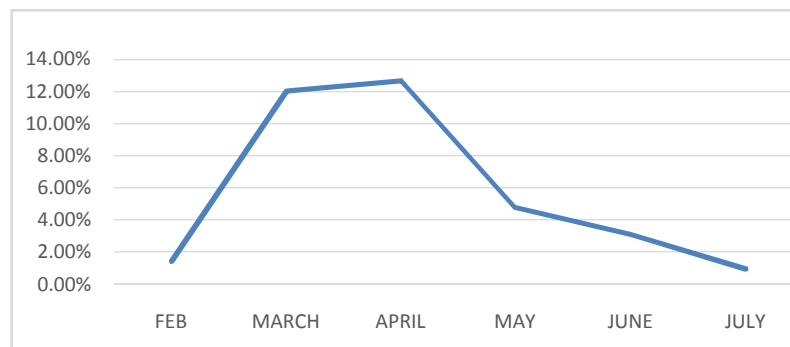


Fig 1.1 Graphical representation of covid-19 positivity of biannual data

This graph reveals that there is rapid spike of corona positive rate in a period of one month and which simultaneously increases the health risk concern, health emergency in the city which causes the increase in mortality rate.

AREA	PERCENTAGE
Rural	31%
Rural (Slum)	47%
City	14%
Metropolitan area	08%

Fig 1.2 Area wise distribution of positive rate

Fig 1.2 states the rate of covid -19 positive patients according to different area of Bhiwandi city which is highly populated. This data shows that slum areas of Bhiwandi city have more serious illness, critical symptoms and higher mortality rate as compared to other part of city. This becomes the major concern reasons for disseminating and impart knowledge in slum area of Bhiwandi. Slum area shows densely populated with congested housing, lack of spacing among the area people stays close to each other where they play a major role in spreading the illness among the individuals. Bhiwandi city developed 15 health posts by Municipal Corporation among the population of 867415 which accounted the population of 520449 in slum area, health department of city provide the facilities of health's and health emergency. Health department control the disease like tuberculosis, AIDS, Measles, Polio and many other communicable disease etc they also provide facilities for ANC's patients, and common illness treatment and many other body physiology testing and distributions of drugs and all such things are completely free facility by Bhiwandi Municipal Corporation. They play a significant role in control of disease and improvements of health in each and every corner of Bhiwandi city. Role of city in COVID -19 pandemic: health department of Bhiwandi City plays a very superior and most important role in control of covid -19 pandemic. They provide surveillance on door-to-door screening of covid -19 affected area and reached till HRC(High Risk Contact) patients and area. In this research we find the data that slum zones of city have more covid-19 suffering cases as compared to other city and metropolitan area.

3 Major backbone of slum area are:



Fig 1.3 states the problems of slum area

As per world Health Organization (WHO) and government norms following set of standard rules and regulations are been put forward against covid-19 health emergency, health risk and health concern to control the Pandemic situation globally. Slum areas were lacking behind in following the set of norms as compared to city and metropolitan area of Bhiwandi. 1500 people were inculcating in this research study, 100 from each health post followed by 15 health post of Bhiwandi. Each hundred were grouped for observation of 3 criteria like illiteracy, low income and Unhygienic conditions. It is an explanatory research where group of 10 people were arranged at specified social distance, and were been educated and impart knowledge against covid-19 on following points followed by 10 rounds.

- About novel corona virus
- Ill effect of virus on own-self, family and neighbour,
- Sign and symptoms of illness.
- Important of social distancing.
- Use of sanitizers and masks followed by family health.

Similarly, 10 rounds of awareness programs on each health-post was planned and similarly imparting of awareness against covid-19 was spread-ed.

RESULTS: It is an explanatory research study, carried successfully in Bhiwandi's slum area in a period of 30 days, which include daily 4 hours program including 100 patients of one HPs followed by 15 days after survey in recovery after research study. Result of this study obtained that due to lack of education people are unaware of novel corona virus. They are illiterate about the ill effect of virus and unknowing the seriousness disease, this awareness program creates health concern among the local people of slum area.

ILLITERACY: Illiteracy is the major drawback in fighting of pandemic situation, in this study 1500 people were been included from slum areas of Bhiwandi, where 1385 people were completely uneducated regarding any points related to corona virus and health emergency in such situation, they were been disseminated against health importance and following of covid-19 rules imposed by WHO and government of India. 115 people are educated with higher section of schooling but not actually aware of seriousness and health risk associated with corona virus.

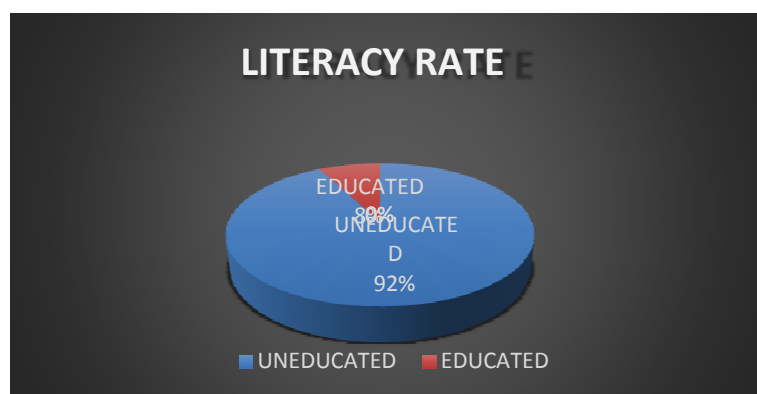


Fig 1.4 States the literacy – rate of slum

According to this data slum areas of Bhiwandi having a greater number of illiteracy rate and are uneducated against the illness caused by these deadly viral infections. After creating a

social awareness people that comes under completely uneducated group that is 92% started using the provided facilities by 69%.

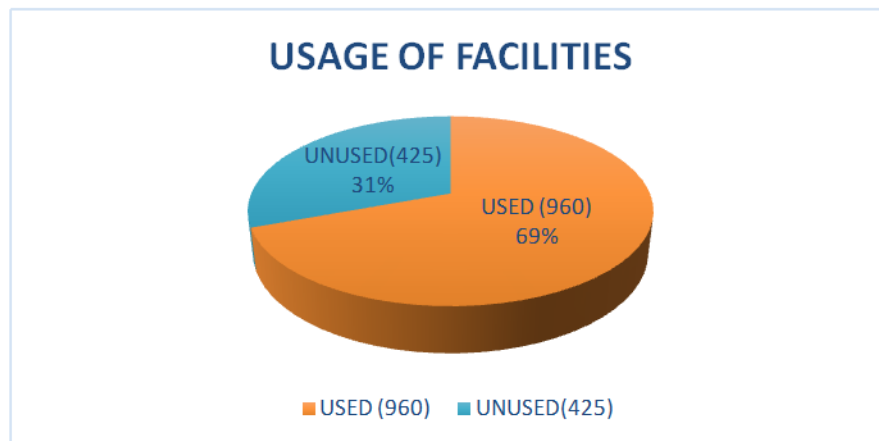


Fig 1.5 facilities used by uneducated group of people.

All such 1500 people are been provided with protective gears like (Sanitizers, Masks etc) by Municipal Corporation (Mahanagar-Palika) but due to lack of seriousness and understanding ability people do not use such gears. After this research and awareness program out of 1385 completely uneducated people 960 were started using such facilities and following rules set by organization to control pandemic and join hands in hands to fight the pandemic.

LOW INCOME GROUP: Bhiwandi is included in under developed city where population is higher in slum areas and low-income group is the major backbone of Bhiwandi city. 70-80% population of Bhiwandi who only survive on daily wages basis. By adding lockdown in such pandemic situation of corona virus, unemployment and starvation among the people increased. If such people were asked for buying any life protective gears which saves their own life as well as their family and helps to control the illness of disease people deny. Out of 1500 people 1000 were completely unable to buy any personal protective equipment and around 500 were able to buy but due to lack of education, awareness regarding covid-19 health risk they couldn't buy. After providing free facilities by government sector only 60% of people used such facilities and rest 40% are counted in super spreader of virus among the family members and a

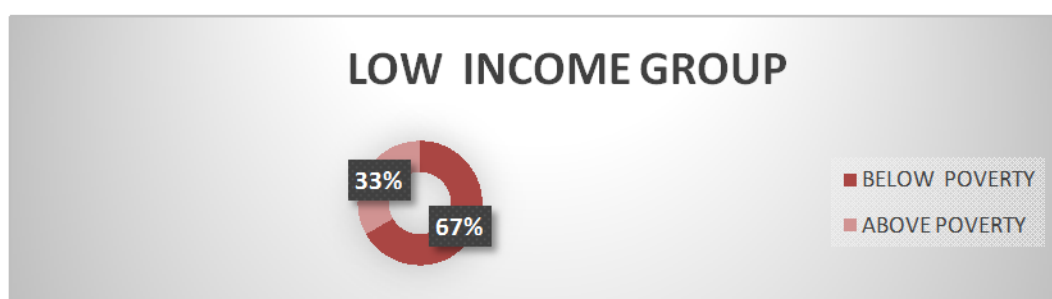


Fig 1.6 shows the people completely unable to buy protective equipment and people who are able to buy but lack of awareness doesn't do

UNHYGENIC CONDITION: Corona virus is deadly virus spread from person to person very rapidly and staying in unhygienic conditions add more illness and threatens to life. The biggest issue of slum areas is the unhygienic condition in different areas of Bhiwandi city due in garbage disposal in unwanted areas, water logging open gatar and nalas etc. Out of

1500 people who were analysed in this research criteria around 80% included in self-unhygienic and poor personal cleanliness and rest 20% were counted in good and satisfactory personal cleanliness. This 80% of people of poor hygiene were rapidly affected by corona virus and were super-fast communicating without following the standard rules and regulations of covid-19.

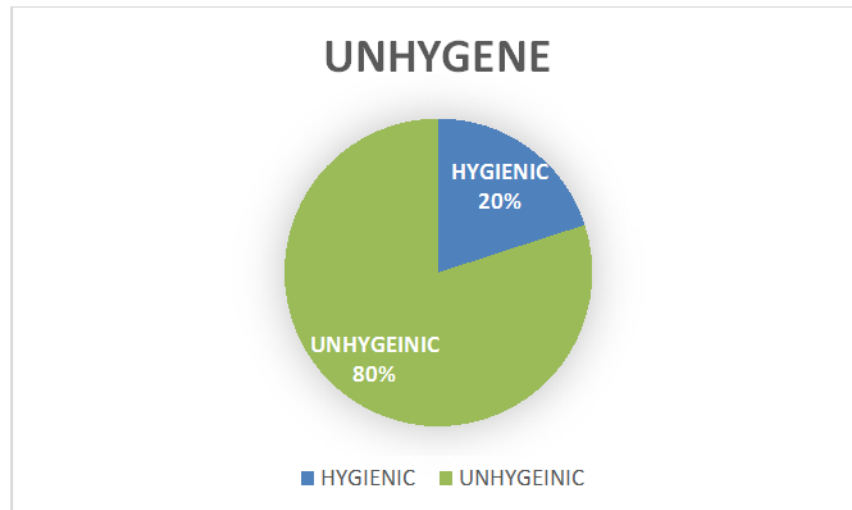


Fig 1.7 states the hygienic and unhygienic condition of slum areas

After this research study 15 days have been observed the people for their action and it is observed that people from slum area proved to be little successful and show satisfactory outcomes of this study even people join hands in hand to fight and control the pandemic situation effectively.

DISCUSSION: covid-19 is spreading in the worldwide and it was come under the major health concern. Health care workers and front-line professionals play a major significant role in control of pandemic. This harsh situation was never in hand of single person, everyone needs to get participated in infection control like health department of government, corporation department of health, social workers and most important every citizen itself. The overall response of this research was little significant to fight against covid-19 infection in slum areas of Bhiwandi city. This research in future can become more improvements and can gain powerful response against covid-19 health risk among people. By disseminating knowledge by various means like arranging more groups of people to be educated, spending more times in local areas, providing more different facilities that still lacking behind by the corporations and enlightening more importance for people towards families and health concern.

CONCLUSION: the present study suggests that vast and majority of slum's population were affected with covid-19 health risk. This research was to disseminate knowledge and awareness among local people of slum community were proved to be adequate and people belonging to low-income groups, illiteracy, poor hygienic conditions were observed analysed and successfully aware against covid-19 health concern. Continued awareness programs need to be developed including more people from other areas, arranging more powerful workshops, presenting power point presentations and more distributions of useful personal protective measures against covid-19 free of cost from health department of Municipal Corporation of Bhiwandi City.

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A STUDY ON CYBER CRIME USING INTERNET AND ITS APPLICATIONS BY CRIMINALS.

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Abstract:-In today's world, almost everybody is dependent on the internet through their laptops, and even smart-phones. Infect people are using internet for their daily processes like jobs- working from home, social interactions, online education classes and above all, all the money transactions through e-Wallets (credit cards, debit cards, etc.) for book cab, train, etc to a big commodity. The people using internet for money transactions or sharing any information are majority those who have recently started using it. Cyber criminals are exploiting a zero day vulnerability to interrupt into Windows Systems for pushing the malware. This malware launches the ransomware attack on the systems thereby encrypting the entire data. The malware also has the capacity to move laterally in the network and infect other systems. The Ransomware related Hash Values such as SHA1: af94a3c3bc278cL6a1631-Obc97 4516650e95bfOd. It is also found that when a third party application requests "storage permissions" from an android phone user, it is able to access the camera, record video, and access geolocation data embedded in store photos. An attacker creates an app and lure victims into downloading it. Once app is installed and permission granted, then app is able to take photos, record videos on victim's phones. Cyber criminals multiple sophisticated cases scams have been identify targeting user through sending unsolicited Google Calendar notifications. The purpose of the scam is to trick users into sharing their personal information etc. This paper analyses cybercriminal attack perspective and highlights the range of cyber-attacks using internet and its applications.

Keywords:-VRS (Voice response system), OTP (One Time Pin), SMS (Short Message Service), VoIP (Voice over Internet Protocol)

Introduction:-In twentieth Century, new innovations have begun arising for improvement of humanity & alongside this its utilization additionally began expanding. development of PC is most imperative accomplishment of relative multitude of huge accomplishments made by humanity, development of PC organizing gave great technique for transmission of data across world consequence of which world has now for all intents & purposes become worldwide town. Web pulled in mass & in brief time frame range, innovation of Web has crossed every topographical obstruction & caught brain & heart of each Resident being called 'Netizen' later because of its enormous use. Correspondence has expanded across nations for sharing information, perspectives & sentiments utilizing Web. Web demonstrated incredibly gainful on one side. On one more side because of its security & protection issues, its abuse had been begun which brought about new crimes in public arena known as 'Cyber crimes'. With view to countering Web & PC related crimes, Indian Parliament supported another enactment, in particular Data Innovation Act, 2000 to handle issues identified with IT for example Data Innovation. demonstration came into power on October 17, 2000. It manages different cybercrimes identified with web & cyber space, especially unapproved access, infection assaults, disavowal of access, or any impurity making harm PC programming & so forth. Uses intimidating phone calls, VRS (Voice Response System), voicemail messages, VoIP calls to convince victims to provide personal information and to steal from the victim. Smishing may be a also phishing scam conducted via Short Message Service (SMS). Guileful phishers send text messages that seem from trustworthy senders, like banks and on-line retailers. Such text messages usually contain URLs or links that trick recipients into visiting websites that transfer viruses and different sorts of malware onto the victim's mobile device. The

reason why smishing attacks square measure growing in quality is as a result of SMS senders aren't documented on the far side phone numbers. Criminals generally have access to credit information, personnel documents, business secrets, password lists, virtual money, and account information. Some of the stolen information can be used to blackmail and sell stolen information to the victim himself. A very commonly occurring crime these days is sharing OTP through wake identity through VoIP calls and VRS (Voice response system).

How does work Vishing, Smishing& Phishing :-The cybercriminal starts by researching their victims. This would possibly embody causing phishing emails, get contact detail from shopping malls there people write into entry, comments or suggestion registers etc. somebody can respond and supply their phone number or the criminal uses specialised software to call to multiple victims using phone number that has same area code as victims and cybercriminals grasp that individuals a lot of seemingly to answer calls from numbers that have an local area code. Now that the cybercriminal has somebody on the phone, their next move is to charm to the victim's human instincts of trust, fear, greed, and want to assist. Counting on the vishing theme, the criminal could use all or simply one in every of these social engineering techniques to convert the victim that they're doing the proper factor. The cybercriminal could invite checking account data, MasterCard details, eWallet, electronic cash account and address or raise the victim to require action by transferring funds, emailing confidential work-related documents. The law-breaking doesn't stop here currently that the cybercriminal has this data, they'll proceed to commit additional crimes as an example, the cybercriminal could drain the victim's checking account, commit fraud, and use the victim's MasterCard details to form unauthorized purchases, so email the victim's colleagues in hopes of tricking somebody into forsaking confidential work data.

Review of Literature

(1) Ellison Louise and YamanAkdeniz (1998)

This article highlights the issues surrounding on-line harassment and asks whether potential victims are adequately protected by existing national laws. It also examines the unique law enforcement problems which the Internet presents as well as addressing the implications legal regulation of the Internet may have for free speech and privacy on-line. Non-legal means of tackling harassment on the Internet are also explored.

(2) Nicholas Chavez and Gisela Bichler (2019)

The authors say cyber theft is a costly crime, impacting those who are most vulnerable. Quelling the coming wave of cybercrime might necessitate exploration of new avenues of research such as examining offender's perspectives. With this goal in mind this paper sought to find out how the hacker community defends itself. Using the SCP framework, authors found that removing targets was the most common technique. Results also showed that 90% of all advice given could be used by those with little computer knowledge.

(3) RachnaBuch, Dhatri Ganda, Pooja Kalola, NiraliBorad (2017)

In this paper authors told about need of cyber security is mentioned and some of the impacts of the cybercrime. Cyber security is to produce interference against the crime, whereas crime is that cluster of activities made by the people by creating disturbance in network, stealing others important and private data, documents, hack bank details and accounts and transferring money to their own

(4) Jason R. C. Nurse (2018)

The author explain this paper cybercrime is one of the most prevalent and has the ability to impact people psychologically, financially, and even physically. This paper reflected on many of the crimes that cybercriminals engage in today and the reasons why these are often quite successful, from social engineering and online harassment to hacking and ransomware

attacks. A salient purpose is that cybercriminals are unit prepared, willing, and have a robust history in exploiting several human psychological desires and weaknesses.

(5) Balsing Rajput (2018)

The author explores cybercrime modus operandi can be classified into three types as technological vulnerabilities, Weaknesses in Human mind and lacunas in the processes. The interpretation in this way covers all the methods and ways of the crime. People-Process-Technology framework perspective provides holistic perspective for classifying and understanding the modus operandi of Cyber economic crimes. All the three components of people, process and technology frameworks are equally responsible for crime. This perspective should be considered for deciding for prevention strategy.

(6) Cyber security Unit U.S. Department of Justice (2018)

The Cyber security Unit originally published this “best practices for victim response and reporting of cyber incidents” document to help organizations prepare a cyber-incident response plan and, more generally, to better equip themselves to reply effectively and lawfully to a cyber-incident.

Research Methodology :- Study was done by observing and gathering information, of how cybercrime occur through latest modus operandi of cyber criminals and also forgery is being done in our society. Studying various cases, where the innocent and unaware citizens are getting victimised.

Limitation of Study

- The research study is confined to the region which is a geographical limitation on the study while collection data.
- Collection of data depends on described records of victims.

Conclusions:- The conclusion of this paper smart cyber security solution is required using artificial intelligence and machine learning typically possess the following feature:-

User Identification and OS provide partial storage access not fully access to application i.e (access memory storage)

Space Time Awareness: Location (GPS) & Real Time Clock.

Learning, Adaptation & Self Organizations: Real Time Intelligence

Massive Memory & Storage: Local & Remote Cloud Storage

Sustainability: Embedded security-Everywhere in the network

Scalable Networked Architecture: Smart Architectures will need to scale in space & time from micro cells to macro solutions.

Decision Focus: "Knowledge Lens" for Data Mining & "Big Data" from global social networks, search & online Trade and commerce.

For cybercrimes against public safety, assorted methodology, which incorporates two-sided, multilateral, multi-sectoral commitment, will be useful. Notwithstanding, much required thing is to put resources into innovative work of cyber abilities, which can recognize potential security dangers, kill them & keep India's cyber country state free from any & all harm.

For global coordinated effort, free web administration under aegis of UN will help in containing strength of Western nations, especially US. GGE's slow achievement proposes that multilateral instrument is conceivable in which part states' power will be more decent.

India's cyber principle ought to be founded on goals of advancement & prevention. With greater part populace without web, India's advancement objectives will remain compromised. Cyber strengthening of rustic & neighborhood bodies just as people, especially ladies & insurance of their cyber rights, will help create cyber capacity for free from any & all harm cyber space for all. cyber security convention dependent on improvement & prevention is missing from current cyber security talk. This should be tended to.

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ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING ANTENATAL AND POSTNATAL EXERCISES AMONG ANTENATAL MOTHER.

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Abstract:-Exercise during pregnancy is called antenatal exercise. Exercise is likely to improve sleep, mood and energy level. It may also help reduce bloating and prevent gestational diabetes. Women who exercise during pregnancy may also get back into shape after the birth of their baby more easily. But, they have lack of knowledge regarding importance of different types of antenatal and postnatal exercises. However, investigator felt that there is a great need of educating antenatal mothers regarding antenatal and postnatal exercises. The aim of the study was to assess the effectiveness of Structured Teaching Programme (STP) on the knowledge regarding antenatal and postnatal exercises among antenatal mothers.

Introduction:-Pregnancy is a unique, exciting and often joyous time in a woman's life. Pregnancy comes with some cost, however, a pregnant woman needs to be a responsible woman so as to best support the health of her future child. Pregnant women must take steps to remain as healthy and well-nourished as they possibly can. 1Pregnancy, also known as gravidity or gestation is the time during which one or more offspring develops in womb inside a woman which occurs by sexual intercourse or assisted reproductive technology. There are three stages of caring for an expecting mother: prenatal, intranatal, postnatal period. Antenatal is the period before giving birth to baby. Intranatal is the period of giving birth to baby And Postnatal is the period after giving the birth.2Regular physical activity and more specifically regular exercise plays an important role to fight against stress. It provides recreation and mental reliability, besides keeping the body physically and mentally fit.3The antenatal period is a time of physical preparation of birth and parenthood. As the baby develops in the womb, the increasing load in the abdomen creates tension in the muscles of the back and waist. Antenatal exercise prevent the over stretching of muscles (abdominal and pelvic muscles) and strengthen them for preparation on labour and support for loosened joints, and decreased muscles tension that promotes relaxation. And also decreased risk of developing gestational diabetes and pregnancy induced hypertension (high blood pressure). Side by side improved self-image and body awareness, circulation, posture and weight control etc. 4Regular exercise after pregnancy helps to improve postnatal recovery and return to pre pregnancy shape more quickly. Postnatal exercise offers a whole range of benefits for the mother. This exercise promotes weight loss, restore muscle strength, improve mother's mood, and relieve stress and postpartum depression etc. 5The pregnant women should be given advice about exercise and physical fitness. During the first prenatal visit, they should be asked about daily routines, recreational and work related exercise, and plans for changes during pregnancy. The level of exercise to be continued, or started, during pregnancy will depend on the general fitness of the mother and her level of exercise period to pregnancy. The primary aim of this exercise is to achieve healthy mother and a healthy baby at the end of a pregnancy. 6Antenatal and postnatal exercises provide many health benefits not only to pregnant mothers but also to the fetuses. Adequate knowledge among pregnant mothers is vital to promote practicing of it. But Knowledge regarding antenatal and postnatal exercises was 'poor' among antenatal mothers. Therefore, many researchers suggested education programs to improve the knowledge of antenatal mother. 7

Objective of the Study:

1. To review various article/journal to assess the existing knowledge regarding antenatal and postnatal exercises among antenatal mother.
2. To review various article/journal to evaluate the effectiveness of Structured Teaching Programme on knowledge regarding antenatal and postnatal exercises among antenatal mothers in selected hospitals at Hassan.

Need for the Study: -Pregnancy and delivery are normal physiological processes. During pregnancy and after pregnancy so many physiological and psychological changes occur and sometime mothers are worried and stressed regarding this. This is essential to ensure smooth pregnancy and labor and to keep the mother healthy after giving birth. In order to be healthy during pregnancy antenatal care plays a greater role. Which includes regular antenatal visit, antenatal exercise, immunization, improve nutritional status etc. There are many benefits to regular exercise, including maintaining a healthy weight and warding off dangerous conditions such as high blood pressure or diabetes. During pregnancy, exercise is even more important, since it helps keep both you and your baby healthy. A lack of exercise can be linked to many pregnancy-related problems for both you and your baby. A lack of exercise during pregnancy puts you at risk for complications, such as increased pulse rate and blood pressure, and puts you at an additional risk for developing gestational diabetes. These all can affect not only your health, but also the health of your unborn child. A lack of exercise during pregnancy also makes it more likely you will gain too much weight during these nine months, making it harder to return to a healthy weight once the baby is born. You may also experience more heartburn and digestion problems.⁸ According to WHO report 2015, About 213 million pregnancies occurred in 2015, of which, 190 million were in the developing world and 23 million were in the developed world. The number of pregnancies in women ages 15 to 44 is 133 per 1,000 women. Every day, approximately 830 women die from preventable causes related to pregnancy and childbirth. 99% of all maternal deaths occur in developing countries. 75% of all maternal deaths are severe bleeding (mostly bleeding after childbirth), high blood pressure during pregnancy (pre-eclampsia and eclampsia), complications from delivery, Gestational diabetes affects approximately 9% of all pregnant women.⁹ Exercise in pregnancy is associated with a decrease in offspring that are significantly small for gestational age. In order to reduce excessive weight gain your doctor will suggest aerobic exercises that utilize a large number of muscle groups, if this is believed to be safe for you and your baby. ¹⁰ A study was conducted on Knowledge of antenatal exercise during pregnancy among antenatal mothers in Puducherry. The study result shows that Response rate was 100%. 66% answered that they have heard about antenatal exercises but no knowledge. About 21% and 13% answered that they did not know or have not heard of antenatal exercises, respectively. Finally, the investigator the knowledge of our women on exercise during pregnancy was less than average. The researcher recommended for education program to improve the antenatal mother knowledge regarding antenatal and postnatal exercises.¹¹

Review of available articles/journals: -A Randomized Controlled Clinical Trial conducted On the Effect of Aerobic Exercises on Maternal Outcomes with the aim of determining the effect of a cycle of exercises on pregnancy outcomes. The study result shows that significant difference was observed between the two groups concerning type of delivery, duration of active phase of delivery and pain intensity in the active phase of delivery. In addition, back pain intensity significantly decreased in the intervention group, but increased with progress in pregnancy in the control group. The researcher concluded that Exercising has positive effects on mothers and infants health. Thus, these exercises are recommended to be incorporated in pregnancy care.¹³ A prospective interventional controlled study was conducted on Effect of aerobic exercise during pregnancy on antenatal depression with the

aim of Exploring the effect of exercise in preventing and treating antenatal depression. The study result shows that exercise group demonstrated a significant improvement of depressive symptoms from baseline to intervention completion, while the control group demonstrated no significant changes over time. The researcher concluded that Exercise during pregnancy was positively associated with reduced depressive symptoms. 12 A randomized control trial was conducted to assess the effect of pelvic floor muscle training exercises in reducing urinary and fecal incontinence among 747 women in New Zealand. The study Results revealed that women in the intervention group had significantly less urinary incontinence: 167 (59.5%) versus 169 (69.0%), 9.1% is the difference among two groups. Fecal incontinence was also reduced 12 (4.4%) versus 25 (10.5%), difference is 6.1%. Finally, researcher concluded that effective pelvic floor muscle training can reduce the urinary and co-existing fecal incontinence. So it is vital for the mothers to know about pelvic floor exercises. 13 A controlled trial was conducted to assess the effectiveness of an exercise support programme on reducing postpartum depression and psychological morbidity among 80 primiparous postnatal mothers in Taiwan. The study Results found that women who received an exercise support program were less likely to have high depression scores after child birth when compared with control group. The researcher concluded that the exercise support program given to postpartum women appeared to benefit their psychological well-being. So there is a need for the mothers to know the postpartum exercises in order to prevent the episodes of postpartum depression. 14 A prospective study conducted to evaluate the effect of postnatal pelvic floor muscle exercises among 132 mothers in Norway. Results revealed that a statistically significant change in pelvic floor muscle strength was found in both Training group and Control group, the improvement of Training group was significantly greater. The researcher concluded that specially devised pelvic floor muscle strength training programme can add significantly to physical recovery after childbirth. So postnatal Exercise is necessary to strengthen pelvic floor muscles. 15 A Cross-Sectional Study was conducted on Antenatal and Postnatal Exercise among Nigerian Women. The result revealed that majority of the pregnant women responders were nulliparous (39.2%) while the nursing mother responders were mostly multiparous (54.5%). Aerobic (43.5%) and stretching (33.4%) were the most common type of physical exercises. There was significant association between exercise knowledge and education level. Finally the researcher concluded that Education level significantly influence physical exercise practice among Nigerian women with aerobic and stretching as the predominant exercises in pregnancy and postpartum. 16

A Cross Sectional Study was conducted on Knowledge of Pregnant Women towards the Role of Physical Therapy in Antenatal Care with the objective of determine knowledge of pregnant women towards the role of physical therapy in antenatal care. The study result shows that the majority of them were not aware or not sure about the different type of antenatal exercises available. However, majority of the participants had adequate knowledge of the antenatal exercise. Finally researcher concluded that a majority of Indian pregnant women have inadequate knowledge about antenatal exercise and care. 17

Conclusion:- The findings of the study showed that there was a deficit in knowledge of antenatal mothers before administration of STP. The results indicated that the STP is effective in increasing the knowledge of antenatal mothers on antenatal and postnatal exercises. The findings of the study proved that Structured Teaching Programme is an effective teaching strategy in improving the knowledge of antenatal mothers regarding antenatal and postnatal exercises. Thus, the Structured Teaching Programme conducted by the investigator helped the antenatal mothers to improve their knowledge.

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IMPACT OF VIDEO ASSISTED TEACHING PROGRAM (VATP) ON KNOWLEDGE AND ATTITUDE REGARDING PRE-MARITAL COUNSELLING ON REPRODUCTIVE AND SEXUAL HEALTH EDUCATION AMONG THE SCHOOL GOING ADOLESCENT GIRLS

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Abstract:-Adolescent is the period of physical, psychological and social maturing from childhood to adulthood. WHO defines adolescence as the period between 10 and 19 years of age, which broadly corresponds to the onset of puberty and the legal age for adulthood. According to 2011 census data, there are 253 million adolescents in the age group 10 -19 years, which comprise little more than one -fifth of India's total population. This represents a huge opportunity that can transform the social and economic fortunes of the country. This age group comprises of individuals in a transient phase of life requiring nutrition, education, counselling and guidance to ensure their development into healthy adults. Considering demographic potential of this group for high economic growth, it's critical to invest in their education, health, and development. This review study was to identify the impact of Video Assisted Teaching Program (VATP) on knowledge and attitude regarding pre -marital counselling on Reproductive and Sexual Health education among the school going adolescent girls in selected urban area and rural areas.

Introduction:-Adolescent health creates a major global burden and has a great deal of additional and diverse complications compared to adult reproductive health such as early pregnancy and parenting issues, difficulties accessing contraception and safe abortions, lack of healthcare access, and high rates of HIV and sexually transmitted infections, and mental health issues. Each of those can be affected by outside political, economic and socio -cultural influences. For most adolescent females, they have yet to complete their body growth trajectories, therefore adding a pregnancy exposes them to a predisposition to complications. These complications range from anaemia, malaria, HIV and other STI's, postpartum bleeding and other postpartum complications, mental health disorders such as depression and suicidal thoughts or attempts. In 2014, adolescent birth rates between the ages of 15 -19 was 44 per 1000, 1 in 3 experienced sexual violence, and there more than 1.2 million deaths. The top three leading causes of death in females between the ages of 15 -19 are maternal conditions 10.1%, self-harm 9.6%, and road conditions 6.1%. According to the NFHS -4, only 16.4% unmarried sexually active adolescent girls (15 -19 yrs.) are using modern method of contraceptives, whereas it is only 10.5% in rural areas. Sexual and reproductive health (SRH) is an important aspect of normal adolescent growth and development that encompasses biological sex, gender roles and identity, sexual orientation, sexual behaviour, and reproduction. Achieving healthy adolescent sexual development involves managing the many physical, social, and emotional changes experienced during adolescence. Medically accurate and developmentally appropriate SRH education and barrier -free access to related clinical services contribute to successful navigation of this developmental task. In recognition of this important fact, the United Nations declared that comprehensive sexual health information and services constitute a basic right for adolescents as articulated in the United Nations Convention on the Rights of the Child. To support the adolescent's right to the highest attainable standard of health, the Convention specifically identifies "the right to control one's health and body, including sexual and reproductive freedom to make responsible choices," and this right is achieved through "access to a range of facilities, goods, services and conditions that provide equality of opportunity for every child." Sociocultural context, laws,

policies, and economics, however, affect access to these basic rights. Being a sensitive and often, controversial area, adolescent reproductive and sexual health issues and information are very often difficult to handle and disseminate. Furthermore, the contents do not only deal with factual and knowledge-based information but more importantly, need to deal with attitudinal and behavioural components of the educational process. This in turn, requires that the educators, information and service providers should be equipped with adequate knowledge and skills in handling sensitive topics, in promoting clarification of values and problem solving as well as ensuring involvement of adolescents in the analysis of their own values and beliefs with regard to such topics. Sexual health education (SHE) is a series of educational activities that help people to acquire the information, motivation, and behavioural skills to maintain and enhance their sexual and reproductive health. Effective SHE is the best way to ensure that people learn and adopt safe and healthy sexual behaviour, and limit their risk and vulnerability to sexual illness and equipping of persons, couples, families and communities with the information and behavioural skills and should be sensitive to gender, age, ethnicity, religious, socio-economic background and physical/cognitive abilities and cultural values and norms. Adolescents should have universal access to comprehensive SRH information and services that are evidence based, confidential, developmentally appropriate, and culturally sensitive. Comprehensive sexuality education programs in schools and communities have been found to improve academic performance, delay and reduce frequency of sexual intercourse, reduce number of sexual partners, increase use of condoms and other forms of contraception, and reduce negative health consequences (e.g., unintended pregnancy and STIs). Access to services in school-based health care centers has been shown to increase SRH services and contraception use. Delivery of behavioural health interventions using mobile technology (e.g., smartphones and tablets) to deliver behavioural health interventions has shown promising results. Education and counselling regarding sexual & reproductive health is an indispensable part of pre-marital counselling, especially in developing and overpopulated countries like India.

Objectives

- To review various article to assess the effectiveness of Video Assisted Teaching Program (VATP) on knowledge and attitude regarding reproductive and sexual health among the school going adolescent girls in rural and urban area.
- To review various article to find out the association between the knowledge and perception on reproductive and sexual health in selected demographic variable.

Review of literature:

As per the article Adolescent sexual and reproductive health : The global challenges Published in International Journal of Gynaecology and Obstetrics Vol. 131 (2015) S40 - 42- Adolescent sexual and reproductive health (ASRH) has been overlooked historically despite the high risks that countries face for its neglect. Some of the challenges faced by adolescents across the world include early pregnancy and parenthood, difficulties accessing contraception and safe abortion, and high rates of HIV and sexually transmitted infections. Various political, economic, and sociocultural factors restrict the delivery of information and services; healthcare workers often act as a barrier to care by failing to provide young people with supportive, non-judgmental, youth-appropriate services. FIGO has been working with partners and its member associations to break some of these barriers—enabling obstetricians and gynaecologists to effect change in their countries and promote the ASRH agenda on a global scale.

As per the article Sixteen million girls aged 15–19 give birth each year, which is approximately 11% of all births worldwide; 95% of these births occur in LMICs. Important regional differences exist; for example, births to adolescents as a percentage of all births

range from approximately 2% in China, to 18% in Latin America and the Caribbean, to more than 50% in Sub-Saharan Africa. Pregnancy among very young mothers is a significant problem; in LMICs, almost 10% of girls become mothers by age 16, with the highest rates in Sub-Saharan Africa and South Central and Southeast Asia. Pregnancies among unmarried adolescent mothers are more likely to be unintended and end in induced abortion; coerced sex (reported by 10% of girls who first had sex before age 15) contributes to unwanted adolescent pregnancies, among a plethora of other negative consequences.

One major outcome of unmet need for family planning is unwanted pregnancy and, consequently, high levels of unsafe abortion. Complications from pregnancy and childbirth are the leading cause of death in girls aged 15–19 years in LMICs where almost all of the estimated three million unsafe abortions occur. Worldwide, mostly as a result of unintended pregnancy, nearly 4.5 million adolescents undergo an abortion each year, with approximately 40% performed under unsafe conditions. Regional differences exist; for example, 15–19 year olds account for 25% of all unsafe abortions in Africa, but the proportion in Asia and in Latin America and the Caribbean is much lower. In Nigeria, adolescents account for up to 74% of all induced abortions—approximately 60% of all gynecological hospital admissions.

Opportunities for improving ASRH come from myriad directions. With regard to services, we must ensure access to quality youth friendly, integrated services, provided by healthcare workers who have been trained to work with adolescents. Sex education programs should be scaled up and offer accurate, comprehensive information while building skills for negotiating sexual behaviours. Healthcare workers should be equipped to provide accurate, balanced sex education, including information about contraception and condoms so that young people have the means to protect themselves, provided within a context of healthy sexuality, without stigma or judgment.

As per the article on Improving Adolescent Sexual and Reproductive Health: A Systematic Review of Potential Interventions, published on Journal of adolescent health:

A significant number of adolescents around the globe are sexually active, and this proportion increases steadily from mid- to late adolescence. Sexual activity of adolescents varies markedly by gender and region more girls compared with boys are sexually active in sub-Saharan Africa, Asia, and central Asia while in Latin America and Caribbean, more boys are sexually active than girls. About 3 in 10 unmarried adolescent women in sub-Saharan Africa and nearly one in four in South America have ever had sex. Early sexual debut increases the risk of sexually transmitted infections (STIs), including HIV, and can result in unintended pregnancy and early childbearing. Adolescents have limited and, in some places, no access to sexual and reproductive health education and contraception, making adolescent girls more prone to early and unintended pregnancies.

Sexual and Reproductive Health Care: A Position Paper of the Society for Adolescent Health and Medicine, Journal of Adolescent Health 54 (2014) 491–496:

Sexual and reproductive health (SRH) is an important aspect of normal adolescent growth and development that encompasses biological sex, gender roles and identity, sexual orientation, sexual behaviour, and reproduction. Achieving healthy adolescent sexual development involves managing the many physical, social, and emotional changes experienced during adolescence.

Adolescent Sexual and Reproductive Health in Developing Countries: An Overview of Trends and Interventions International Perspectives on Sexual and Reproductive Health:

There are more than one billion 10–19 year olds, 70% of whom live in developing nations. They are growing up in circumstances quite different from those of their parents, with greater access to formal education, increasing need for such technological skills as

computer and internet literacy, different job opportunities, and more exposure to new ideas through media, telecommunications and other avenues.

The environment in which young people are making decisions related to sexual and reproductive health is also rapidly evolving. Rates of sexual initiation during young adulthood are rising or remaining unchanged in many developing countries, childbearing and marriage are increasingly unlinked, and in many countries, high HIV prevalence adds to the risks associated with early sexual activity.

Meeting the Sexual and Reproductive Health Needs of Adolescent Girls (UNFPA):

Adolescence is a decisive age for girls around the world. What transpires during a girl's teenage years shapes the direction of her life and that of her family. For many girls in developing countries, the mere onset of puberty that occurs during adolescence marks a time of heightened vulnerability—to leaving school, child marriage, early pregnancy, HIV, sexual exploitation, coercion and violence. Adolescent girls are less likely than older women to access sexual and reproductive health care, including modern contraception and skilled assistance during pregnancy and childbirth. Today, 88 per cent of adolescents live in developing countries. Adolescent populations are growing fastest in Sub-Saharan Africa and the least developed countries overall. These are the very places where the risk associated with pregnancy and childbirth is highest.

A qualitative study was conducted in Nepal to gain a deeper understanding of Sexual and Reproductive Health (SRH) problems faced by late adolescents (15–19 years of age) and to document their perceptions concerning available SRH services. Purposive sampling was used in the selection of the study participants' i.e. late adolescents of age between 15 and 19 seeking SRH services at a health facility. Total 20 adolescents were selected as study participants, 10 from each district and among them 50% were females. The participants were selected from different community youth networks and youth club at school. Semi-structured in-depth interviews were used as method of data collection. A total of 20 in-depth interviews were carried on with late adolescents aged 15 to 19 years. Ten of the in-depth interviews were carried with the adolescents in Kapilvastu district and the rest in Arghakhanchi district. Out of total 20 participants, 10 in-depth interviews were held with boys and 10 with girls.

Rao RS and Lena A, (2008) carried out a study to find the effectiveness of educational information program on knowledge of reproductive health among adolescence. The researcher reported that desirable changes in knowledge among adolescence girls were found regarding reproductive health, after an educational information program.

Tazeen Saeed Ali, (2006) conducted a cross-sectional study to determine the understanding and level of knowledge on puberty and health problems among female adolescence of Karachi. Data were collected from 150 female adolescence between 10-19 years of age. Sixty-six percent (66%) of the participants were aware of the names of reproductive system. The majority of the participants received information related to sexuality from their mothers. Cable and internet were cited as a major source of puberty and sexual health related information. The study concluded that there is a lack of knowledge related to puberty and related health problems among female adolescence. The researcher recommended that the adolescence should be provided with health education before and during their puberty period to make them confident in dealing with their body changes during puberty effectively.

Malleshappa (2011) the main objective of this interventional to determine the effectiveness of a reproductive health education intervention programme in improving the knowledge of adolescent girls aged between 14–19 years in Kuppam mandal, Chittoor district, Andhra Pradesh. The study was carried out over a period of 8 months. A total of 656 girls in the age group of 14-19 years were randomly selected from 3 high schools (class X) & 3 intermediate colleges (class XI & XII) in Kuppam mandal, Chittoor district, Andhra Pradesh. The reproductive health education package developed in consultation with parents, teachers &

adolescents was used to educate the girls. A 50 item structured questionnaire was used to test the knowledge of all the participants about the reproductive health before & after the education session. The data was tabulated & analyzed using SPSS version 11.0 for windows. Findings were described in terms of proportions & percentages, chi square test was used to test the effect of intervention.

Shah et al. (2012) conducted a study to find the relationship, between media and cognitive dissonance, at high school level due to exposure to media and furthermore to test, whether, the urban teenagers had exhibited cognitive dissonance as compared to the rural pool. Results have revealed a strong positive relationship exists between exposure to media and cognitive dissonance ($r=.89$; $p<.01$), i.e the more is the exposure, the higher is the cognitive dissonance. In addition, various TV programs ($r=.799$; $p<.01$) prompt cognitive dissonance among urban group as compared to their rural counterparts. They operationally defined T.V. as media, which is nevertheless an entertainment zone to negate isolation and boredom effect and perceive primarily, the world, by the click of a button.

Donkor (2010) in a study on the comparative instructional effectiveness of print-based and video-based instructional materials for teaching practical skills at a distance education, found users of video-based instructional materials and print-based instructional materials pedagogically equivalent in terms of theoretical knowledge acquired. Practical skills acquired, however, were significantly higher among users of video-based instructional materials. Finally, users of video-based instructional materials displayed significantly superior craftsmanship. A researcher-designed performance test and an achievement test of 20 multiple-choice items were used to collect data from 34 participants, who used print-based instructional materials and 35 participants, who used video-based instructional materials to learn practical skills was used for this purpose

Patricia et al. (2009) carried out a research study on student characteristics and motivation in rural high schools of U.S. They indicated that students bring individual motivational characteristics to the classroom including self-perceptions that influence their school success, multiple goal orientations and different types and degrees of motivation. These characteristics are influenced by past and present achievement, feedback from teachers and peers and features of the current classroom learning environment. The motivations that students develop in school influence their future goals, expectations and intentions.

Gubhaju (2002) stated that the reproductive health needs of adolescents are largely ignored by the existing health services in Asian countries, therefore, there is a need to provide such services and to undertake research in understanding adolescent sexual behaviour and reproductive health. He predicted a remarkable change during the period 2000-2025 while the world's adolescent population will continue to grow to 619 million by 2025. He identified inadequate access to correct reproductive health information, peer pressure and the erosion of the role of the family, inadequate access to youth friendly health services and economic constraints as factors that lead to risky behaviour among adolescents in general, particularly among unmarried adolescents

Vishnu (2011), studied effectiveness of animated modules of nutrition messages on high school children. Three modules were developed based on the selected nutrition messages in each category. Animated Module 1 (AM 1) is titled "Food groups and functions," Animated Module 2 (AM 2) titled "Be well red aware of anemia" and Animated Module 3 (AM 3) is titled "Bye bye to junk foods". In AM1 the indicator presentation contributed to the maximum, AM 2 indicator colour had attained high percentage indicator score and in AM 3 the indicators colour (18.7%), illustration (18.6%) and design (18.3) ranged almost equally in contributing to the effectiveness of the module.

Rapeepisarn *et al.* (2008) presented a paper on similarities and differences between learning through play and edutainment. They defined edutainment is the act of learning heavily through any of various media such as television programs, video games, films, music, multimedia, websites and computer software. Entertainment is the media and education is the content. The development of edutainment environment is also intended to implement technological innovations in education.

Betrancourt (2005) opined that animation plays potential role in supporting the visualization of a dynamic process such as not easily observable in real space and time scales, the real process that is practically impossible to realize in a learning situation, or the process that is not inherently visual. It also plays potential role in reducing the cognitive cost of mental simulation thus saving cognitive resources for learning task especially for novice learners. In its best uses, animation presents information in a more interesting, easier to understand and remembered way than static media.

A study was conducted to Assess the effectiveness of Teaching program of social anxiety among adolescent in selected school in Puliangudi, Tamilnadu:

Social Anxiety is a major problem. It's more than just shyness or nervousness around people. Children under 16 years of age constitute over 40 per cent of India's population and information about their mental health needs is a national imperative. So a study was undertaken to assess the effectiveness of teaching programme on social anxiety among adolescents in selected schools. Sample size was 100 and stratified random sampling technique was used in this study. The mean value of overall social anxiety in 97 with a standard deviation of 9.46 in experimental group for the overall anxiety in control group, the mean value is 96.12 with a standard deviation of 10.51. The calculated t value (7.062) is greater than the table value. The comparisons of effectiveness of teaching programme on social anxiety among adolescents between experimental and control group shows that there was a significant level of reduction in social anxiety among adolescents in experimental group who had undergone the STP than those who did not undergo teaching programme. The result of the study helps the nursing students to conduct many researches related to the same topic in various aspects and under various settings.

Conclusion:-After reviewing of various article it has been proved that there is significant impact of Video Assisted Teaching Program on knowledge and attitude regarding pre-marital counselling on Reproductive and Sexual Health education among the school going adolescent girls in selected urban area and rural areas

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THE EFFECT OF A CUSTOMIZED AWARENESS PROGRAM ON BEHAVIORAL OUTCOMES IN CONNECTION WITH THE ADVERSE EFFECT OF TECHNOLOGY ADDICTION ON PARENTING AMONG PARENTS

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ABSTARCT:-Children in twenty -first century are more technology than previous generations. Because of this increase in use, there has been lot of focus on effects of technology on children's brains & their socio -emotional, cognitive, & physical development. Much of this research, particularly brain -based research, is still in its early stages. It frequently reveals extremely modest correlations between technology usage & child outcomes; whether technology causes these outcomes is unknown, & tiny impact sizes raise concerns about real -world consequences for children. Despite these concerns, policymakers in number of nations have enacted technology -use rules for children that are typically restrictive. This study examines part of literature on impact of technology on children's brain, cognitive, socio -emotional, & physical deve lopment, & summarises what has been clearly established in literature. It also emphasises need for more high -quality research to better understand impact of technology on children & to support development of effective, evidence-based guidelines. In this co ntext, nursing department sees it as its responsibility to guide parents to live healthy lifestyle from then on, setting example for their children to follow. necessity of interdisciplinary cooperation through partnerships that focus on estimating care for children's health must be recognised.

KEY WORDS- Nursing, Technology, Child, Parents, Impact.

INTRODUCTION:-Contemporaneity is defined by various advancements, with evident effects of technical & scientific developments on many sectors of human activity. Technological developments have posed challenges to all systems, whether social, economic, political, or cultural. Term "technology" refers to all human innovations that increase person's physical, sensory, motor, or mental capability, decrease or simplifi es their job, improve interpersonal connections, or just give pleasure. They include widely utilised technology such as cell phone, computer video game, tablet, & television, as well as other technical gadgets prevalent in contemporary culture. As result, technology was developed to interact with man, & it may be used to control, change, or construct objects, as well as to generate natural or social processes. [1] They become capable of establishing lifestyle of entire civilization, using cultural & social control over human individual, depending on how they are employed. Because they disseminate information & become part of people's thoughts & debates, technological gadgets are related to social routines, capable of altering behaviour, attitude, & modifying values & traditions. It is possible to discern how technologies contribute to development of conduct & opinion, as well as transfer of public knowledge & propagation of life habits, through extending contemplation on their usage. [2] As result, healthcare practitioners must be mindful of consequences that technology creates in individuals, as they have impact on people's culture & lifestyles. Children are possible source of worry in this study, since they are still forming their ethical & moral notions & a re constantly bombarded with information, as well as technology culture, which have negative impact on their health. Childhood is life cycle stage in which human being goes through variety of learning processes as well as new & ongoing adaptations. There is lot of interaction & apprehension of stimuli at this age, which leads to child's well -being being influenced by these connections with electronic gadgets. Child is biological & metaphorical entity who is always changing & adapting to environment in which it lives. Micro environmental settings in which children

live, as well as their family structures, are both important factors in development of their talents, ways of being, & perceiving world, as well as determining their life habits, and, obviously, their health. [3]

What is impact of technology on our children?

Long periods of time spent on phone or tablet can be harmful to child's physical & mental health. Technology addiction has been proved to influence & delay children's development by restricting their creative, imaginative, & physical challenges to attain optimum motor & sensory development. It also makes them agitated, which leads to behavioural difficulties & scholastic troubles. [4]

Mental health ramifications:

Addiction

Technology addiction is newest health concern among youngsters, according to child health specialists. Smartphone provide youngsters with access to whole new universe of visual pleasure. It instantly piques their attention & may keep them fascinated for hours. However, true issue emerges when their passion becomes addiction. It becomes hard for them to go day without using their devices, & they may have severe withdrawal symptoms as result.

Recent brain imaging studies reveal that technology has similar effect on frontal cortex (the region of brain that governs executive functions like impulse control) as cocaine. Because technology is so stimulating, it raises dopamine levels (a feel-good neurotransmitter that plays key role in addiction); making kid desires more & more stimulation. [5]

Autism was brought on by technology.

Children might get lonely if they are exposed to too much technology. They prefer companionship of their devices than that of their friends & family, whether they are happy or depressed. They like to be alone & disconnected from rest of world. This impairs their social & communication abilities to point that they don't even make eye contact when conversing with others.

Problems with nervous system

Have you heard of term "Electronic Screen Syndrome"? It's undiagnosed modern-day disease induced by over use of technology. Inability to adjust one's attention, mood, or degree of arousal in manner that is suitable to environment is what ESS is all about. Extreme irritability, sadness, excessive tantrums, frustration, poor self-regulation, disorganised behaviour, disobedience, poor social skills, rejecting eye contact, sleep cycle disruption, learning difficulties, & poor memory are all signs of this.

Excessive use of technology can lead to hazardous diseases such as psychosis & neurosis. [6]

Insomnia

Spending too much time with devices may lead to late evenings, robbing youngster of vital sleep. Furthermore, staring at screen all day inhibits brain from relaxing, causing insomnia & disrupting natural sleep-wake cycle. Sleep deprivation can cause variety of health issues, including depression & hallucinations.

Children & Technology

The usage of technology has increased dramatically in recent years all across world.

According to 2015 findings of Programme for International Student Assessment (PISA), 95 percent of 15-year-old pupils in OECD nations have access to Internet at home. Furthermore, kids spend more than two hours online after school on normal workday, up 40 minutes since 2012. Children are "connected" in variety of settings, not only at home. According to PISA 2012 statistics, 72 percent of pupils in OECD nations reported using computer technology (desktops, laptops, or tablet computers) at school vs. 93 percent at home. Technology usage is increasing among people of all ages, not just teens. [7] Before they are introduced to books, preschoolers get familiar with digital devices. International trends show that younger ages of first access are becoming more popular. In response to this rise, there has been explosion of

study in recent years examining potential links between emotional well-being/mental health outcomes & children's technology usage, despite fact that understanding about how children under age of eight use technology is limited. In any case, majority of published research is correlational, with tiny effect sizes & unknown underlying processes. Given pervasiveness of technology in today's society & importance of this issue for policy & practise, it's critical to comprehend effects of technology on children's developing brains & bodies in twenty-first century in order to develop policies that define safe & effective use. When it comes to recommendations & studies, parents & guardians should exercise caution, while governments & policy-making bodies should be wary of prescribing policy without first conducting holistic & complete review of evidence base. This study examines present research base in order to determine possible influence on future recommendations & national policy implementation. [8]

Realizing children's healthy lifestyles through their interactions & day-to-day activities.

The statements below show that, for majority of parents, their children's healthy lifestyles were mostly linked to their daily activities, practise of exercises, such as play time, period when they typically move about lot, & adequate food. Some parents, on other hand, emphasised importance of their children's relationships, particularly those with friends & relatives.

To live healthily, you must have some free time, be able to participate in sports, enjoy childhood, play with your friends, socialise, & consume nutritious foods. Healthy child, in my opinion, is one who eats well, plays well, & lives in decent environment. Living healthy lifestyle entails receiving affection from one's family.

It occurs when you eat well-balanced diet & engage in variety of physical activities.

A healthy child studies & plays, but play time cannot be spent on internet or watching television; play time must include running about, being in contact with nature, & being on playground with other children.

They went beyond sickness when they talked about type of environment kid needs to grow up in order to be healthy, environment that should offer health, affection, & complete development of intellect.

Furthermore, parents thought that it was their & school's obligation to ensure their children's health. Remarks transcribed below show how concerned parents were about providing their children with healthy life. [9]

I believe that child is healthy if its mother & school are able to give it with healthy lifestyle, as well as nutritious diet & decent education. As result, both of them bear culpability.

Controlling child's health is challenging nowadays, & if we don't set example, it becomes even more difficult. child is reflection of its parents; if eating veggies is tough now, think what it would be like if we didn't do what we were meant to. They know everything, & when we do something we normally ask them to do, they blame us.

Some of participants indicated that lack of time & rush of daily life are challenges they encounter when raising their children, as these two issues prevent them from carrying out their responsibilities as progenitors more effectively, such as monitoring their children's food. [10]

I've been concerned since his most recent blood test came back negative; I've taken him to paediatrician & now to nutritionist to figure out what's wrong with his health. We've been taking severe steps that include entire family since it's our responsibility; we eat terribly, & he does as well.

Understanding influence of technology on children's daily lives & health.

All of respondents stated that technology had detrimental influence on their children's life, as seen by replies displayed below. Parents' main concerns were connected to their children's isolation & inactive lifestyles: [11]

There is significant influence, since I believe youngster loses interaction with friends & family as result of their emphasis on computer, electronic games, or television, so there is much to be desired in terms of interaction.

It does have effect; my kid just wants to play video games; if I let him, he would play for hours on end, which is unhealthy; he seldom eats, & he hardly speaks to us, his family.

When we take him out of his cartoon world & out of his bedroom, he is extremely quiet when dealing with people.

In addition to interpersonal concerns & those that influence development of kid as individual, parents were concerned about impact of technology on their children's health, as evidenced by following statements: [12]

I'm astonished by their sedentary behaviour; other day, we brought them to field to let them run about; they quickly became out of breath & weary, but come on, they virtually never leave our yard, so I believe there is influence.

Because he becomes sedentary, he does not engage in any physical exercise, even when we try to get him to do so.

From these comments, it is evident that technology has detrimental impact on children's health since it causes them to live sedentary lifestyle.

Screen time in children: Implications for health-behaviours & outcomes.

Sleep habits, posture, & sedentary behaviour are just few of health-related outcomes & behaviours that might be affected. Paper's second section evaluates some of possible dangers & advantages of technology use on developing countries. [13]

DISCUSSION:-During child's neuropsychomotor development, mother & father figures act as role models to be emulated. Parents and/or caregivers are accountable for their children's emotional structure & serve as facilitators in their growth & development. Both parents & schools should teach their children good behaviours & aim to improve their health via quality of life. Inappropriate behaviours, which are frequently repeated by adults, have major impact on proportion of children & adolescents who develop chronic degenerative illnesses. [14]

Children are through metamorphosis; therefore it is feasible to give them with healthy lifestyle, as they are more readily convinced to modify their lifestyle patterns than adults since they have not grown as connected to their daily routines. To do this, however, education programmes including parents, family members, caregivers, teachers, & healthcare experts would be required. Inappropriate use of technologies has resulted in significant increase in health risks for new generation, who have grown up in digital environment. [15] Excessive time spent in front of computer, for example, promotes sleep deprivation, lowers academic performance, & encourages sedentary behaviour, among other issues. Children are progressively spending more time in front of TV, video game, or computer for passive & lonely amusement, which, if not utilised properly, can lead to lack of creativity, lack of interest in reading, loss in curiosity, sedentariness, & isolation. Importance of child-digital interaction is undeniable, owing to child's development process. This experience is seen as necessary step in childhood socialisation, providing space for learning about roles, cognitive & moral development, control of aggressive impulses, & acquisition of global social skills.

[16] However, technology can contribute to social isolation in youngsters, causing them to become less altruistic or concerned about helping or providing nice things to others, as they spend hours online & lose interest in third parties. They also lack empathy & are less inclined to form friendships & trust relationships. During early stages of life, technology can obstruct children's formation of important bonds. Other young individuals have shown increase in narcissism & reduction in empathy. Although there is no direct link to technology, emergence of new media formats & their increased appeal has clearly resulted in losses. If kid does not build interpersonal relationships, he or she may grow insecure & unprepared to deal with pressure, taunting, & new circumstances. Sedentariness is becoming more prevalent among

young people & is one of leading causes of obesity. Sedentariness in childhood & adolescence is said to have grown more frequent as result of children's, families, & caregivers' lifestyle choices. Playing is more than just having fun; kid also learns, produces, recreates, & interacts with environment during play time. [17]The parents' responses show that, in their opinion, there are numerous ways to play, & that electronic games, although not being most appropriate for them, occupy significant portion of children's daily routine. This continual presence, along with lack of physical activity, compels parents to intervene in their children's routines, guiding them away from this unhealthy habit & luring them toward entertainment that they perceive to be more productive play time. [18]

CONCLUSION:-It was discovered that, according to parents, it is their & school's obligation to ensure that their children live healthy lives, & that this is closely connected to physical activity, food, & family connections. All of them expressed considerable worry about how their behaviours affect their children's health, habits that can be linked to media's encouragement of consumption. Influence of technology on children's health is apparent & irrefutable, since parents claim that technology causes isolation, sedentariness, & lack of other methods to play. Although, when questioned about their children's connection with technology, most parents focused on how often their children used it, just few of them considered this relationship. This lack of thought is exacerbated by presence of television in children's life for extended periods of time, as parents frequently use it as electronic babysitter, supporting construction of notions, attitudes, & values that should be provided by family. Nursing, with its generalist education & function as health educator, stands out in light of these findings & significance of interdisciplinary cooperation. Nursing professional should counsel parents on how to adjust their children's & own lifestyles in pursuit of healthy life, taking into account singularities & pluralities. When these technologies are utilised pedagogically, they become great instruments for child's growth. Nurse should warn them about implications of their children's inappropriate use of technology & help them in effective control & monitoring.

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INDIAN AGRICULTURE UNDER WTO REGIME

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Introduction:- Agriculture is an important part of India's economy. Around 65 percent of the workforce is employed by this industry, which produces a major portion of the country's GDP. Agricultural products such as grains, tea, coffee, spices, tobacco, cashew, and leather are key exports of India and hence assist the economy generate adequate foreign currency. Jute, textiles, sugar, cigarettes, paper and processed foodstuffs are all products of agriculture, which provides the raw materials for these businesses. Moreover, the agricultural sector offers a market for inputs like fertilisers and insecticides, capital goods such as tractors, pump sets and other agricultural machinery; and light consumer goods. Priority has been given to the agricultural sector in the first five -year plan (1951 -56) in order to deal with food shortages caused by the country's split into two territories. Since then, agriculture has always been the main focus of every successive plan. Enormous resources have been invested in the development of agriculture under different plans. Subsidies on inputs and Minimum support price for output are the two significant elements of agricultural development strategy. Agriculture has been neglected in the GATT for a long time as it remained mainly outside the disciplines governing international trade. The GATT did apply to agriculture. However, there were a number of exceptions to the regulations on non -tariff and subsidy measures. While export subsidies for the industrial sector have been banned, they have been given openly to agricultural products. In the agricultural sector, GATT rules allow countries to impose import restrictions if certain conditions are met. All of this has resulted in a dramatic shift in the global agriculture market. Excessive subsidisation by rich countries has resulted in a severe need for the liberalisation of world agricultural commerce, which has led to price distortions in agricultural products. All the poor and developing countries continue to face difficulties in getting access to agricultural products markets in developed countries. Trade restrictions prior to 1995 under the GATT were essentially useless when it came to keeping an eye on agricultural exports. It was only in 1986 -1994, however, that the Uruguay Round of 1986 -1994 made a significant difference. As a result of the WTO's multilateral trading system, agricultural trade is now completely under their control. An important first step in restructuring agricultural trade has been taken with the Agreement on Agriculture. As a result, all of the member governments have agreed to engage in extensive discussions focused towards

- i) There has been a considerable increase in the number of people who can buy the merchandise.
- ii) Export subsidies will be reduced and phased out
- iii) Domestic support that distorts international commerce will be cut

A total of five sections make up the current chapter. The first section is an introduction, followed by a discussion of WTO obligations and their effect on Indian agriculture. The third section focuses on Indian agricultural exports within the World Trade Organization (WTO) framework. For both before and post -WTO periods, it examines the trend in agricultural exports from India. It discusses the major export markets for the agricultural products and most importantly, measures the diversification in the agricultural exports using Normalised Herfindahl-Hirschman Index. The imports of agricultural products into India, both before and after the WTO, are examined in the fourth section. In the concluding phase of the market access indicator discussion, the applied, bound, and non -tariff measures indicators are explored in more detail.

WTO Commitments and Indian Agriculture

Import of Farm Products and Indian Markets

During the signing of the Uruguay Round, India said in its WTO schedule that there was no requirement under the balance of payment problems to have minimal market access for Indian goods. Even if quantitative constraints on the balance of payment basis are abolished, Implementation will not require India to meet any minimum market access requirements. As a result, there's no reason to worry about an agricultural product glut in India. Anti-dumping, safeguard action, or countervailing action may be used to prevent an increase in imports by standardising customs duty rates within bound rates and by implementing remedial trade measures, as permitted by WTO agreements.

Subsidies on Farm Sector

Subsidies for Indian farmers may no longer be available due to the WTO Agriculture Agreement, according to some. In reality, the Agreement on Agriculture places no duty on India to reduce its subsidies. Due to the fact that the overall aggregate value of subsidies provided to farmers, including energy, fertiliser, pesticide, and seed subsidies, is substantially below the Uruguay Round Agreement's ceiling, this cannot be said to be a good thing. In the words of Mr. Pranab Mukherjee: "An opinion is sometimes raised that the GATT agreement could jeopardise farm sector subsidies, both product-specific and non-product-specific. The importance of product-specific as well as non-product-specific support in achieving self-sufficiency in food is something I believe we all agree on. These eminent economists have found that, in the three base years of 1986-87, 1987-88, and 1988-89, the Indian government gave the agriculture sector negative subsidies of Rs 19,000 crore. According to this, if we are ever going to get even in the ballpark of positive subsidies, we'll need a whopping Rs. 19,000 crore in additional subsidies for agriculture, which is practically impossible. As a result, we would be under no obligation to reduce our current levels of agricultural subsidies under the agreement.

Additional exemptions for developing nations include:

- I) Agricultural input subsidies normally offered to growers with low incomes or limited resources.
- II) Investment subsidies accessible to agriculture and
- III) Producing alternatives to illegal narcotics is easier with help from within the country's own borders.

WTO and India's Public Distribution System (PDS)

In India, the public distribution system (PDS) does not provide farmers or producers with a financial incentive. Subsidies for food will be provided to poor in both rural and urban areas. According to Agricultural Agreement, such subsidies are excluded from WTO regulations.

With respect to the World Trade Organization (WTO), India has declared that Public Distribution System (PDS) and other social safety measures for food grains sold at lower rates are in compliance with the agreement's conditions. Almost all of India's trading partners have examined and approved the pact already.

The requirements of the Agricultural Agreement's Annex 2 pertain to public food storage for the sake of food security. It allows for government stockpiling programmes for food security objectives in underdeveloped nations, which are transparent and directed by objective criteria or rules that have been formally publicised. Under these recommendations, operations are deemed to conform to the Agreement's obligations if AMS accounts for any discrepancy between the attainment price and the external reference price. Under the Agreement on Agriculture, there is no restriction on our public distribution system.

Food Security under WTO

Definition: "the ability of all individuals to have access to sufficient food for an active and healthy life at any given time without fear of losing such access, and hence is intimately tied to the loss of livelihood in developing nations." A healthy diet is provided for everyone on Earth by the Bali Declaration of the Non-Aligned Movement and Other Developing Nations. Malnutrition and hunger rates have risen steadily over the past decade in many poor nations despite the fact that food supplies have increased globally. Having "food security" as both a primary goal and an objective measure of development policy's effectiveness was emphasised in the Bali Declaration. Agricultural reform promises should consider non-trade factors including food security, as stated in the Preamble to the Agreement on Agriculture. Article 20 of the Agreement states that non-trade issues such as food safety will be taken into account in negotiations to continue the reform process. As a result, many individuals believe that current agricultural conversations should begin with addressing the pressing issue of food security, which is crucial in nations with substantial agricultural economies like India from both an economic and a political aspect.

WTO and Indian Agricultural Exports

Trend in Indian Agricultural Exports in Pre and Post WTO period.

India's total exports are dominated by agricultural products. Exports of agricultural products accounted for 17.5% of overall exports in the years preceding the WTO's establishment (1990-95). US\$ 3354 million was exported in agricultural and associated products in 1990-91, it then showed negative growth in two subsequent years, i.e., 1991-92 and 1992-93 and fell to US\$ 3136 million in 1992-93. It has gained momentum and reached US\$ 4028 million in 1993-94 and then US\$ 4226 million in 1994-95. The performance of the sector has been satisfactory in the pre-WTO period; In fact, it has grown at a 7.16 percent annual compound rate.

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IMPACT OF WTO ON INDIAN AGRICULTURAL TRADE: A GRAVITY MODEL APPROACH

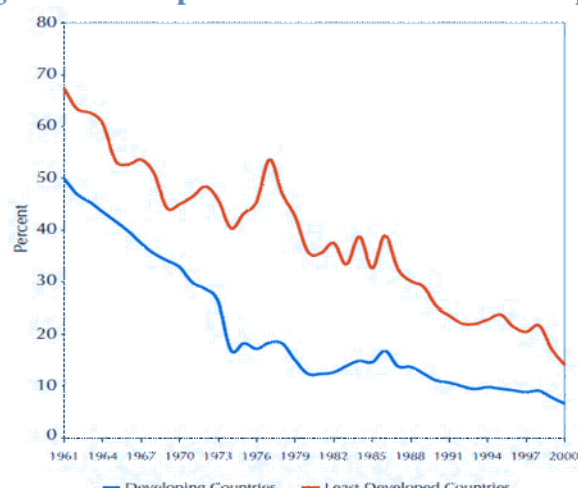
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Introduction:- Global food security and domestic agricultural production and employment are both dependent on agricultural trade, which is an essential aspect of total economic activity. If a situation of temporary food-deficit arises in any country either due to adverse climatic conditions or some other reasons, Agricultural trade might potentially provide the world's food demand. Farmers, businesses, and consumers all benefit from it. This is why countries have traditionally relied on agricultural trade to supplement and complement their local produce. Differences in the distribution of land resources and climate zones that affect farming patterns have sparked commerce between the countries.

As a result, the importance of commerce has grown and the development of global markets has been accelerated by changes in consumer tastes. Developed countries meet a significant share of the growing food needs of developing countries. Other agricultural products such as tropical beverages, rubber, and fibres are provided in exchange by the developing countries. There is no single bloc of developing countries. All emerging countries throughout the world have boosted their net exports of tropical items and imported commodities from the temperate zone. However, a number of countries in the temperate zone are large net exporters of goods.

Agricultural trade is the most critical issue which has attracted the attention of policymakers and economists in India as well as globally. This is because growth in agricultural trade has an uneven effect on economic development and poverty in developing countries like India, where agriculture provides the primary source of income for the majority of the population. Agricultural trade requires greater attention in a changing global scenario, where countries prioritise it as one of their uppermost agenda in international trade negotiations. In recent decades, we see that the efforts of countries and their rising concern for the agricultural sector has enhanced the trade in agriculture. It is true that the volume of agricultural exports has increased, but this does not mean that agricultural exports have grown at the same rate as the manufacturing sector. Although worldwide merchandise commerce has surged 17-fold in the previous 50 years, which is more than three times the growth in global economic production, agricultural trade has grown at same rate.

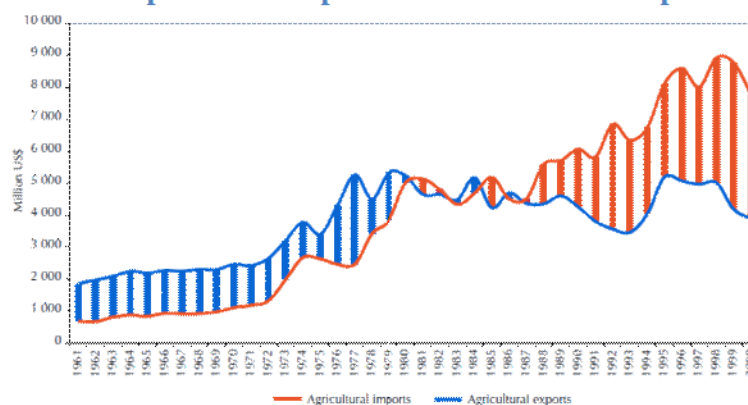
Figure 1.1 : Share of agricultural exports in total merchandise exports



Source: FAO

It is because of this that agricultural export development in underdeveloped countries is being inhibited. This has resulted in them exporting a considerable portion of their goods to markets that are already saturated with wealthy countries. About 80% of agricultural items traded worldwide are food products, and the other main category is raw material. Trade in high-value agricultural products, such as processed foods, has been growing faster than trade in primary crops like cereals since the mid-1980s. Farming has been losing importance in total merchandise exports as can be seen in the graph above. Agriculture's proportion in developing countries' exports declined from 50 percent in 1961 to less than 5 percent in 2000 because of the restricted market capacity to absorb agricultural products. Agriculture is primarily exported to industrialised countries, where the market is oversupplied and there is limited wiggle room for price changes. Coffee, chocolate, tea, and rubber have been particularly hard hit by these restrictions. Inelastic demand in affluent countries has been supplied by expanding output from emerging countries, resulting in a long-term downward pressure on prices. As a result, export earnings have improved only somewhat as a result of reduced prices cancelling out much of the export volume gains. LDC countries, whose economies are based primarily on agriculture, saw their proportion of agricultural exports drop from 65 percent in 1961 to less than 15 percent in 2000. Figure 6.2 shows the agricultural exports and imports of LDCs.

Figure 1.2 : Agricultural exports and imports of the Least Developed Countries (LDCs)



Source: FAO

In the above figure, we can see that LDCs are the net exporters of agricultural items from 1961 to 1980. During this period, LDCs have imposed many restrictions on imports, and they put emphasis on domestic production; and hence the exportable surplus has made the LDCs the net exporters. From 1980 to 1987, agricultural exports and imports are found to be about equal in terms of their value. Imports have already surpassed exports by the 1990s, and the agricultural trade deficit has continued to grow at an accelerating rate since then. Agribusiness has become a net importer of agricultural products for LDCs since 1990, as the trade gap has increased. Food aid and imports, according to FAO's 2010 forecast, will be required to make up the growing food imbalance. Some of these countries' export earnings and external resources are critical to their ability to fund these escalating import costs. Most of these countries have seen their export profits stagnant over the last two decades, primarily because commodity prices have fallen. Imports of agricultural products have increased throughout this time period. The least developed countries are increasingly reliant on imports to meet their dietary needs for essential food items.

It isn't always the case that a country's overall economic situation is getting worse just because the net agriculture trade balance changes. A increasing agriculture trade deficit in certain countries may simply be a reflection of their rapid economic growth. As an example, consider the Republic of Korea, where a growing agricultural deficit has coexisted with rapid

economic growth and rising food demand. Similarly, China's increasing imports of vegetable oil are essentially a sign that the country is better equipped to meet its own food demands by importing them. In countries that depend significantly on agricultural export revenues or that must shift limited foreign exchange capital (and ultimately acquire unsustainable foreign debt) in order to pay for increased food imports, a deteriorating agricultural trade balance is a negative development consequence. More worrisome, however, is the situation where such imports are not linked to an increase in per capita food consumption, but are simply necessary to sustain a certain level of consumption.

During the 1990s, the World Trade Organization (WTO) was established. Countries may apply export subsidies on primary agricultural products and impose importing restrictions under specific situations prior to the founding of the GATT. As a result, agricultural trade has been severely harmed. Since WTO's inception, trade restrictions have been reduced or eliminated, which has contributed to increased global trade. According to many, the World Trade Organization (WTO) and its precursor GATT are some of the most successful multilateral organisations in the history of international trade (Bhagwati, 1991; Irwin, 1995; Bagwell & Staiger, 2002). After 60 years, GATT/WTO produced a paper titled "Six decades of multilateral cooperation: What have we learned?" to commemorate the milestone. These are some of GATT's successes, WTO's as noted in the report:

More than three times as significant as the eight-fold increase in global output since 1950 has been the increase in global trade, which has increased more than twenty-seven fold in volume terms. International Trade Organization (WTO) p. 243

Pascal Lamy, the WTO's director general, also lauded the GATT/accomplishments: WTO's To open and regulate global trade, the World Trade Organization (WTO) remains the most effective and credible platform (WTO, 2015). Global commerce has grown at an incredibly rapid pace thanks to the persistence of the GATT/WTO and its visible role in eliminating trade barriers via successive rounds of negotiations. GATT/WTO membership and commerce have become a focus point for empirical research in recent years. This debate began with an article by Andrew K. Rose (2004) titled "Do we genuinely know that the WTO increases trade?" GATT/WTO members do not appear to trade differently from non-members based on a traditional gravity model and extensive panel data spanning 175 countries and 50 years. Rosetta considers this to be an intriguing conundrum. GATT/WTO has had a considerable impact on international commerce since then, according to experts. Silviano et al. (2018) found the same conclusion, but Rose's work has garnered a lot of negative attention. '

Subramanian and Wei's study of Rose is one of the more critical ones (2007). Some countries or businesses have found that the benefits of being a member of GATT/WTO are not equitably distributed. Trade liberalisation is a complicated issue, and it relies on how much a country participates, who it negotiates with, and what items are included in the negotiations. The findings of Subramanian and Wei (2007) are significant. In the first place, the GATT/WTO significantly promotes trade, but only for the industrialised nations that have participated in trade liberalisation. Because the agriculture sector was insulated from trade liberalisation under GATT/WTO, they observed a huge and considerable negative impact on this sector. A debate is taking place on the impact of GATT/WTO membership on international trade, particularly in relation to agriculture.

In this chapter, we'll look at how India's agricultural trade has changed since it joined the WTO. When it comes to studying trade patterns between India and its trading partners, the gravity model is used to analyse a huge panel data set that includes 88 nations across 39 years. Out of the total 240 trading partners of India, which account for 5,12,563,257 thousand US dollar value of Indian agricultural exports and 3,66,538,525 thousand US dollar value of agricultural imports over the years 1978 to 2018, 87 countries are selected for the present study which accounts for 95.05 percent of total exports and 89.05 percent of total imports.

The value of exports to these selected partners is higher than 50,000,000 US dollars per annum in the recent period (i.e., 2000-2018). Of the selected 87 trading partners of India, 56 are founding members of WTO, 20 of them joined later, and 11 are still non-members. The list of countries selected for analysis and their date of WTO accession is presented in the Appendix Table A.8. Several determinants of trade are included in our model, of which the primary variables of interest are Bothin and Onein. This study aims to determine the impact of India's membership in the WTO on agricultural trade. By looking at these "Bothin" and "Onein" coefficients, we can see how much of a positive or negative impact the WTO has on global trade. Bothin should be positive if the trade is established when both nations are WTO members, and Onein should be negative if the commerce is diverted from the non-members. The following is the rest of Chapter 2. Indian agriculture was studied using a gravity model, which accounted for a wide range of factors, are presented in the following section. There are three sub-sections in this section. First, agricultural trade is discussed, followed by agricultural exports, and finally, agricultural imports from India are discussed. Section three predicts the agricultural trade potential of India using the gravity coefficients. Section four concludes the chapter.

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Global Pandemic threat in Living Life, West Bengal: A review work

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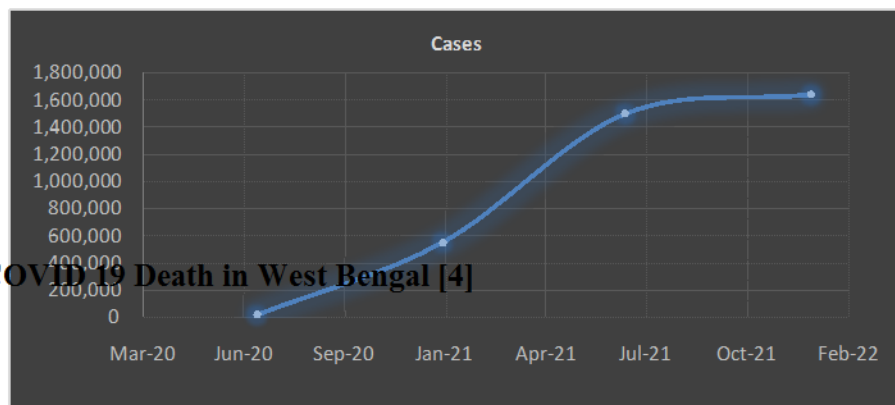
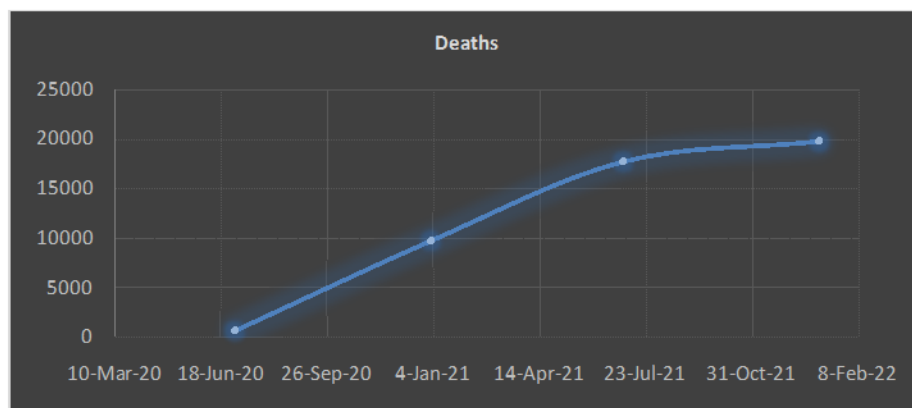
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Abstract:-It is believed that every 100 years, a deadly storm strikes the earth. The name of the deadly storm in 2019 is Coronavirus. In December 2019, in Wuhan, China, the first case of Novel Corona Virus Disease (COVID -19) was reported. Rapidly, this virus migrates from Wuhan city to 206 countries via droplet infection through humans. On January 27, 2020, a 20-year-old female was the first case of COVID -19 reported in Kerala, India. In West Bengal, Kolkata, March 17, 2020, the COVID -19 pandemic was the first confirmed case reported. As rapidly confirmed COVID-19 cases increase, the Prime Minister on March 19, 2020, asked all citizens to join the Janata Curfew on Sunday, March 22. On the evening of March 24, 2020, the government of India ordered a nationwide lockdown for 21 days. Because of the lockdown, more than 350 deaths were accounted for starting on May 10, with reasons ranging from starvation, suicides, weariness, street and rail mishaps, police mercilessness, and forswearing of opportune clinical consideration. Reported deaths were mostly among migrants and labor workers. This review paper discusses the effect of a pandemic threat on daily life during the lockdown period.

Keywords:- Covid 19, Pandemic threat, Lock down

1. Introduction: The coronavirus is the greatest worldwide threat and challenge of our lifetimes. All things considered, today is changing human perspectives, practices, and compelling associations to react. In any case, the need to react won't end when the infection's prompt danger subsides. The pandemic has an extended history, but the time itself is too short to be described by using many scientific texts. There have been some substantial pandemics recorded in human history in which pandemic -associated crises have brought on enormous poor effects on fitness, economies, or even country-wide safety globally [1]. Pandemics are huge scope flare-ups of irresistible illnesses that can enormously expand dreariness and mortality over a wide geographic region and cause huge monetary, social, and political disturbances. Proof suggests that the probability of pandemics has expanded throughout the most recent century on account of expanded worldwide travel and combination, urbanization, changes in land use, and more noteworthy abuse of the regular habitat [2].

2. Pandemic effect on living life: After declared lock down, people are restricted own house, which means social distances. Social separating is a basic means to break the pattern of infection. Physical activity was totally stopped. The COVID -19 pandemic was first affirmed in the Indian province of West Bengal on 17 March 2020 in Kolkata. The Health and Family Welfare division of the Government of West Bengal has affirmed an aggregate of 13, 43,442 COVID-19 positive cases, including 1, 09,806 dynamic cases, 15,120 died, and 12, 18,516 recovery, starting at 28 May 2021 [3]. 23rd March 2020, the principal COVID -19 demise was accounted for as the 57 -year-old male patient lapsed at the private office. He was the Indian Railway staff representative and as of late came from Bilaspur. Two men (48 years and 20 years) and one female (47 years), who were in direct contact of a positive case, were tried positive. 24 March, 55 year's old female and 58 years old male were positive who got back from UK.

Fig 1. : COVID 19 Cases In West Bengal [4]**Fig 2. : COVID 19 Death in West Bengal [4]**

3. Quarantine and Lock down:On the night of 24 March 2020, the Government of India asked Lockdown for 21 days, proscribing the development of the entire 1.38 billion (138 crores) population of India as a safety measure towards the COVID-19 pandemic in India[5]. It became asked following a 14-hour Janta curfew on 22 March, trailed by means of authorization of development of tips in the international locations' COVID-19 impacted districts. The lockdown became set when the quantity of affirmed high-quality Covid cases in India was around 500[6, 7, 8].

Phase 1 (24 March – 14 April, 2020):On 24 March, the principal day of the lockdown, practically all administrations and processing plants were suspended. Individuals were hustling to stock basics in certain parts[9]. Captures across the states were made for abusing standards of lockdown, for example, branching out for no crisis, starting organizations, and furthermore home quarantine infringement. The public authority held gatherings with online business sites and merchants to guarantee a consistent stockpile of fundamental merchandise the country over during the lockdown time frame. A few states reported alleviation assets for poor people and impacted individuals while the focal government was settling an upgrade bundle.

Phase 2 (15 April – 3 May, 2020):On 14 April, PM Modi prolonged the national lockdown till 5 May, with a conditional relaxation promised after 20 April for the areas where the unfold had been contained with the aid of then[10]. He stated that each metropolis, each police station region and every state might be carefully evaluated to peer if it had contained the spread. The areas that had been capable of accomplish that would be released from the lockdown on 20 April. If any new cases emerged in those areas, lockdown will be reimposed [11, 12].

Phase 3 (4–17 May,2020): On 1 May, the Ministry of Home Affairs (MHA) and the Government of India (GoI) similarly extended the lockdown period to 2 weeks past 4

May,[13,14] with a few rest. Us of has been cut up into 3 zones: crimson zones (a hundred thirty districts), orange zones (284 districts), and green zones (320 districts)[15]. Red zones are those with excessive coronavirus instances and a high doubling price, orange zones are those with comparatively fewer cases than the red region and inexperienced zones are those with no instances inside the beyond 21 days.

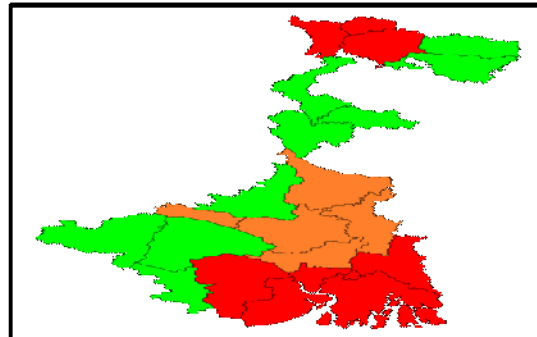
Phase 4 (18–31 May, 2020): On 17 May, the National Disaster Management Authority (NDMA) and the Ministry of Home Affairs (MHA) prolonged the lockdown for a period of weeks past 18 May, with additional relaxations. Unlike the previous extensions, states have been given a larger say within the demarcation of Green, Orange, and Red zones and the implementation roadmap. Red zones were in addition divided into containment and buffer zones. The neighborhood our bodies had been given the authority to demarcate containment and buffer zones[16, 17, 18].

Table 1: Unlock Phases

Phase	Duration	Permit
Unlock 1.0	1-30 June, 2020	shopping malls, religious places, hotels, and restaurants
Unlock 2.0	1-31 July,2020	Inter- and intrastate travel, Limited international travel, Shops (5 person at a time)
Unlock 3.0	1-31 August, 2020	gymnasiums, yoga centers,All inter-and intrastate travel and transport
Unlock 4.0	1-30 September 2020	Religious, entertainment, political, sports, academic functions (100 people allowoutside the containment zone,)
Unlock 5.0	1-31 October, 2020	Swimming pools, Cinema halls (50%),
Unlock 6.0	1-30 November	partial reopening of schools outside Containment zone

Containment Zone: West Bengal government announced 4 districts, including Kolkata as red zones, 348 areas containment zones. Some other district Orange and Green zones. Some rest will be given to Orange zones and most rest will be given to Green Zones.

Fig3: Red, Orange and Green Zone in West Bengal [Source: en.wikipedia.org/wiki/]



4. Mobility Changes:

Fig4: Retail and Recreation during Lock down [4]

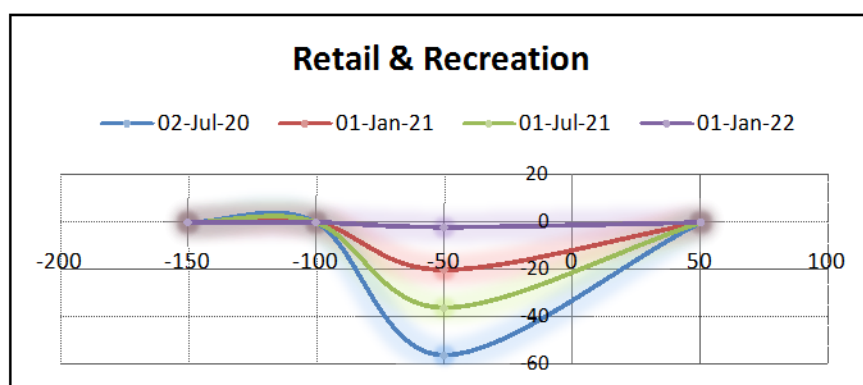
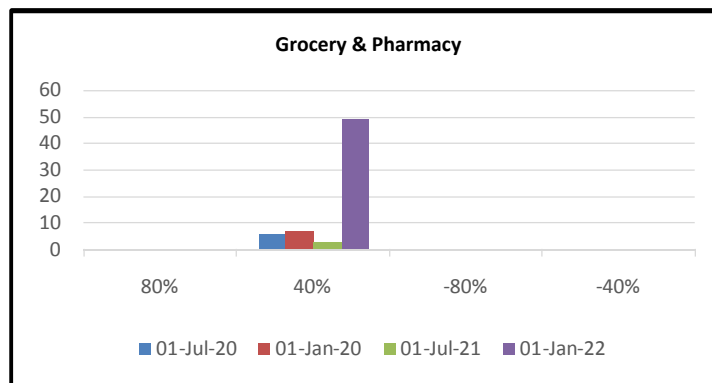


Fig5: Grocery and Pharmacy during Lock down [4]

5. Impact:

Food Impact: The not unusual point of pandemics is their serious negative outcomes on the global economy. Considering the food delivery chain, one of the most important sectors of the economic system, it has been seen that COVID-19 has an effect on the entire process from the sector to the consumer. Local online food delivery was totally stop. Even e-commerce services was totally stop[20].

Migrating Labor: According to the reviews of WHO, the COVID -19, first mentioned in December 2019, however the entire international in an extraordinary crisis and lingering uncertainty with innumerable deaths, generalized economic depression, unemployment, quarantine, unavoidable lockdown, and journey -ban that changed into imposed globally as a necessity to tackle the pandemic. Among the populace, the migrants were discovered to be one of the most prone businesses in this lockdown, as their very livelihood came to a complete standstill.

With factories and offices shut down, thousands and thousands of migrant workers needed to deal with the lack of income [21], food shortages, and uncertainty about their destiny.

Following this, many of them and their households went hungry [22, 23]. While the authority's schemes ensured that the bad might get additional rations due to the lockdown, the distribution procedure did not be powerful [24, 25].

With no work and no cash [26], thousands of migrant workers were walking or bicycling hundreds of kilometers to go again to their native villages [27]. Many were arrested for violating the lockdown and a few died of exhaustion or in accidents on the roads[28].

Impact on Education : School closures were a commonplace strategy in the battle towards COVID-19[29]. The pandemic caused similar shocks to the education system, with schools forced to close down throughout the lockdown length, and the transition of students and teachers to online teaching-studying. In India, around 250 million college students have been affected because of faculty closures on the onset of lockdown induced by COVID -19[30]. Currently, the united states are undergoing it's one of the worst recession fallout, and this is what's making the students stressed about what will take place to their destiny, will they get a good carrier? Will they be able to pass the exam? Can they regularly attend school soon? The Government on the center is doing many things however isn't always centered on the fundamental trouble that is stressed youngsters, their fitness, and happiness.

Table2: School closed during COVID 19 [31]

School type	Females	Males	Total
Preprimary	20,257,029	22,144,753	42,401,782
Primary	58,441,303	63,258,910	121,700,213
Secondary	63,156,590	70,886,710	134,043,300

6. Conclusion: The COVID-19 pandemic has brought about a dramatic loss of life all over the world and offers an extraordinary challenge to public health, food systems, and education.

Countries dealing with existing humanitarian crises or emergencies are mainly exposed to the consequences of COVID-19. Responding unexpectedly to the pandemic while ensuring that humanitarian and recovery help reaches the ones most in need is crucial. We should reconsider the future of our surroundings and address climate change and environmental degradation with ambition and urgency.

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Managing Agriculture with the implementation of Sustainable Development Goals in India

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Abstract:-The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by all United Nations Member States in 2015 as a universal call to action to end poverty, protect the planet and ensure that all people enjoy peace and prosperity by 2030. Rural development is strongly linked with sustainable agriculture. It is indirectly that health status, educational level and social complexities develop fairly due to sustainable development in agriculture. After independence there was drastic shift in commerce of the country which was rapidly changing from primary sector to manufacturing and service sector. Being an agrarian economy it was not possible that country's GDP will be led by manufacturing and service sector. So it was thought that sustainable agriculture development is only the source for overall development of India where majority of the population still are residing in rural area. The paper primarily focuses on the need for sustainable development of agricultural techniques for overall rural development. It deals with modern practices which will support this idea.

Key words: Sustainable Agriculture, Integrated approach, programming, rural development, incentives and modern techniques, Sustainable Development Goals.

Introduction:-A UN document on SDGs 'Transforming Our World: The 2030 Agenda for Sustainable Development', puts forward 17 goals and 169 targets that are universal, integrated and indivisible for the development. Though national governments were not legally bound to implement SDGs, however, it was expected from them to take ownership and integrate SDGs with their national policy framework in order to achieve the desired results by 2030. In this direction, Union Government of India tried to align SDGs with its National Development Agenda and has to bring out key policy documents such as Vision, Strategy and Action Agenda. The Vision document was supposed to focus on the social, economic and environmental goals proposed for SDGs up to 2030, with an aim to transform India into a prosperous, highly educated, healthy, secured, corruption free, energy abundant, environmentally clean and globally influential nation. Further, mapping of schemes and programmes have been carried out by Ministries and Departments in Union and the select State governments as per SDG goals but no framework has been prepared at the levels of districts/ local governments. Agriculture being the primary economic activity of the country it is the most favoured private enterprise of the country. Its role is however, witnessed in the economic development of the nation. Rural development always takes place when its natural resources are harnessed in an effective manner. Thus agriculture determine the fate of the country where still two third of the population reside in rural area. The larger objective for the improvement of agriculture sector can be realised through rapid growth of agriculture, which depends upon increasing the area of cultivation, cropping intensity, and productivity. But for a country like India, increasing productivity is more important than the rest of two. This is simply because of increasing urbanization, industrialisation and the limited land size of the country.

Objectives of the Paper:-As it is a fact that rural development by all the chance is associated with sustainable techniques in agriculture, the present paper will try to highlight the modern techniques which will lead to agricultural sustainability as well as its usage in future to gain the utmost benefit from the same.

Prospects of Sustainable Agricultural Development:-The issue of sustainable development can be discussed under three broad types of farming systems viz. traditional production system, modern agriculture system and sustainable agriculture system. Further we can compare them across three dimensions, ecological, economic and social responsibility. The contribution of agriculture to the GDP of the country is 13.7%. Agriculture in the country is characterised by low productivity and unsustainable farm practices, giving rise to a high incidence of rural poverty. A sustainable portion of the cultivated area is still under the traditional farming and most of the food items are imported from other countries such as eggs, food grains, etc. Infrastructural constraints have also perverted the economy of the country from growing at a pace commensurate with that of the rest of the country.

Need for sustainable agriculture :-With the advent of chemical fertilizers, larger dependency fell on it. It was very much necessary that the ever increasing population of the country should be fed with available natural resources. This seemed possible. It was two decades after our independence that a major revolution was seen in the field of agriculture. This was called as "Green Revolution". It started in India in 1968 with new chemical inputs and high yielding varieties of crops. Undoubtedly, this was a great effort towards self sufficiency in food. But, the Green Revolution is now showing the second generation problems like soil fatigue due to intensive cultivation and inadequate and imbalanced fertilizer use, stagnation in yield of high yielding varieties, increasing problems of soil salinity, declining soil organic carbon content, declining water table and development of the rural area it was necessary that the natural assets of the country shouldn't have been disturbed, so the concept of sustainable agriculture arose.

Concept of Sustainable Agriculture :-"Sustainable agriculture is the efficient production of safe, high quality agricultural products, in a way that protects and improve the natural environment, the social and economic conditions of farmers, their employees and local communities and safeguards the health and welfare of all farmed species".

Sustainable Agricultural Practices leading to overall Rural Development:

a) Effective Land use Practices: The availability of land and fertile soil is essential for healthy crops and livestock. Farmers who work on degraded land face decreasing yields, resulting in lower income. It is therefore, vital for them to adopt sustainable land use practices to keep soil healthy. This is also in the interest of local industrial community as fertile land is essential for securing their supply of raw material.

To minimize erosion and soil degradation it is advised to the growers to minimize tilling or to avoid plowing the soil altogether. Turning the soil may control weeds, but it expose the top soil, which is rich in organic matter and retains water well. When top soil is exposed, the organic matter it contains is rapidly broken down and nutrients vital to plant and soil health are lost.

No tilling helps to keep the soil in better health and also reduces, the need for irrigation and fertilizers, saving farmer's money on expensive inputs. Growers can implement other land use practices such as waste reduction, drip irrigation, sustainable pest control and harvesting techniques as well.

b) Pest Managment: Protecting crops from pest, weeds and disease is an essential part of everyday farming activities, even more so in the context of rising food prices, population growth and concerns over global food security. Pest managment is essetial for preserving the abundance and diverisity of native species and for ensuring the quality and sustainability of agricutlural yields. Nematodes are soil organisms, and certain species prey on the early stages of fruit flies which reside in soil. Following this discovery, they offer many advantages including the control of other insects such as "bichofurao" less releases per year, and greater ease of release in the field.

c) Economic Aspects: -Agriculture plays a fundamental role in the economic growth and the development prospects of a vast majority of developing countries. Therefore, when businesses source products from these countri es, they can contribute to the well being of millions of rural laborers and small farmers. However, this requires that they understand the dynamics of their supply chains and the consequences of their procurement policies. Supply Chain generation should be improved and trust must be generated among the supply chain players. It helps to ensure continuity among the produce from the fields and also helps the managers and buyers take multiple factors into accent while making decisions. Weather disruptions, inspection delays, product losses and price increases still occur, but they are now seen from the perspectives of the farmers as well as buyers.

d) Social Aspects: - Agriculture, the largest industry on the planet which employes over one billion people world wide. Working conditions and community health issues vary greatly according to region and continent. Agriculture can facilitate access to education, training and health care for laborers and their families. Farmers who comply with International Standards can display the stamp on their products, providing them with added value in the market place. It will encourage the farmers to orgnaize efficiently and to improve t heir agricultural and mangement practices. The aim has been for them to increase their income, to improve the living, working health and education condition of their families and workers, to manage their farms more professionally and to protect the environment.

Efforts of the State Governments to Manage Agriculture with the help of SDGs.

State governments are both policy makers and implementers of the policy. Thus, they are best placed to link the SDGs to the needs and priorities of the region and local com munities. SDGs need to be implemented in effective manner in order to take the agricultural sector in a sustainable direction. One of the cornerstones of the localising process is building a robust institutional structure for planning, budgeting, implement ing and monitoring for SDGs. This involves

- Identification of a nodal department for coordinating work on SDGs;
- setting up mechanisms for convergence of all departments & stakeholders in planning at Panchayat, Block & district levels;
- Sensitising a nd capacity building of the bureaucracy as well as elected representatives at the state, district and grassroots level about the Vision 2030;
- aligning the planning, decision making and budgeting processes with SDGs;
- Developing departmental action pla ns with short and medium term targets to achieve the SDGs in a time bound manner;

- Analysing adequacy of current interventions, identifying critical gaps & devising suitable interventions;
- developing a State Indicator framework for monitoring progress, identifying data sources & nodal officials for collecting/managing data

Conclusion:-The Sustainable Agriculture Initiative (SAI) Platform is an organization founded by food industry companies - Group Danone, Nestle and Cargill - to communicate world wide and actively support the development of sustainable agriculture practices by stakeholder throughout the food chain.

SAI Platform supports agricultural practices and agricultural production systems that preserves the future availability of current resources and enhance their efficiency. As mentioned earlier support system of Rural Development is Agricultural Sustainability. Development of one is interrelated with the other.

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Level of Fatigue, Depression and Sleep Quality among Hemodialysis Patients

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Abstract: Hemodialysis(HD)is a medical procedure to remove fluid and waste products from the blood and to correct electrolyte imbalance. Over 2 million ESRD patients worldwide presently receive treatment with HD to stay alive, yet this number may only represent 10% of people who actually need treatment to live .(CouserWG,2011)^[1]According to Sofia Zyga,2015^[2], Higher levels of fatigue were reported (47.3%) among hemodialysis patients residing in urban areas, in those with low educational level and unemployed .Disorders most frequently encountered in HD patients with insomnia were waking up at night (90%), difficulty falling asleep (60%), and daytime sleepiness (60%). ([Mohamed Amine Hamzi](#),2017)^[3].Amjad Khan (2019) ^[4] also revealed that Depression thought to be under recognized problem and was prevalent (84.9%) in HD patients.

Objectives: 1] To assess level of fatigue among HD patients .2] To measure level of depression among HD patients.3] To evaluate level of sleep quality among HD patients.4] To find association of fatigue, depression & sleep quality with demographic variables.

Methodology:In this Quantitative study Exploratory research design was used. By Non probability purposive sampling technique 40 dialysis patients were selected.4 data collection tools were used.Interview schedule for demographic variables,Fatigue Severity Scale (FSS)to assess level of fatigue, Beck Depression Inventory(BDI) Scale to measure the level of depression and Pittsburgh Sleep Quality Index (PSQI) to evaluate sleep quality. Reliability of the tools measured by Cronbach's alpha method &it was found 0.77 for FSS,0.79 for BDIand0.77 for PSQI. Results:Majority55%of the patients were in the age group>50 years,29%male,47.5% illiterate,95%married&57.5% were in service.In 17.5% patients the duration of illness was upto1year,27.5%1 -3 years&37.5%>5 years.Duration of dialysis,22.5%&17.5% were between1 -3 years &3 -5 years respectively whereas32.5%were experiencing HD>5 years. **90%patients were having fatigue on FSS (score >=36).On BDI,35%had mild,30% each were with moderate and severe depression. InPSQI,85% had poor sleep quality. No significant association seen between any of the demographic variable and FSS and PSQI (p > 0.05).Statistically significant association was seen between duration of illness and BDI (p<0.05),while all the other demographic variables were not associated with BDI(p>0.05)**

Keywords:-Hemodialysis,FSS,BDI,PSQI

Introduction: Kidneys are two bean-shaped organs that lie just below rib cage, on each side of [spine](#).They remove waste and fluid frombody,keep controlled[blood pressure](#)and support bones to be strong.They also maintains normal fluid & electrolyte balance in[blood](#).Finally,they make the [hormone](#) that helps to produce red [blood cells](#).If kidney disease becomes very severe and crosses a point where there's not enough function to maintain the body,then patient need either a transplant or **dialysis**(webmed,2020)^[5]**Fatigue** is a common symptom in dialysis patients and is associated with an impaired health -related quality of life.Most hemodialysis patients experience fatigue and malaise after treatment.Within 5h after dialysis,resting or taking a nap is reported,and more than 80% of patients experience fatigue symptoms.([Hirotoshi Kodama](#),2020)^[6].Although dialysis is aprocedure that saves lives,it cannotreplace the function of healthy kidneys.Fatigue associated with HD significantly affects the quality of lifeof these patients (McCann K,2000)^[7] **Depression** According to the guidelines of the World Health Organization (WHO) ^[8],“depression is a common mental disorder, characterized by sadness,loss of interest orpleasure, feelings of guilt or low self -worth, disturbed sleep or

appetite, feelings of tiredness and poor concentration.

Objectives of the study:

1. To assess level of fatigue among HD patients
2. To measure level of depression among HD patients
3. To evaluate level of sleep quality among HD patients
4. To find association of fatigue, depression & sleep quality with selected demographic variables

Assumption:- The hemodialysis patients may have some amount of fatigue, depression and sleep disturbances

Methodology:

Research Approach: Quantitative Non-experimental approach

Research Design: Exploratory research design

Setting: Dialysis unit of Shree Indore Cloth Market Hospital, Indore, Madhya Pradesh

Sample: Patients undergoing HD in Dialysis unit

Sample Size: 40 patients

Sampling Technique: Non probability purposive sampling

Inclusion criteria for sampling:

- 1] Those patients who were undergoing hemodialysis at Shree Indore Cloth Market Hospital, Indore (M.P.)
- 2] Patients who were willing to participate in the study
- 3] Patients who were oriented to time & place and not having any symptomatic discomfort during hemodialysis.
- 4] Patients who did not have any hearing or cognition impairment.
- 5] Patients who were present during the period of data collection
- 6] Patients who were able to read and understand Hindi language

Exclusion criteria for sampling:

- 1] Patients who were not willing to participate in the study
- 2] Patients with any serious co morbidity or illness
- 3] Patients who were not present at the time of data collection.
- 4] Patients who did not come in inclusion criteria

Tool: In this study following tools and techniques were used:

Section-A: Structured interview schedule on demographic profile of patients: 11 demographic variables are included in this study i.e. Age, Gender, Academic status, Marital status, Occupational status, Income per month, Number of children, Duration of illness, Duration of HD, Residential area, Any other comorbidity with ESRD

Section-B: The following 3 Standardized tools were used for data collection:

- I. Fatigue Severity Scale (FSS) to assess level of fatigue:** It was given by Krupp LB, 1989. The FSS questionnaire contains 9 statements that rate the severity of patient's fatigue symptoms. After reading each statement the patient circle a number from 1 to 7, based on how accurately it reflects his/her condition. **A low value (e.g., 1) indicates strong disagreement with the statement, whereas a high value (e.g., 7) indicates strong agreement.**
- II. Beck Depression Inventory (BDI) Scale to measure the level of depression:** It was given by Beck and Ward in 1961. It is a 21-item, multiple-choice inventory employing to assess the level of depression in adults. **Each item is scored 0 to 3 points for a total score range of 0 to 63.** The scale was developed as a quantitative measure of depression.
- III. Pittsburgh Sleep Quality Index (PSQI) to evaluate sleep quality:** It was developed by Buysse and his colleagues in 1988, to measure the quality and patterns of sleep in adults. It differentiates "poor" from "good" sleep quality by measuring seven areas

(components): subjective sleep quality, sleep latency, sleep duration, habitual sleep efficiency, sleep disturbances, use of sleeping medications and daytime dysfunction.

A total score of “5” or greater is indicative of Poor Sleep Quality

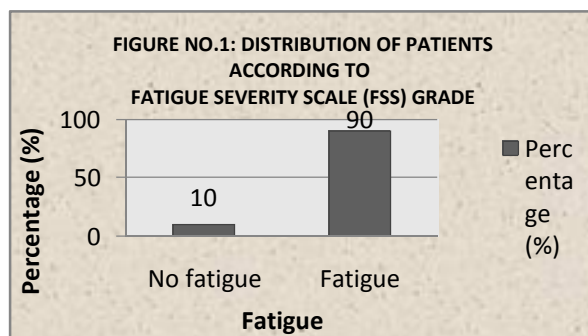
Reliability of Tool: The reliability statistics done by using Cronbach’s alpha for all the 3 tools. It was found to be 0.77 for Fatigue Severity Score, 0.79 for Beck’s Depression Index (BDI) and 0.77 for Pittsburg Sleep Quality Index (PSQI), which is in “**acceptable category**”. Thus all the tools used in the study were **acceptable**.

Results:

Section-I: Frequency and percentage distribution of hemodialysis patients Out of 40 subjects, majority of patients were above 50 years of age (55%), 29 (73%) were male, (95%) were married and 93% had children. Most of the 19 (48%) patients were illiterate whereas only 08 (20%) had above higher secondary education with 83% residing in urban area. More than half of the patients 23 (58%) had private job and majority of 24 (60%) patients had monthly income >Rs 5000. More than 5 years, 38% and 33% patients had duration of kidney disease and getting HD respectively and majority 33 (83%) of them had ESRD with some other comorbidity.

Section-II: Distribution of patients according to Fatigue Severity Scale (FSS):

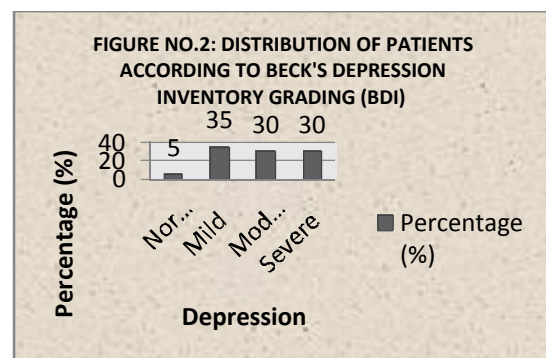
S. No.	Fatigue Severity Scale (FSS) Grade	Number	%
1.	No fatigue (< 36)	4	10.00
2.	Fatigue (\geq 36)	36	90.0
	Total	40	100.0



The above Table & Figure no.1 reveals that there were 4 (10.0%) patients who had no fatigue, **while majority of patients 36 (90.0%) were having fatigue** according to the Fatigue Severity Scale.

Section-III: Distribution of patients according to Beck’s Depression Inventory (BDI):

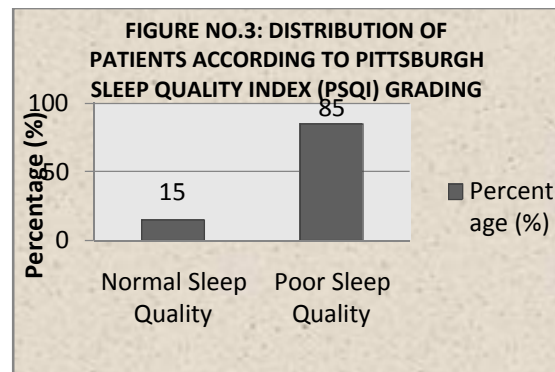
S. No.	Beck Depression Inventory Grading (BDI)	Number	%
1.	Normal (<10)	2	5.00
2.	Mild (11-20)	14	35.00
3.	Moderate (21-30)	12	30.00
4.	Severe (>30)	12	30.00
	Total	40	100.00



The above Table & Figure no.2 shows distribution of patients according to Beck’s Depression Inventory Grading (BDI) in which 2 (5.0%) patients were normal, **14 (35.0%) patients were having mild depression** whereas 12 (30.0%) patients were having moderate and severe depression respectively. Majority of the patients were in mild to severe depression category.

Section-IV: Distribution of patients according to Pittsburgh Sleep Quality (PSQI):

S. No.	Pittsburgh Sleep Quality Index (PSQI) Grading	Number	%
1.	Normal Sleep Quality (< 5)	6	15.00
2.	Poor Sleep Quality (≥ 5)	34	85.00
	Total	40	100.0



On the bases of **Pittsburgh Sleep Quality Index (PSQI)** the above Table & Figure no.3 illustrates that 6 (15.0%) patients showing normal sleep quality, while 34 (85.0%) patients had poor sleep quality. **Majority of the patients were having poor sleep quality.**

Section-V: Association between demographic variables and FSS, BDI & PSQI:

The findings of the study shows that there was no significant association found between FSS, PSQI & selected demographic variables ($p > 0.05$) respectively, whereas among all variables only association between duration of illness and BDI was found to be statistically significant ($\chi^2=16.966$, $df=9$, $p=0.049$), showing that BDI is dependent on the duration of illness of the patients.

Discussion: The present study reveals that out of 40 HD patients there were 4 (10.0%) patients who had no fatigue, while majority of patients **36 (90.0%) were had fatigue as calculated by Fatigue Severity Scale (FSS)**. By using Beck's Depression Inventory Grading (BDI), it was measured that 2 (5.0%) patients were normal, 14 (35.0%) patients had mild depression whereas 12 (30.0%) patients were found to be in moderate and severe depression respectively. **Majority of the patients were in mild to severe depression category.** On the bases of **Pittsburgh Sleep Quality Index (PSQI)** the above Table & Figure no.3 illustrates that 6 (15.0%) patients showing normal sleep quality, while 34 (85.0%) patients had poor sleep quality. **Majority of the patients were having poor sleep quality.** The similar findings are concluded by **Hanaa H., et al.^[19]** in their study, that overall, 90.5% of the HD patients had sleep problems and 83.8% had fatigue symptoms; 37.1% and 33.3% had severe and moderate depression symptoms respectively. The present study's findings are also supported by review article of **Janine Farragher (2019)^[23]**, reported that current literature on this topic is dominated by cross-sectional studies, which support the existence of an association between fatigue and depression in HD patients in various practice settings and subpopulations. The findings of the study revealed that there was no significant association found between FSS, PSQI with selected demographic variables ($p > 0.05$) respectively, whereas among all variables, association between duration of illness and BDI was found to be statistically significant ($\chi^2=16.966$, $df=9$, $p=0.049$), showing that BDI is dependent on duration of illness of the HD patients. These findings are fairly correlated with cross sectional study done on 612 CKD patients at the renal clinic of a tertiary care hospital, Punjab from September 2014 to April 2016. Nine-item Patient Health Questionnaire from PRIME-MD was used to assess the depression. Of all the patients, 55.9% had no depression. Mild depression was found to affect 28.4% of the patients followed by moderate depression, moderately severe, and severe depression (11.8%, 3.8%, and 0.8%, respectively) (Ahlawat R. et al.,^[24]

Conclusion:- The study results make affirmable approach that the patients on HD have a varying degree of sleep problems, depression symptoms and fatigue. These results showing a constant need for ongoing assessment and standard nursing care for HD patients so that they

may not only improve themselves psychologically but their quality of life and self attainment goals will also go high thus risk of mortality and morbidity may get reduced. As future perspective the physicians and other health care personnel must keep their attention on these valuable but neglected health issues for planning & providing comprehensive care in HD patients.

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Barriers in Self Care Management of Diabetes Mellitus Among Diabetic patients

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Abstract:-Diabetes mellitus is a disorder in which blood sugar (glucose) levels are abnormally high because the body does not produce enough insulin to meet its needs. Atleast 463 million people worldwide suffer from diabetes & 3.7 million deaths due to diabetes & high blood glucose ¹. In India, with 72.9 million people currently living with diabetes, India is known as the “World Capital” for the disease ². Diabetes is a condition that a significant number of people have to live with. Type 2 diabetes begins in people older than 30 and becomes progressively more common with age. ³ One of the biggest challenges for health care providers today is addressing the continued needs and demands of individuals with chronic illnesses like diabetes. Some of the Indian studies revealed very poor adherence to treatment regimens due to poor attitude towards the disease and poor health literacy among the general public. Educational programs help patients with diabetes to obtain information about their condition and improve their self-care skills.⁴

Objectives: 1] To assess the knowledge level of patients about diabetes mellitus. 2] To assess diabetes self care management practices of patients. 3] To find out major barriers in self care management among diabetic patients. 4] To prepare an instructional module on self care management of diabetes mellitus for patients. 5] To deliver a session on diabetes and its self care management to future staff nurses.

Methodology:- In this Quantitative Non experimental approach and Exploratory research design was used. By Non probability Convenience Sampling, data was collected from MOG lines & Rajmohalla community at Gangwal bus stand, Indore. Diabetes patients residing at selected community was the population and sample size was 40 patients diagnosed with Diabetes. 4 data collection tools were used namely, Interview schedule for demographic variables, Structured closed ended knowledge questionnaire to assess knowledge of diabetic patients regarding disease and self care management, Structured oral interview sessions to assess self care management practices carry out by diabetic patients and Structured open ended questionnaire to find out major barriers in self care management among diabetic patients. All the tools were validated by different expert opinion.

Results:- Out of 40 subjects, majority of samples (52.5%) were above the age of 50 years, 58% samples were male. Most of the samples (40%) had studied higher secondary, 25% were in business and in private job respectively, 27% samples were house wife whereas 10% were unemployed, (32.5%) had monthly income >10000/- rupees, 23% samples had diabetes since between 3-5 years. Majority of samples had suffered from type -II diabetes mellitus, 11% with type -I and only 1% had gestational diabetes. 70% of them with no other comorbidity among them 72.5% samples were receiving oral anti diabetic medication and only 03% were on regular insulin. (32.5%) samples were with family history of DM. 50% diabetic patients had poor knowledge whereas 35% and 15% had fair and good knowledge respectively, regarding their disease. 42.5% patients had poor, 55% were on average and only 02.5% had good level of self care practices. Aspects of diabetes self management like Dietary practices, Medication intake and Monitoring of glucose were found to be as major barriers in self care management of diabetics. An instructional module is prepared which contains comprehensive information regarding diabetes self care at home, was distributed to the patients. Also, delivered sessions to final year B.Sc.(N) and GNM students so that they can provide quality diabetic care in future.

Keywords:- Diabetes mellitus, Self care management practices and Barriers in Self care of diabetics

Introduction:- Insulin, a hormone released from the pancreas (an organ behind the stomach that also produces digestive enzymes), controls the amount of glucose in the blood. Glucose in the bloodstream stimulates the pancreas to produce insulin. It helps glucose to move from the blood into the cells. Once inside the cells, glucose is converted to energy, which is used immediately, or the glucose is stored as fat or glycogen until it is needed. Diabetes mellitus is a disorder in which blood sugar (glucose) levels are abnormally high because the body does not produce enough insulin to meet its needs. Urination and thirst are increased, and people may lose weight even if they are not trying to. Diabetes damages the nerves and causes problems with sensation. It also damages blood vessels and increases the risk of heart attack, stroke, chronic kidney disease, and vision loss. Doctors diagnose diabetes by measuring blood sugar levels. People with diabetes need to follow a healthy diet that is low in refined carbohydrates (including sugar), saturated fat, and processed foods. They also need to exercise and usually take drugs to lower blood sugar levels. Self-care in diabetes has been defined as an evolutionary process of development of knowledge or awareness by learning to survive with the complex nature of the diabetes in a social context. Because the vast majority of day-to-day care in diabetes is handled by patients and/or families, there is an important need for reliable and valid measures for self-management of diabetes.⁵ Diabetes education is important but it must be transferred to action or self-care activities to fully benefit the patient. Self-care activities refer to behaviors such as following a diet plan, avoiding high fat foods, increased exercise, self-glucose monitoring, and foot care. Changes in self-care activities should also be evaluated for progress toward behavioral change⁶

Objectives of the study:

1. To assess the knowledge level of patients about diabetes mellitus
2. To assess diabetes self care management practices of patients
3. To find out major barriers in self care management among diabetic patients
4. To prepare an instructional module on self care management of diabetes mellitus for patients
5. To deliver a session on diabetes and its self care management to future staff nurses

Methodology:

Research Approach:- Quantitative Non-experimental approach

Research Design: Exploratory research design

Setting: MOG lines & Rajmohalla community at Gangwal bus stand, Indore

Population: Diabetes patients residing at selected community

Sample size: 40 patients diagnosed with Diabetes

Sampling techniques: Non probability Convenience Sampling

Inclusion criteria for sampling:

- 1] Those patients who were family members of B.Sc.(N) and GNM students studying in selected nursing institution
- 2] Patients who were willing to participate in the study
- 3] Patients who were oriented to time & place and not having any complication related to diabetes
- 4] Patients who did not have any hearing or cognition impairment.
- 5] Patients who were present during the period of data collection
- 6] Patients who were able to read and understand hindi

Exclusive criteria for sampling:

- 1] Patients who were not willing to participate in the study
- 2] Patients with any serious co morbidity, illness and complication with diabetes
- 3] Patients who were not present at the time of data collection.

4] Patients who did not come in inclusion criteria

Tool: In this study following tools and techniques were used:

Section-A: Structured interview schedule on demographic profile of patients: 11 demographic variables are included in this study i.e. Age, Gender, Academic status, Working conditions, Income per month, Duration of disease, Type of diabetes, Any other comorbidity with diabetes, Management options, Family history of diabetes.

Section-B: The following 3 tools were used for data collection:

1. Structured closed ended knowledge questionnaire: To assess knowledge of diabetic patients regarding disease and self care management. Each correct answer will be provided 1 and wrong answer 0 mark.
2. Structured oral interview sessions: To assess self care management practices carry out by diabetic patients. It is formed in form of 3 point (Always, Sometimes, Never) Likert scale.
3. Structured open ended questionnaire: To find out major barriers in self care management among diabetic patients which included open ended questions about their regular selfcare regimen lacking that was considered as barriers in selfcare.

Results:

Section-I: Frequency and percentage distribution of diabetic patients Out of 40 subjects, majority of samples (52.5%) were above the age of 50 years, 58% samples were male. Most of the samples (40%) had studied higher secondary, 25% were in business and in private job respectively, 27% samples were house wife whereas 10% were unemployed, (32.5%) had monthly income >10000/- rupees, 23% samples had diabetes since between 3-5 years. Majority of samples had suffered from type -II diabetes mellitus, 11 % with type -I and only 1% had gestational diabetes. 70% of them with no other comorbidity, among them 72.5% samples were receiving oral anti diabetic medication and only 03% were on regular insulin. (32.5%) samples were with family history of DM.

Section-II: Distribution of patients according to Knowledge score:

Level of Knowledge	Frequency	%	Mean Knowledge Score
Excellent Knowledge (20-25)	0	0%	17.4
Good Knowledge (15-19)	06	15%	
Fair Knowledge (9-14)	14	35%	
Poor Knowledge (1-8)	20	50%	
Total	40	100%	

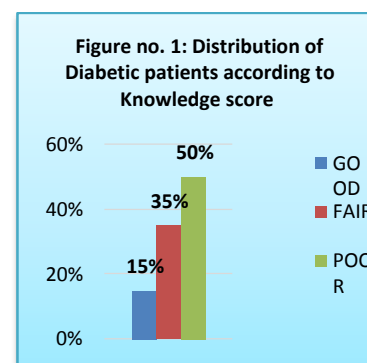


Table & Figure no. 1 shows % distribution of knowledge level of patients about diabetes mellitus, which shows **only 15%** of patients has got **Good knowledge score**. The highest **50% of patients** obtained **Poor knowledge** score whereas **35%** of patients obtained **Fair knowledge**. The above data presented fulfils the objective clearly which indicates only 15% diabetic patients has Good knowledge regarding diabetic self care and they need a good educational programme for the same.

Section-III: Distribution of patients according to diabetes self care management practices:

✓ **Related to routine physical activity:** (Fig.no.2)

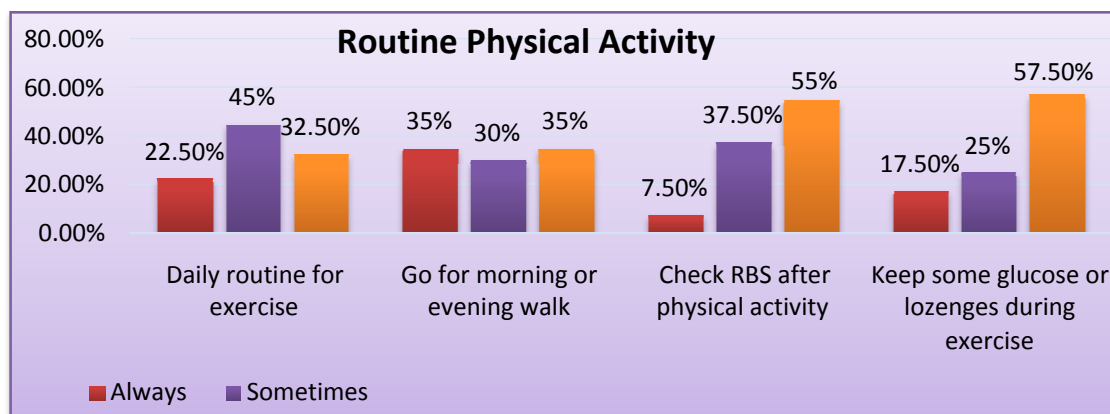


Figure no. 2 shows selfcare practices like only 22.50% patients always find time from daily routine to exercise ,whereas only 35 % patients always go on morning or evening walk.Only 75% follows the routine to check RBS after physical exercise and only 17.5% people have the practice to keep some glucose or other lozenges with them during exercise session.

✓ **Related to anti diabetic medication: (Fig.no.3)**

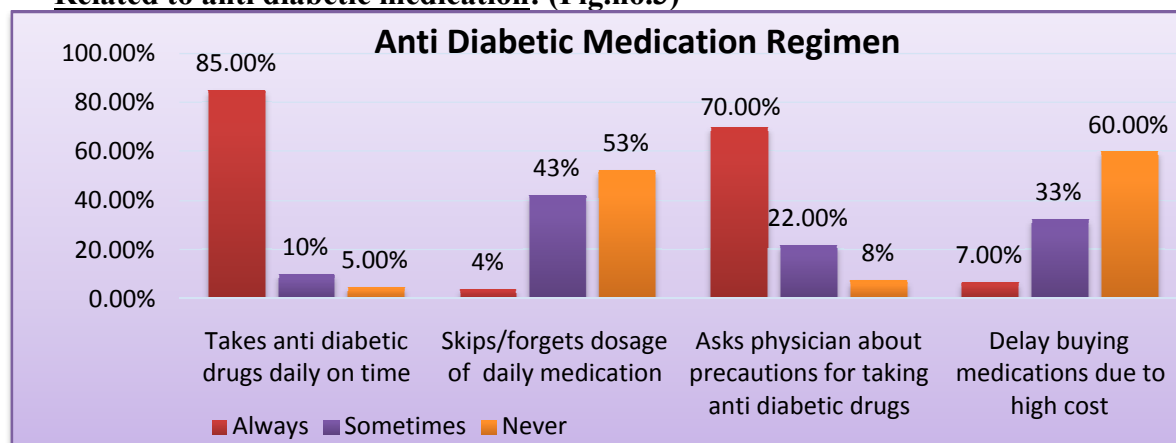


Figure no. 3 shows, the practices regarding medication regimen of samples which shows that highest 85 % diabetics take their anti diabetic drugs daily on time. Only 04% diabetics skip dosage from their medicine regimen whereas 70% of them never asked to physician about precautions to be taken while taking their anti diabetic drugs and majority 60% of them never delays buying medications due to its high costs

✓ **Related to Dietary preferences: (Fig.no.4)**

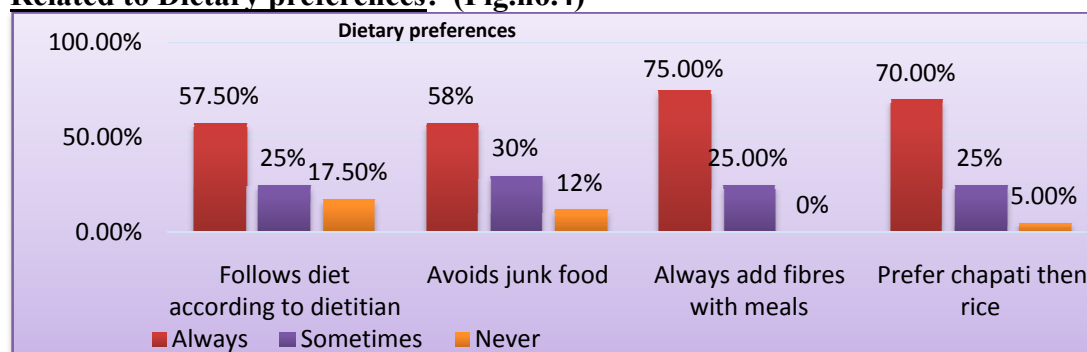


Figure no. 4 shows, that 17.50 % diabetics never followed diet according to dietitian whereas only 12% of them never avoids junk food. 75% of diabetics told they always add fibre diet along with meals whereas only 05% of them never prefer chapatis then rice in their diet.

✓ **Related to regular sugar level monitoring & maintenance : (Fig.no.5)**

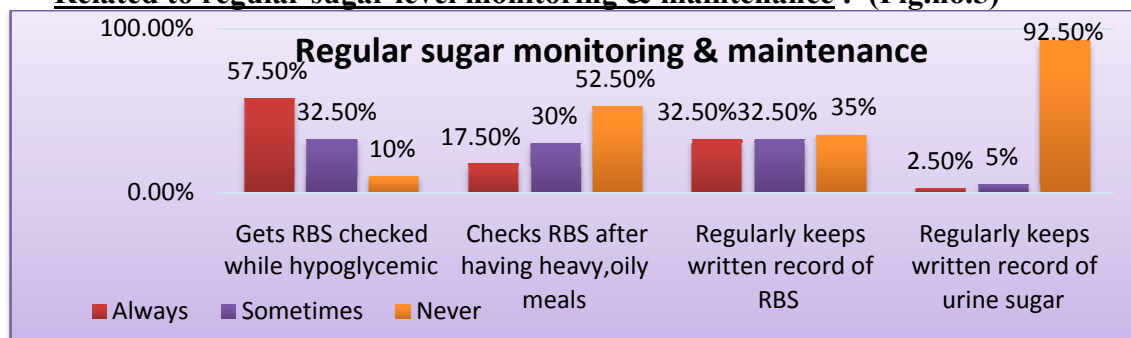


Figure no. 5 shows, that 57.50 % patients told they always get checked RBS while hypoglycemic. Only 17.50% always checks their RBS after having heavy,oily meals in any function. 32.30% regularly keeps written record of their RBS. Majority of them 92.50% never keeps urine sugar record at home.

✓ **Related to regular foot care : (Fig.no.6)**

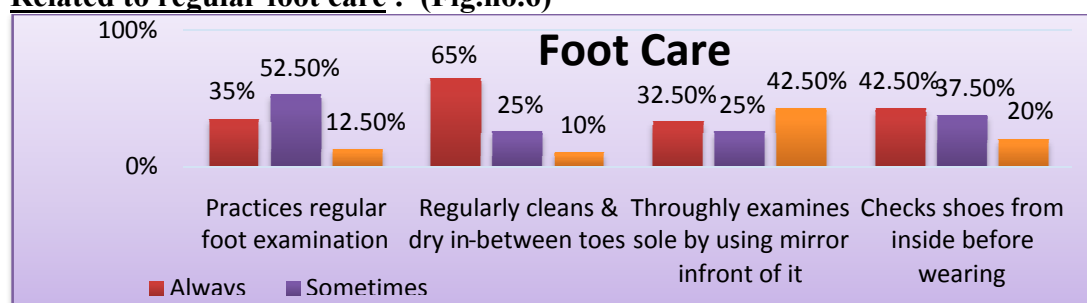


Figure no. 6 shows, only 35 % patients practices regular foot examination as their daily foot care regimen. 65% patients daily cleans and dry in-between the toes which shows that patients are willing to practice foot care whereas 42.50% patients don't know about examination of feet soles through small mirror however 45% patients checks their shoes from inside before wearing it.

Section-IV: Distribution of major barriers in self care management among diabetic patients:

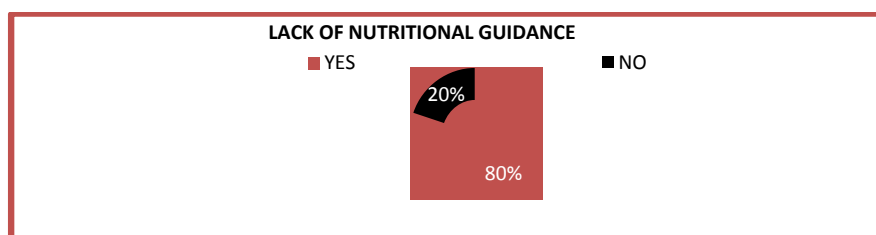


Figure 7 shows that the majority of 80% patients had lack of nutritional knowledge and not consulting any dietitian as well, but only 20% patients do.

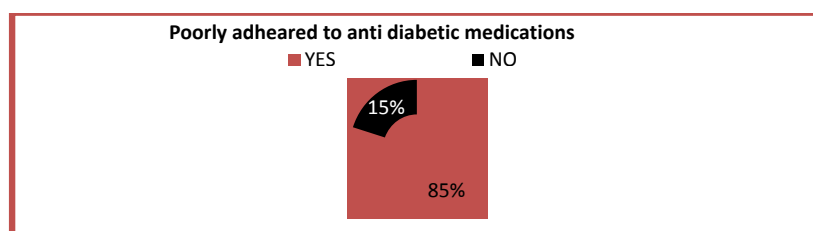


Figure 8 shows that, 85% patients were poorly adhered with anti diabetic medications whereas only 15% were taking the drugs on time.

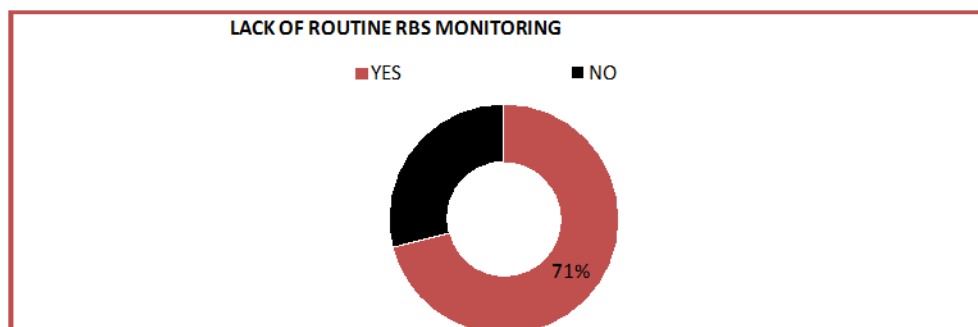


Figure 9 shows that, 71% patients routine RBS monitoring is not accessible so they are not practicing it on daily bases whereas only 29% patients are practising regular and timely RBS monitoring.

Section-V: Preparation of Instructional module on self care management of diabetes:

The module contains a comprehensive information in very simplified way (in hindi language) so that DM patients & family members can have a basic knowledge about the disease and by applying simple preventive & curative measures given in the module, they can prevent themselves / any other family member or friend from possible life threatening complications of diabetes.

The following aspects were included with proper diagrammatic presentation in the module:

- 1] Introduction of Diabetes, 2] Causes or risk factors, 3] Common clinical features,
- 4] Routine diagnostic tests, 5] Possible complications, 6] General preventive measures

Section-VI: Session on self care management of diabetes mellitus to future staff nurses:

Self management skills are an essential part of diabetes care and with the help and support of nurses, the condition can be managed to help people stay healthy and prevent complications. Hospital bedside nurses are expected to provide the “survival skills” education, but are often unprepared and overwhelmed with many other responsibilities. As a result, education tends to be inadequate and fragmented. Patients often leave the hospital without the self-care skills as far as diabetes is concerned. On account to fulfil the last objective of this study, researcher provided teaching session to B.Sc.(N) & GNM final year students about self care of diabetics and its related barriers because they are our future staff nurses and educators. By these new roles, the students are expected to bring necessary changes in the present scenario, not only in our hospital settings but also in community setting as well.

Discussion: The finding of the study revealed that out of 40 diabetes patients, **highest 20 patients (50%)** have obtain category of **Good Knowledge Score** whereas only 06 (15%) and 14 (35%) nurses have got Poor and Fair Knowledge category respectively. Their **mean knowledge score was 17.4**. As far as the diabetes self care management practices of patients is concerned, a 3- point Likert scale structured practice checklist was prepared. There were 4-5 sub points in each area to assess daily practices carry out by diabetic patient. By the tool, it was revealed that 42.5% patients had poor, 55% were on average and only 02.5% had good level of self care practices. Results shows there is increase need to encourage DM patients to improve their routine self care management practices.

Many aspects of diabetes self management like **Daily drug regimen** (Poorly adhered to anti diabetic medications, Postpones buying anti diabetic medications due to financial crisis), **Routine RBS monitoring** (not accessible for many patients), **Knowledge about self care management of diabetes** (Lack of nutritional guidance and overall educational sessions) were found to be the major barriers in the study and **Diabetes complications**

(Unaware that foot & eyes can be affected by poorly controlled diabetes) were found to be as **major barriers** in self care management of diabetics. Hence on the bases of all the barriers & areas of poor self care practices found as the study results, investigators **prepared an instructional module and distributed to the samples** so that they can be benefited by the module. Investigator also **delivered a session & improved knowledge of future staff nurses (B.Sc. & GNM final year students)** specially on self care management and helped them to find out solutions of barriers and taught them the measures to fulfill the gaps between barriers and self care of DM patients so that these future nurses would help DM patients in these aspects with full expertise.

Conclusion: The patient has to follow self-care practices to achieve target blood glucose levels and prevent poor health outcomes. These self-care practices include regular physical activity, appropriate dietary practices, foot care practice, self-monitoring of blood glucose, and compliance with the treatment regimen.⁷ Improving self-care behaviour among patients with diabetes in India should start with adequate targeted health education⁸

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An Overview of Fuel Cell Technology

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Abstract:-Day by day the demand of energy is increased substantially but the fossil fuels are decreased progressively. The research shows that fuel cell is an alternative for these energy crises. The Fuel cell provides a safe and environment friendly solution.

In this paper the fuel cell types principle of operation of an acidic fuel cell, technical parameter of a fuel cell, operating characteristics of fuel cells, energy output of a fuel cell Efficiency and emf of a fuel cell, hydrogen fuel cell analysis with thermodynamic potentials, classification of losses in an actual fuel cell activation losses, voltage efficiency of a fuel cell, thermal efficiency of a fuel cell are discussed.

Keywords:-Alkaline fuel Cells (AFC), Proton exchange Membrane Fuel Cells (PEMFC), Phosphoric Acid Fuel Cells (PAFC), Fuel Molten Carbonate Cells (MCFC), Solid Oxide Fuel Cells (SOFC)

Introduction:-The principle of the electric cell was discovered by the German Scientist Christian Fr iendrich Schonbein in 1838. The primary electric cell was demonstrated within the year 1839 by Welsh Scientist and Barrister Sir William Robert Grove in the philosophical magazine and journal of science. Though it absolutely was discovered way back in 1838, the concept was commercially used nearly after 117 years. NASA used electric cell developed by UTC in Gemini space mission in 1962 [2]. In 1980's USN used electric cell in submarines and it absolutely was only in 2007 when electric cell were sold as Auxiliary electromagnetic unit (APU) for backup power. Demand of energy worldwide is increasing hence there is progressive decrease of fossil fuel. During these energy crises; the fuel cell provides one of the best solutions to bridge the gap between supply and demand. Fuel cell is an alternative proving itself an efficient with respect to safe production of energy and eco-friendly to retain the development of environment. Fuel cells are used in various sectors –commercial, industrial and residential. Research is going on that way to fulfill the need in these sectors as fuel cell power plants are environment-friendly, noiseless, no rotating components are present. In contrast, in coal-based stations, ash slurry, discharge of smoke through chimney adversely affects the environment. This plant can be used for military and hospitals as here noise and smoke is not allowed. Besides, full power is utilized in transmission and distribution hence no power wastage. Efficiency of Fuel cell power sources is high up to 55% whereas conventional thermal plants operate at 30% efficiency.

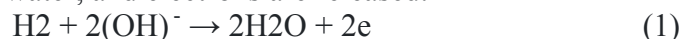
FUEL CELL TYPES

Fuel cells are broadly classified on the basis of the electrolyte used. There are five types of fuel cells:

- Alkaline fuel Cells (AFC)
- Proton exchange Membrane Fuel Cells (PEMFC)
- Phosphoric Acid Fuel Cells (PAFC)
- Fuel Molten Carbonate Cells (MCFC)
- Solid Oxide Fuel Cells (SOFC)

Alkaline Fuel Cells (AFCs) :-Alkaline fuel cells use KOH as electrolyte with porous electrodes of carbon having nickel because the electro catalyst. Here as a fuel Hydrogen is used and as oxidant oxygen is used. Its operating temperature is about 800C. At anode, the

hydrogen gas reacts with hydroxide ions present within the electrolyte solution to create water, and electrons are released.



Electrons so released develop a negative potential and shifted to the cathode through an externally circuit. Figure 1

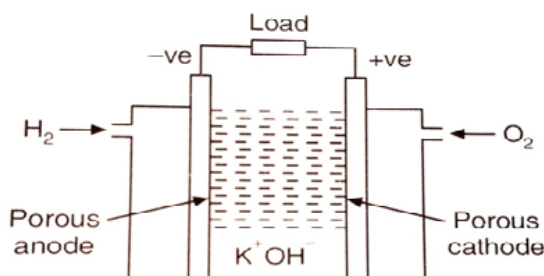
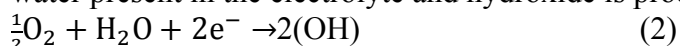


Figure 1 Alkaline Electrolyte Fuel Cell

At **cathode** the electrons are selected by the oxygen atoms present there and it reacts with water present in the electrolyte and hydroxide is produced



The hydroxide which form react with hydrogen and water is formed.



Hence, with hydrogen and oxygen constantly supplied, the fuel will be oxidized by the ions produced in the process to produce electric power, resulting a current to flow in the external circuit. The voltage of the cell is around 1 volt. In order to get higher outputs a number of single cells can be connected in series. The efficiency of SOFC is high, around 70 percent. This cell is not suited in terrestrial applications since the KOH electrolyte used in AFCs reacts with the CO_2 to form K_2CO_3 . Even traces of CO_2 present in the ambient air limits the life of fuel cells.

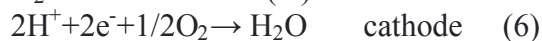
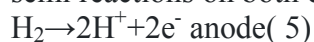
On the other hand, pure H_2 and O_2 reactants are available, hence widely used in rockets and spacecraft, due to its high power densities provided by AFCs.

Polymer Electrolyte Membrane Fuel cells (PEMFC) :- A polymer electrolyte fuel cell, also known as Proton exchange Fuel Cell (PEFC), consists of a solid electrolyte which is an ion exchange membrane as shown in Figure 2. Hydrogen is used as a fuel and oxidant as an air. The membrane is impermeable gases but allows the hydrogen ions to move across it which makes the current to flow in the circuit. The cell operates at low temperatures (80 - 100°C). Polymer electrolyte fuel cells are the electrochemical energy converters with efficiency more than 60 percent. It does not release poisonous gases like in internal combustion engines. PEM fuel cell require a very low temperature for its operation, hence its start-up and shutdown times are less. Such fuel cells are suited in small stationary applications where power range is less than 1 MW.

Hydrogen PEM fuel cells transform chemical energy into electrical and thermal energy is given as the chemical reaction [3]



To obtain an electric current out of this reaction, hydrogen oxidation and oxygen reduction are divided by a membrane, which is flowing protons from the anode to the cathode side. The semi reactions on both electrodes are [3]



while the protons are removed through the membrane and electric circuit uses the energy of electrons. An energy balance shows that the electrical efficiency of the fuel cell is about 50%. The thermodynamic (reversible) output voltage of one cell can be calculated from Gibb's free energy and its value is for a standard operating point [3]

$$V_{\text{rev}} = -\Delta G / 2F = 1.23 \text{ V} \quad (7)$$

In a real fuel cell, one cell can provide a voltage between 0.5 and 0.8 V, due to voltage losses which will be discussed later on. Several cells are usually connected in series, forming a stack. Anyway, the gas supply is provided in parallel. Existing fuel cell stacks have up to 100 single cells providing a voltage of about 60 V. For heat evacuation, an external cooling system is needed. This heat can be used to provide cogeneration heating energy. Up to 120°C, effect of temperature on PEM fuel cell behaviour is that rising in temperature decreases the concentration losses in all range of temperature but decreasing the activation over-potential up to 80°C. It has also been observed that with rise in temperature the partial pressures of reactant gases and electrochemical Platinum surface areas of the cathode and anode layers reduces that lead to more losses in activation and therefore decreases the cell performance. [4] In many research it is mentioned for range up to 80°C showed increasing fuel cell efficiency by rising the temperature [5–10]. But there are less research is carried out to examine the temperature effect above 80°C [11-12]

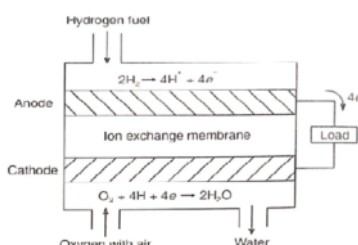


Figure 2 Polymer Electrolyte Fuel Cell

Phosphoric Acid Fuel Cell (PAFC) :- The Phosphoric Acid Fuel Cell (PAFC) contains an anode of porous graphite substrate and platinum alloy as the catalyst. The cathode made up of a noble-metal catalyst. The electrolyte matrix contains concentrated phosphoric acid and is located between anode and cathode. Stacking of individual cell is accomplished with a bipolar plate. The electrical contact between the anode of one cell and the cathode of the adjacent cell, is provided by as shown in Figure 3 as this fuel cell operates on low temperature it requires highly pure Hydrogen. The low temperature fuel cell systems comprises a second pre-processing step called the 'water gas-shift reaction' in which CO reacts with steam and is converted into hydrogen and CO₂. These pre-processing steps are accomplished in separate reactors, and the fuel cell system is called as an 'external reforming system'. PAFC has an advantage that it can be employed with no danger of poisoning the electrolyte, but conversion of Carbon monoxide is necessary to prevent platinum poisoning.

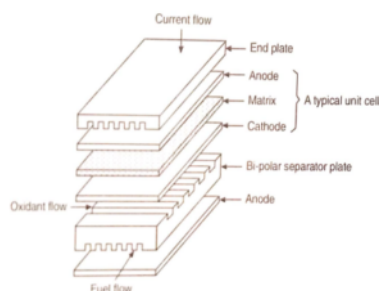
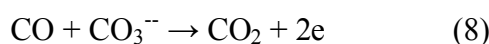


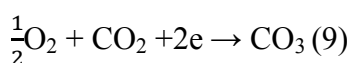
Figure 3 PAFC stack

Molten Carbonate Fuel Cells (MCFCs) :-A molten mixture of alkali carbonates is used as an electrolyte in a molten carbonate fuel cell. Its operating temperature is around 650°C which allows the use of catalyst like nickel in the electrodes. Due to high temperature, the carbonate electrolyte remains in liquid phase. The electrolyte is maintained between two porous nickel electrodes as shown in Figure 4. A fuel gas developed from fossil fuels consists of CO , H_2 and CO_2 . The MCFC is insensitive to CO and with nickel/nickel oxide electrodes it is also immune to poisoning by CO . Being a high temperature fuel cell, there is an internal reforming system which takes place almost simultaneously with the electro-chemical reactions. With the operating conditions in this cell, CO is oxidized, via the water-gas shift reactions, to CO_2 with the production of hydrogen. The carbonate ions are the oxidizing agents for hydrogen. Carbonate ions which are produced at the cathode. So, the oxidant gas must consist of CO_2 . In fact, CO_2 is provided by reusing the anode off-gas to the cathode.

At anode



At cathode



The by-products of this cell are, steam and carbon dioxide at a high temperature of 545°C and a source of cogeneration. Hence the MCFC, along with electricity, also gives industrial process heat. Waste heat can produce steam in a boiler which can run a generator to supply additional electric power, yields an improvement in overall efficiency of the system.

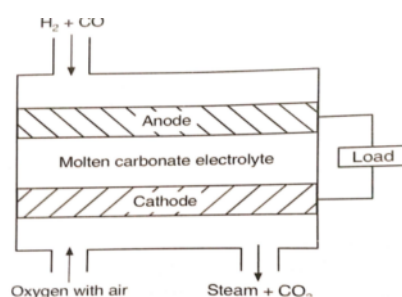


Figure 4 Molten Carbonate Fuel Cell

Solid Oxide Fuel Cell (SOFC) :-An SOFC is dependent on a solid metal oxide electrolyte (zirconium dioxide) called zirconia. It permits ionic conductivity of oxygen ions from cathode to anode. This fuel cell operates in the temperature range of 800°C to 1000°C. The electrodes are electric conductors which are very porous. The operating temperature is sufficient for internal reforming of natural gas in the anode chamber. The water gas shift reaction takes place at the anode, thus enabling H_2 and CO mixtures to be used as fuel feedstock. Arrangement of a single SOFC in tubular shape is shown in Figure 5. Metal oxides and ceramics are utilized as the construction materials. In the central empty space air flow takes place and serve as an oxidant. SOFC operates effectively at 1000°C and 1 atmospheric pressure. Fuel gas runs through the outermost layer of the fuel electrode. Next to it is the electrolyte layer. Fuel gas passes through the porous electrodes and is oxidized by air containing oxygen. Next to electrolyte is the air electrode and air flows along the axis of the central hollow space. Both fuel gas and oxidant are applied into the cell constantly which

gets used and the SOFC supplies electrical energy. For mass power production SOFC, coal gas and gases obtained from biomass can be used as a fuel. Because of high operating temperature, gas and steam turbines incorporation is possible. As compared to fossil fuels, natural gas is environment friendly, efficient and economical. High electrical efficiency rating up to 55% can be achieved if in SOFC natural gas is used as a fuel supply. It lies 25A current at 0.7 V and a 50 cells stack provides 1000 Watt as an output.

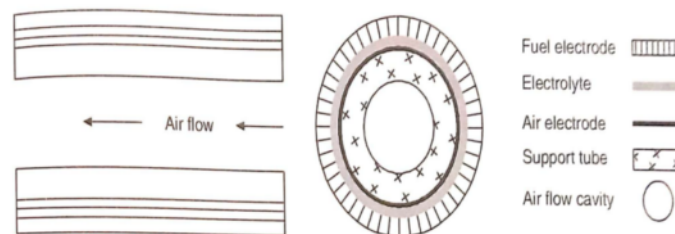


Figure 5 Solid Oxide Fuel Cell

TECHNICAL PARAMETER OF A FUEL CELL :-Each single cell produces voltage of 0.55 to 0.75 V. A number of cells are arranged in 'stacks' to provide the required voltage. The total amperage depends upon the electrode size, and current density in the range of 100 – 500 mA/cm² can be obtained. For any desired power rating, suitable electrode size and the necessary number of cells are preferred. In a fuel cell stack, the bipolar plates are used to stack individual cells together. A bipolar plate performs two functions, one is to assist in supply of fuel and oxidants to the cells, and other is to maintain continuity in electrical circuit between the cells. In order to achieve this requirement, the plate should resist gas diffusion and have low electrical resistance. Elements used in stack are shown in Figure 6

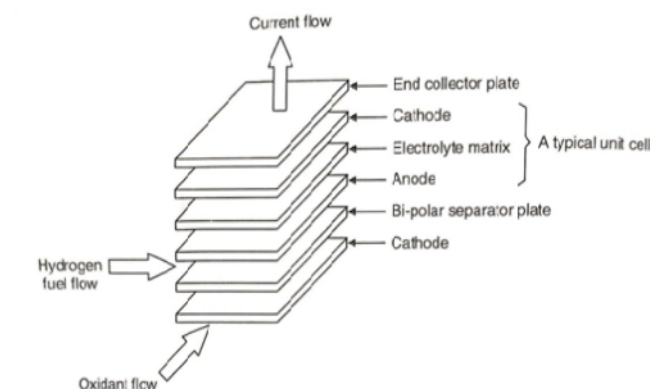


Figure 6 Repeating elements used in a cells stack

Operating characteristics of fuel cells :-A fuel cell comprises of two electrodes surrounded by an electrolyte. Hydrogen fuel is supplied to the 'anode' of the fuel cell, while oxygen enters through the cathode. Excited by a catalyst, the Hydrogen atom divides into a proton and an electron, which take different paths to the cathode. The proton passes through the electrolyte while the electrons create a current which is used before they come back to the cathode, to be recombine with the hydrogen ions and oxygen to form water. It has already been explained that the amount of energy per mole of hydrogen which can be supplied as electrical energy is the change in the Gibbs free energy, i.e., 237.1 kJ at 25 °C. The heat energy of the reaction is 285.83 kJ under the similar conditions. Thus, the maximum efficiency of hydrogen – oxygen fuel cell is 83 %. However, when a fuel cell operates, it can harness the fuel's energy through a chemical reaction into electricity up to 65 percent only. The polarization curve as

shown in Figure 7 calculate the performance of a fuel cell. The curve shows the relation between voltage V_C and current density I_D at electrode surface at a given temperature.

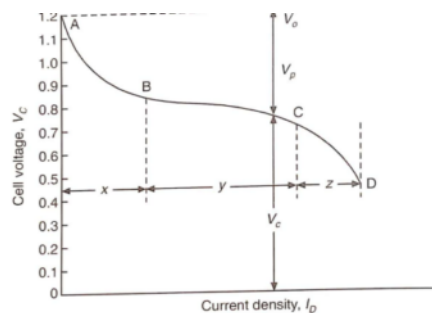


Figure 7 voltages – current density curve (polarization curve).

The difference in open circuit voltage (V_O) and closed circuit voltage (V_C) is due to the Polarization effect within the cell. The drop in voltage V_P is expressed as

$$V_O = V_C + V_P \quad (10)$$

The 'polarization loss' at the electrodes denotes the difference in the open – circuit voltage and the closed – circuit voltage. Electrode losses are classified into three types as chemical polarization, internal resistance polarization, and electrolyte concentration polarization.

Chemical polarization :- In fuel cells, electrons are released and their movement causes the current to flow in the external circuit. If current density is less, less number of electrons are released. To increase the current represented by the process needs acceleration for which the energy is supplied by the fuel cell represented by the curve part AB as shown in Figure 7. It creates voltage drop, the output loss is due to chemical polarization. The effect can be minimized with a superior electrode catalyst and operating the cell at a higher temperature.

Internal resistance polarization :- When a fuel cell works, the ions released at one electrode go to the other electrode through the electrolyte resulting flow of current in the external circuit. The internal resistance is the sum of electrode resistance, the contact resistance between electrolyte resistance, electrode and electrolyte. It is shown in curve part BC of Figure 7. The internal resistance polarization can be reduced by reducing the electrode size, by applying a coat of good electric conductor on the electrodes, increasing concentration of the electrolyte and decreasing two electrode's distance.

Electrolyte concentration polarization :- When a fuel cell works, because of concentration loss of the electrolyte there is a reduction in voltage which causes slow ionic movement. It is represented by the CD part of the curve as shown in Figure 7. A remedy for this polarization is to increase the electrolyte concentration by continuous stirring and operate the cell at a higher temperature. The optimal operating temperature for an acidic cell is 180°C .

ENERGY OUTPUT OF A FUEL CELL :- Different forms of energy possess different quality. Some forms of energy possess high quality, while others possess low quality. Work, heat and electrical energy all possess different quality. The second law of thermodynamics states that, heat cannot be fully converted to work [1] and

$$Q > W \quad (11)$$

Where Q shows the heat and W the work. Conversely, the work can be completely converted to heat, i.e.,

$$W = Q \quad (12)$$

Thus, the work is high grade energy likewise; electrical energy is a higher form of energy since it is convertible into heat or work.

In a fuel cell a chemical reaction is carried out as fuel and air are constantly supplied at NTP, produces electric power and water. There is a fixed flow of fuel and air at the inlet of the fuel cell and so is the fixed flow at the outlet, and hence maintaining pressure and temperature equilibrium with the atmosphere.

Under a steady-flow condition, the equation of the first law of thermodynamics is

$$\Delta Q = \Delta W + \Delta H \quad (13)$$

Where,

ΔQ = net heat transferred to the steady flow stream from the surrounding atmosphere

ΔW = net work done by the steady stream on the surrounding

ΔH = change in enthalpy of the flow stream from inlet to exit.

In (Equation 13) the changes in potential energy, kinetic energy and internal energy are neglected.

EFFICIENCY AND EMF OF A FUEL CELL

$$\eta = \frac{\Delta W}{-\Delta H} \quad (14)$$

To measure reversible emf of the cell, the reversible electrical work is given as

$$\Delta W_{\text{rev}} = E \Delta q \quad (15)$$

where Δq is the charge shifted.

For a fuel cell chemical reaction, Δq can also be written as

$$\Delta q = NF \quad (16)$$

Where

F = Faraday's constant = 96500 C/g-mole

N = total number of electrons moved per molecule of the reactant.

From Eqs. (15) and (16),

$$\Delta W_{\text{rev}} = NFE \quad (17)$$

The emf of the fuel cell is

$$E = \frac{W_{\text{rev}}}{NF} \quad (18)$$

Voltage efficiency of a fuel cell

Polarization in a fuel cell decreases the output voltage. Waste heat which is a form losses in a fuel is released to the atmosphere. The efficiency of a fuel with respect to voltage is expressed as

$$\eta_v = \frac{\text{closed circuit voltage}}{\text{open circuit voltage}} = \frac{V_0 - V_p}{V_0} \quad (19)$$

Putting values from the curve, $\eta_v = \frac{0.78}{1.20} \times 100 = 65\%$

THERMAL EFFICIENCY OF A FUEL CELL :-The voltage efficiency of a fuel cell has already been considered which is 65% as calculated from the curve is . Even though, most of energy converters convert heat energy into electricity. To compare the efficiency of electrochemical energy converters, i.e., 'fuel cells' the heat input may be taken as the enthalpy change of the reaction (ΔH). It is now assumed that the only useful work done by a fuel cell system is electrical work which is represented by the quantity of charge that flows from the cell, multiplied by the potential difference of the cell. Thus, the quantity of charge can be calculated by multiplying the number of moles of electrons operative in the cell reaction by the number of coulombs per mole of electrons.

$$\text{Electrical work} = W_{el} = -nFV_o \quad (20)$$

where

V_o = open-circuit voltage of the fuel cell

F = Faraday constant

N = number of moles of electrons.

The work output in a fuel cell which operates at the thermodynamic reversible is equal to Gibbs free energy change (ΔG). Hence,

$$W_{el} = \Delta G = -nFV_o \quad (21)$$

The thermal efficiency of a fuel cell is the ratio of work output of the system to the heat reaction.

$$\begin{aligned} \eta_{th} &= \frac{\Delta G}{\Delta H} = \frac{-nFV_o}{\Delta H} \\ &= - \frac{ItV_o}{\Delta H} \quad (22) \end{aligned}$$

Where I is the current and t is the time in second for which the current flows. When a fuel cell feeds a load the cell voltage decreases and so hence the efficiency.

Conclusion:-In this paper the overview of fuel cell is represented in which all types of fuel cell along with their types, energy output of fuel cell, efficiency and EMF, characteristics, chemical polarization, internal resistance polarization, electrolyte concentration polarization, voltage efficiency of fuel cell and thermal efficiency of fuel cell are presented. It is predicted that there are numerous applications of fuel cell. One of the major applications of fuel cell is in hybrid power plant which is purely renewable energy based. As Fuel cell power plants are environment -friendly, noiseless, no rotating components are present. In contrast, in coal -based stations, ash slurry, discharge of smoke through chimney adversely affects the environment.. It is a distributed plant, can be operated remotely for military installations and hospitals where noise and smoke are not allowed. Besides, full power is utilized in transmission and distribution hence no power wastage. Efficiency of Fuel cell power sources is high up to 55% whereas conventional thermal plants operate at 30% efficiency. These are available high range is with a capacity ranging from 5kW to 2MW. Fuel cells operate on waste gases at breweries, also on gas from seewage sludge proving to be the cleanest and most cost -effective energy conversion technology. In addition to electric power, fuel cell plants not also give the electric power but also provide hot water, space heat and steam. Fuel cells have cogeneration capabilities.

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