International Journal of Renewable Energy Exchange

ISSN 2321-1067 - Print Welcome to Renewable Energy World

RENEWABLE ENERGY EXCHANGE

Volume 9
Issue - 5
May -2021

Frequency : Monthly
Discipline :- Engineering & Applied Science & Technology

Published by:

Shri Jagdhishprasad Jhabarmal Tibrewala University

Vidhyanagari,Jhunjhunu-churu Road
Chudela, Distt.-Jhunjhunu(Raj.)-333001

REX -ISSN 2321-1067

International Journal of Renewable Energy Exchange

ISSN 2321-1067 - Print Welcome to Renewable Energy World

RENEWABLE ENERGY EXCHANGE

Frequency : Monthly
Discipline :- Engineering & Applied Sciences& Technology

FROM THE CHIEF EDITOR'S DESK

The “REX” journal is one of the fastest emerging as a governing means of education in this era. It has been immensely contributing to the overall improvement of society. The journal has kept its pace with ever-changing societies and catering its knowledge to society by and large.

Nevertheless to say the role of research and its scope in the area of academic and industry has been conducted at all the level. “REX” has been at the forefront in manifesting such ideas and innovation to society from time to time. The University has always evaluated and measures such researches on different aspects and has featured itself as continuing and never-ending education in fine tune with the changes in the perspectives and program in the area of research.

“REX” Serves as an epitome source of information for the type of educational issues and aspects of education undertaken to study the growth and developments and honing the skills and methods of study. This publication is expected to help the future researcher to explore different areas of research, helping them to understand the research and methods, techniques used for research findings.

The researcher and the scholars' input has enhanced the quality of article already published. We offer the research publication platform through REX journal in deliverance of excellence level of research papers in field of Science and technology.

Dr. Madhu Gupta

Editor-in Chief, (REX)

INDEX

----------※※※※※※----------

College Students Lifestyle Issue Identification Using Naive Bayes Classifier

Ashish Chaturvedi[1], Santosh Kumar Yadav[2], Mohd. AbuzarMohd. Haroon Ansari[3]

1 JJT University, Jhunjhunu - 333001, Rajasthan, India

ashishved1220@gmail.com
2 JJT University, Jhunjhunu, Rajasthan-333001, India

drskyadav@hotmail.com

3 SIES College of Arts, Science & Commerce, Mumbai-400022, India

md_abuzar@hotmail.com

Abstract:-Lifestyle-related concerns have become more prevalent among college students in recent years. The majority of today's college students are more concerned with academic pressure, social media addictions, and a variety of other lifestyle issues. The purpose of this research is to discuss a machine learning system that determines and categorizes the student lifestyle problem based on their inquiries. The lifestyle issue classifier model is developed using a simulation of the Naive Bayes machine learning technique.

Keywords: Text classification, Naïve Bayes algorithm, Machine Learning

Introduction

Students are subjected to a great deal of physical and emotional stress while studying for their degree. This manifests itself in high levels of stress that every student encounter while balancing academic success, social life, sleep, and maintaining a healthy lifestyle [1]. College students' mental health is primarily affected by anxiety. College students are the backbone of the country's development, and their psychological well-being is inversely proportional to the country's future growth level. Anxiety is a major contributor to poor health, according to studies. Anxiety and stress-related physical and mental diseases have become common causes for college students to take time off, drop out, or commit suicide [2]. Previously, the term "addiction" was connected with traditional substances such as alcohol, drugs, and addictive behaviours such as overeating and gambling; nevertheless, it is now connected with technology, particularly among young students [3].Aside from this, a pupil has a slew of other questions that must be addressed. Students are sometimes hesitant to ask their parents and teachers questions. They have a lot of questions about their education, their families, their spirituality, and their personalities. There is sometimes an age gap between parents and students, which prevents them from sharing their ideas. As a result, there is a strong desire to create a preliminary level of virtual system that can at the very least recognize the nature of student queries. Once the student's query has been discovered, a system can be created to handle it.

Textual data processing and categorization on online platforms where vast amounts of data are generated and exchanged is at the forefront of data mining's core concerns. The text segmentation method can be defined as the process of assigning text documents to one or

more predetermined groups or classes utilising machine learning methods and techniques depending on the content of the processed texts. Text classification software is useful in a variety of fields and for a variety of reasons. For instance, categorising incoming communications as spam or not spam, or categorising online textual material into themes, and so on. Machine learning is a data analysis technology that automates the creation of analytical models. Machine learning is closely related to computational statistics, which is a branch of statistics that focuses on making predictions using computers and is commonly utilised in text categorization applications [4].We have compiled and studied the various types of lifestyle concerns that a college student faces in this study. Based on the student's query, we created a machine learning-based expert system to determine the type of lifestyle difficulties. The model is developed using the Naive Bayes supervised machine learning technique. The proposed classifier accepts textual queries from students and predicts the problem type. The following is a breakdown of the paper's structure: The review of literature is explained in Section 2, research technique is presented in Section 3, results are discussed in Section 4, and the study is concluded in Section 5.

2 Review of Literatures

This section provides a synopsis of recent work on multiclass text classification using machine learning approaches during the last few years.

F. Gurcan (2018) works on categorising Turkish news texts. To create the classifier system, they used a variety of machine learning techniques such as NB, Decision Tree, and Support Vector Machine. 3000 news texts were gathered from several online news sites to form a data set. The dataset defines five classes: economy, sport, politics, technology, and health. The nave bayes algorithm model received the highest classification score of 95.20 percent. K. Sundus et al. (2019) employed a Deep Learning (DL) methodology to handle the challenge of Arabic text classification. The proposed model is also validated using the Logistic Regression Algorithm. The researchers were able to validate data with a 94.1 percent accuracy rate. In the instance of a multi-class classification problem, Jung and Park (2019) suggested an iterative technique for feature extraction and feature evaluation. The Boruta algorithm was utilised by the authors.

Baydogan, C., and Alatas, B. (2019) employed machine learning and natural language processing approaches to assess consumer happiness from product or service feedback. The authors first simulated the NB method before moving on to the KNN approach for classification. In an experiment, they were able to attain an accuracy of 80%. For the question categorization procedure, Anhar, R., et al., (2019) employed the BiLSTM approach. In terms of text classification, Bi-LSTM has a high level of accuracy. The accuracy of the classification was 0.909, with a loss of 0.316. When compared to simple LSTM and Recurrent Neural Network, Bi-LSTM is more accurate (RNN). The authors concluded that Bi-LSTM can be employed as a question categorization approach for Question Answer Systems based on the findings.

Raicu, I., et al., (2019) conducted text classification study on a dataset derived from Romanian financial banking marketplace discussion forums. The Chi square test and the TF-IDF were utilised. The performance of supervised machine learning algorithms such as RF, SVM, MNB, and LR to classify Romanian financial banking reviews was explored by the authors. The Support Vector Machine methodology outperforms when it comes to classifying financial banking products and services, according to an experimental outcome. M. P. Akhter et al. (2020) created a big multi-purpose and multi-format dataset with over 10,000 documents organized into six types. They tested the performance of Single-layer Multisize Filters Convolutional Neural Network (SMFCNN) with sixteen ML baseline models on three imbalanced datasets of varied sizes in the study.

3 Research Methodology

Because of its speed and ease of implementation, Nave Bayes is frequently employed as a baseline in text classification. Nave Bayes is based on the "nave assumption," which states that given the context of the class, all features in the document are independent of each other [9].

3.1 Dataset:-We created a survey form to collect information on college students' lifestyle difficulties. Google Form was used to create an online questionnaire form. Academic, Addictions, Personality, Spirituality, and Relationship questionnaires were separated into five groups. Students were requested to write their questions in English for each of the listed categories. A total of 525 students from various Mumbai institutions completed the survey. In total, we got roughly 701 requests in designated categories. CSV (Comma-Separated-Values) file including student queries and tags. Figure 1 shows a sample of the dataset.

	Sr.no	queries	tags
0	1	proper way great future various issue face pro...	Academic
1	2	study stress also major problem came across du...	Academic
2	3	anger management one major problem faced tried...	Personality and Character
3	4	weak decision making whenever taking decision ...	Personality and Character
4	5	time management study	Academic

Fig 1: Sample of dataset in CSV file

3.2 Prototype of Proposed Model

Figure 2 shows the primary prototype of the suggested model. The following are the basic phases in model building:

i. Dataset pre-processing

ii. Feature extraction

iii. Dataset Division

iv. Model Training

v. Model Evaluation

i. Dataset preprocessing: Data preprocessing is the process of preparing raw data for use in a machine learning model. It's the first and most important stage in building a machine learning model. Real-world data sometimes contains noise, missing values, and is in an unsuitable format that cannot be used directly in machine learning models. We deleted all unwanted characters, symbols, and filtered-out stop-words (a, an, the...) in this phase.

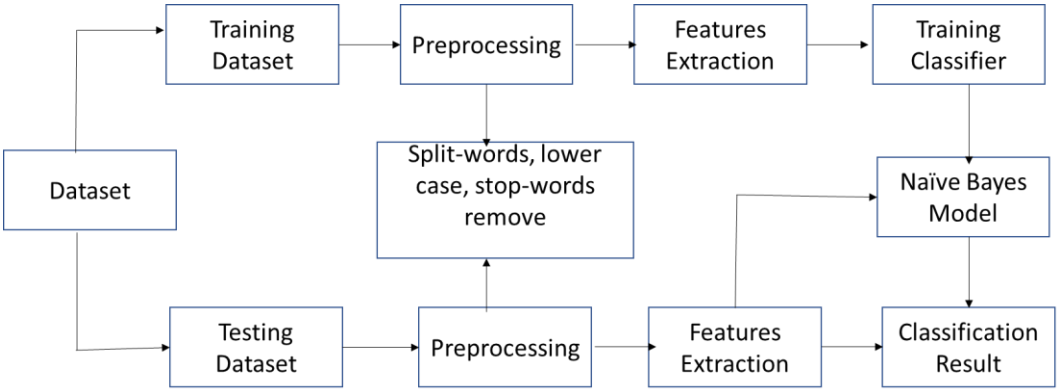


Fig 2: Block diagram of Proposed Model

ii. Feature extraction: After preparing the input, the next step is to turn the text data into numeric representation so that a machine learning model can understand it. We translated our data into numerical features format utilising the Tf-Idf (Term-frequency and Inverse-document frequence) approach. The model is trained using this feature matrix.

iii. Dataset Division: The dataset is separated into training and testing parts after obtaining the feature matrix in step 2. We used 80% of the data in the machine learning process and 20% of the data in the model evaluation step.

iv. Model training: In this study, we employed the multinomial Nave Bayes (MNB) approach. We fed the algorithm training data, i.e. the training feature matrix, and the model was trained.

v. Model Evaluation: After the model had been trained, the next step was to evaluate its performance. We gave a testing portion of the dataset to a model that had already been trained, and we examined its performance. The end outcome is discussed in section 4.

4Result:-On testing data, the suggested classifier is tested, and the results are shown in tables 1 and 2. ACD: Academic, ADB: Addictions, FMR: Relationship, PCR: Personality, and SPR: Spiritual are the multinomial classes on which the model is trained. Table 1 shows the model's precision, recall, and f1-score performance metrics, while table 2 shows the model's classification matrix report. In classification, the proposed model earned an average precision score of 76 percent, recall score of 60 percent, F1-score of 64 percent, and total accuracy of 66 percent.

Table 1. Naïve Bayes (NB) algorithm simulation results

Category	**precision**	**Recall**	**F1-score**
ACD	0.67	0.30	0.41
ADB	0.94	0.81	0.87
FMR	0.87	0.48	0.62
PCR	0.48	0.86	0.62
SPR	0.82	0.56	0.67
Accuracy	**0.66**		

Table 2: Classification-Matrix report

Tags	**ACD**	**ADB**	**FMR**	**PCR**	**SPR**

ACD	6	0	0	14	0
ADB	0	29	0	6	1
FMR	1	0	13	13	0
PCR	2	1	2	36	1
SPR	0	1	0	6	9

5.Conclusion:-We describe a multinomial classifier system based on the Nave Bayes Algorithm in this research. The suggested methodology categorises lifestyle questions from college students aged 17 to 23 years old. In classification, the proposed model earned an average precision score of 76 percent, recall score of 60 percent, F1-score of 64 percent, and total accuracy of 66 percent. The proposed model would serve as a preliminary virtual system for determining the lifestyle problem of college students. It is necessary to evolve this model to the point where the system not only classifies but also takes suitable actions in response to student queries.

References

[1] Hasanbasic, A., Spahic, M., Bosnjic, D., Adzic, H. H., Mesic, V., &Jahic, O. (2019). Recognition of stress levels among students with wearable sensors. 2019 18th International Symposium INFOTEH-JAHORINA (INFOTEH). doi:10.1109/infoteh.2019.8717754

[2] Meng, X., & Zhang, J. (2020). Anxiety recognition of college students using a Takagi-Sugeno-Kang fuzzy system modeling method and deep features. IEEE Access, 8, 159897-159905. doi:10.1109/access.2020.3021092

[3] Mavuso, N., Jere, N., &Matsebula, F. (2020). An evaluation of students addiction to mobile devices at a South African University. 2020 International Conference on Artificial Intelligence, Big Data, Computing and Data Communication Systems (icABCD). doi:10.1109/icabcd49160.2020.9183883

[4] Gurcan, F. (2018). Multi-Class Classification of Turkish Texts with Machine Learning Algorithms. 2018 2nd International Symposium on Multidisciplinary Studies and Innovative Technologies (ISMSIT). doi:10.1109/ismsit.2018.8567307

[5] Sundus, K., Al-Haj, F., &Hammo, B. (2019). A Deep Learning Approach for Arabic Text Classification. 2019 2nd International Conference on New Trends in Computing Sciences (ICTCS). doi:10.1109/ictcs.2019.8923083

[6] Jung, D., & Park, H. (2019). An Iterative Algorithm of Key Feature Selection for Multi-class Classification. 2019 Eleventh International Conference on Ubiquitous and Future Networks (ICUFN). doi:10.1109/icufn.2019.8806074

[7] Baydogan, C., &Alatas, B. (2019). Detection of Customer Satisfaction on Unbalanced and Multi-Class Data Using Machine Learning Algorithms. 2019 1st International Informatics and Software Engineering Conference (UBMYK). doi:10.1109/ubmyk48245.2019.8965631

[8] Anhar, R., Adji, T. B., & Setiawan, N. A. (2019). Question Classification on Question-Answer System using Bidirectional-LSTM. 2019 5th International Conference on Science and Technology (ICST). doi:10.1109/icst47872.2019.9166190

ANALYZATION OF VARIOUS LOCAL SURFACE DEFECTS IN INJECTION MOULDING PROCESS

P. Durga Ravi Prasad
Research Scholar
SHRI JJT University
Jhunjhunu, Rajasthan
EMAIL ID:pdurgaraviprasad@gmail.com

ABSTRACT- Plastic factories are rising at highest pace due to high demand for plastic goods. Plastic injection molding starts with development of moulds & production of complex shapes. Controlling consistency of injection moulded materials relies heavily on proper setup of injection molding process variables. Controlling attribute defects such as sink marks is extremely critical. Sink marks are essentially “built-in" issue that must be addressed at design stage. Due to such restrictions requirements, it is often overlooked during design stage assumed to be done by moulders with only guidance to ‘do their utmost.' Controlling defects by managing large number of processing variables is huge challenge that take slot of time, commitment, resources. Mould Flow Analysis is valuable modeling method for reducing sink marks predicting expected development time at lowest possible cost. As opposed to traditional trial-and-error processes on factory floor, simulation verification takes far less time has no material costs to produce quality outcome.In this thesis, sink marks in manufacturing of head light for Alto Car plastic part were minimized by comparing various process parameters single gate, two gate, three gate positions. When material is filled in mould, blow holes, sink marks, weld lines must be removed in order for light to pass through clearly. Modeling is completed in Pro/Engineer, Mould Flow Analysis is completed in Pro/Plastic Engineer's Advisor.

Molding flaws are often triggered by process issues:-Any moulding flaws can be impossible or expensive to fix. Others can be avoided by changing moulding process rather than redesigning mould tooling or replacing other manufacturing machinery. Through changing flow rate, temperature, or pressure of your mould, you can usually prevent these defects very easily.

1. Flow lines:-Flow lines occur as wavy pattern on smaller areas of moulded portion, often of subtly different color than surrounding area. They can also appear on product’s surface as ring-shaped bands at mold’s entry points, or "gates," from which molten content flows. Flow marks usually have little impact on component’s credibility. However, if used in such luxury items, such as high-end sunglasses, they may be unsightly inappropriate.

Flow line causes treatments:-Variations in material’s cooling speed as it moves in various directions in mould are most common cause of flow lines. Wall thickness differences will also cause material to cool at varying speeds, leaving flow lines behind.

If injection speed is too slow, for example, molten plastic cools quickly during injection process, resulting in flow marks. Plastic becomes partially stiff gummy as it fills mould, resulting in wave formation.

Injection-molded materials' flow lines are often treated in following ways:

- **Increase injection speed, force, temperature of liquid until it fills mould completely.**
- **To better ensure steady flow rate stop flow lines, round corners of mould where wall thickness increases.**
- **Raise nozzle width to increase flow speed to prevent early freezing.**
- **Move mould gates away from mould coolant help protect liquid from cooling so rapidly throughout flow.**

2. Burn marks:-Burn marks occur asblack or rust-colored discoloration onmoulded plastic part's edge or surface. Ifplastic has been burnt topoint of corrosion, burn marks don't usually impair component integrity.

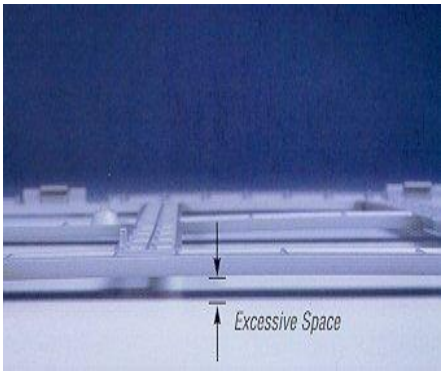
Burn marks: what causes them & how to avoid them

Trapped air or resin itself overheating in mould cavity during injection is most common source of burn marks in injection-molded products. Excessive injection rates or material heating sometimes result in overheating burns. To escape burn stains in moulded materials, consider following precautions:

- **Reduce injection speed to reduce risk of trapped air inside mould**
- **Enlarge gas vents gates to allow trapped air to exit mould**
- **Reduce mould cycle time so that trapped air & resin don't have chance to overheat**

3. Warping:-When various sections of piece shrink unevenly, it can cause warping in injection moulded products. Plastic & other materials can warp during cooling process as irregular shrinkage places excessive stress on various parts of formed component, much as wood can warp as it dries unevenly. When finished portion cools, excess friction causes it to curve or twist. This can be seen in section that is supposed to lay flat but leaves void when laid flat.

Warping of moulded parts: causes & prevention:-Cooling very fast is one of major sources of warping of injection-molded plastic & related materials.



- Excessive heat or low thermal conductivity of molten material will exacerbate issue. Mold construction will also lead to warping where mold's walls are not of consistent thickness—shrinkage increases as wall thickness increases. Here are some common ways to keep your moulded parts from warping:
- Lower temperature of material or mould
- Consider converting to material that shrinks less during cooling
- Redesign mould with standardized wall thickness & part spacing to ensure better stability in part during cooling

4. Vacuum voids / air pockets

Vacuum voids, also known as air pockets, are frozen air bubbles that occur in moulded product after it has been completed. Vacancies are generally regarded as "minor" defect by quality management experts (related: 3 Types of Quality Defects in Different Products).

However, greater or more numerous voids may undermine moulded component in some situations, since air exists undersurface of part where moulded material should be.

Vacuum voids in fabricated components are caused by variety of factors, & there are many ways to avoid them.

Inadequate moulding pressure to drive compressed air out of mould cavity is one of leading causes of voids. Most times, layer nearest to mould wall cools very soon, allowing it to harden & draw away from mould wall, resulting in abscess. If density of material varies dramatically from liquid to hardened, it can be particularly prone to voids. In shaped sections thicker than 6 mm, voids are more difficult to prevent. Among most popular methods for preventing voids are:

• Choose material grade with lower viscosity to reduce risk of air bubbles forming

• Place gates near to thickest sections of mould to avoid premature cooling where material is most susceptible to voids

5. Sink marks:- Sink marks are tiny depressions or recesses in moulded part's otherwise smooth & clear surface.As inner portion of moulded component shrinks, material from outside is drawn inward.

Sink marks: what causes them & how to avoid them

Sink marks are identical to vacuum voids, but cause & effect are inverted.

Instead of cooling too quickly near outside of element, material cools too slowly. resultant shrinkage force Souter material inward until it has had time to cool properly, resulting in depression. Sink marks, including voids, are more likely to appear in thicker sections of piece. Here are some things you can do to avoid this problem:

• Increase retaining pressure & time to enable material near part's surface to cool

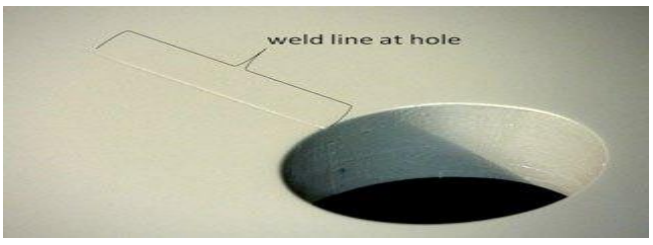
• Increase cooling time to avoid shrinkage

• Create mould with thinner product walls to allow for quicker cooling near surface

6. Weld lines:-Where molten material has converged after breaking off into two or more directions in mould, weld lines may appear on surface of moulded component. Poor material bonding causes hair-like weld line, which reduces part's strength.

Weld lines are caused by variety of factors, & there are ways to avoid them.

When two or more fronts of polymer or other molten substance collide, they must sustain constant temperature.

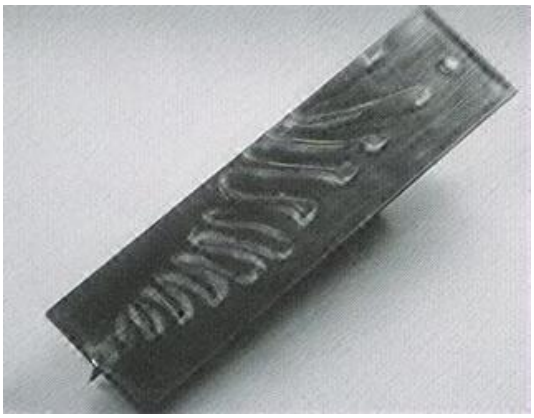


- Otherwise, they will become partly solidified & will fail to connect well where they intersect, resulting in weld lines.
- Raise material temperature to avoid partial solidification, which is common remedy for weld lines in moulded pieces.
- Increase injection speed & pressure to prevent freezing until fluid has fully filled mould • Redesign mould to remove partitions
- Use material with lower melting temperature or viscosity to enable smoother flow to avoid premature cooling

7. Jetting:-Jetting is type of deformation that can occur in moulded components when initial "jet" of molten material is poured into mould cavity & begins to solidify until cavity is filled. Jetting occurs as squiggly line on finished component's surface, usually leading from injection gate's initial gate. Part deficiency may result from this apparent flow pattern.

Jetting in moulded parts: causes & solutions.

Excessive injection pressure is most common source of jetting.



As molten polymer or other substance is pumped through narrow gate at high pressure, it sometimes squirts through gate instead of steadily filling mould cavity. If original line of film cools & hardens against mould walls, residual mould material moves it further, leaving marks on finished part's surface. To avoid jetting in moulded pieces, do following:

• Increasing liquid & mould temperatures to protect initial jet of material from solidifying too much

• Designing mould with injection gate situated around mould rather than lengthwise to prevent rapid squirting of substance into mould cavity.

Defects resulting from use or handling of product.

Injection moulding flaws are often caused by material or how manufacturer holds & treats material prior to manufacturing process. These flaws can range from slight cosmetic problems to finished component's strength being weakened. Depending on intended use of substance in question, serious safety issues could arise.

8. Discoloration:-When moulded component is different colour than expected, it is referred to as discoloration or "colour streaking." Mostly, discoloration on moulded component is confined to small region or few lines of irregular pigment. This type of flaw usually influences part's appearance rather than its intensity.

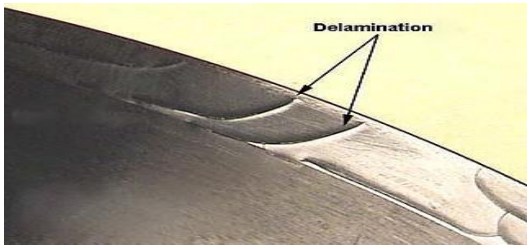
Discoloration of moulded products: what causes it & how to avoid it.

Leftover pellets in hopper or residual resin in nozzle or mould from previous manufacturing run are typical causes of discoloration.

- Other possible reasons include colouring agent's lack of thermal resilience or incorrect master batch mixing. To avoid discoloration of your injection-molded materials, take following precautions:
- Use purging compound to extract unwanted colour from unit
- Use purging compound to extract unwanted colour from unit
- Make sure you or your supplier is using colour agent with acceptable thermal tolerance
- Make sure master batch is uniformly matched for consistent colour performance.

9. Delamination:-Delamination is moulding defect that occurs when thin layers on surface of moulded part quickly separate or peel away from underlying substance. Delamination is flaking surface layer flaw, close to what you'd see on flake mica. Since it decreases component's strength, this is commonly known as comparatively serious flaw.

Delamination in injection moulding: causes & avoidance:-The most frequent source of delamination is foreign material penetration of resin pellets or other base material. When two materials cannot properly bind to each other, flaky separation occurs. For example, popular base plastic like acrylonitrile butadiene styrene (ABS) could be combined within compatible plastic like polypropylene (PP). If component is intended for safety-critical use, resultant lack of structural strength will be very unsafe.



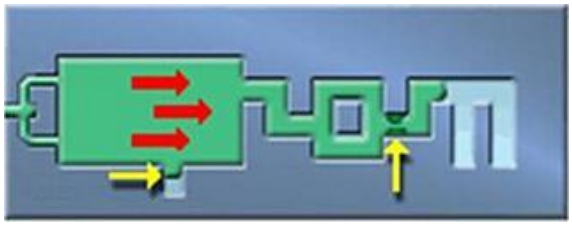
- Aside from substance feeding into hopper, any residual release agents covering mould for better product separation may also be contaminant. Delamination may also be caused by excessive moisture on material asresult of premature drying prior to use. If you notice

delamination in your moulded products, take following steps to prevent it from happening again:

- If extra moisture is problem, increase mould temperature or adequately pre-dry plastic.
- Make sure employees are correctly preparing & treating resin pellets or base material to avoid leakage.
- Consider redesigning mould with emphasis on injection nozzle to reduce reliance on release agents.

Mold construction or maintenance flaws trigger injection moulding defects:-Issues with mould tooling itself can inject defects into moulded objects. If mould is not properly handled or built, such flaws are more likely to occur. When it comes to above, these flaws can be impossible or expensive to fix in subsequent manufacturing runs if mould has to be fully overhauled.

10. Short shot:-As surge of molten fluid does not fully fill cavities in mould, short shot happens. As consequence, after cooling, moulded part is unfinished. For example, incomplete compartments in plastic shelves of show or missing prongs on plastic fork may be signs of short shot. Short shots are usually regarded as significant flaw that can impair formed part's function or appearance.



Short shot of moulded products: causes & solutions.:-Flow obstruction caused by small or blocked gates is most frequent source of short shots. If liquid is too viscous or mould is too cold ,molten material will not be able to fill mould entirely until cooling. Other times, stuck air pockets or insufficient injection pressure can obstruct proper flow. To avoid short shot, take following precautions:

- **Improve flow by redesigning mould with larger channels or gates.**
- **To maximize flow, increase injection speed or pressure, or use thinner base film.**
- **Install external air vents or expand current vents in mould to enable trapped air to escape**
- **Increase mould temperature to avoid content from cooling too quickly**

11. Flash:- An abundance of moulding content, also known as "spew" or "burrs," occurs as thin lip or protrusion at edge of piece. Stuff has circulated outside of planned flow channels & into gap between tooling plates or at injector pin, causing flash to emerge.

Flash is normally undetectable, but if it is especially noticeable on product, it can be called significant flaw. Trimming excess material from moulded component with flash is common part of reworking process.

The most common causes of flash in moulded objects, as well as how to avoid it.

The most frequent cause of flash is badly built or worn & degraded mould. Flash may also be caused by excessively high mould temperature or injection pressure. If plate clamping force is insufficient, material streaming through mould cavities will force its way between plates. following are some of most popular techniques for dealing with flash in moulded products:

- **Increase plate clamping force to confine material flow to channel**
- **Adjust mould temperature, injection pressure, & ventilation to enhance material flow**
- **Retool or redesign mould if plates don't fit together properly or allow material to flow beyond channel**

Conclusion:-Injection moulding usually necessitates large initial cost in tooling. That's why it's important to get mould design right first time, rather than trying to start again after discovering major flaws. Defects in moulding process or substance are usually simpler & less expensive to fix. Defects in moulded materials, regardless of cause, may have significant negative impact on bottom line.

Now that you know what to look for when it comes to typical injection moulding flaws, you can take precautions to avoid them in future & ensure your products meet your customers' quality expectations.

REFERENCES

1. Plastic Injection Molding: Manufacturing Process Fundamentals by Douglas M. Bryce
2. Injection Mould Design:Design Manual forThermo plastics Industry by R G W Pye
3. The Mould Design Guide by Peter Jones
4. Injection molding - Society of Plastics Engineers
5. Injection moulding of plastic components by John Bown
6. Rosato, D. Injection Moulding Handbook. Second Edition, Chapman & Hall, London, 1995.
7. Lam, Y.C., Jin, S. Optimization ofgate location for plastic injection moulding. Journal of Injection Moulding Technology, 2001
8. Sahputra, I.H. Comparison of two flow analysis software for injection moulding tool design. Proceedings of International Conference on Industrial Engineering & Engineering Management, 2-4 Dec. 2007, Singapore.
9. Saman, A.M., Abdullah, A.H., Nor, M.A.M. Computer simulation opportunity in plastic injection mould development for automotive part. International Conference on ComputerTechnology&Development, 13-15 Nov. 2009, Kota Kinabalu, Malaysia
10. Journal Paper of Application of computer simulation for finding optimum gate location in plastic injection moulding process by S.R. Pattnaik, D.B. Karunakar, P.K. Jha.

Effect of Prayer on Mental Health during COVID Pandemics on Nursing Student: A Perspective Study

Jyotsna Budhagaonkar[1*] Dr. Neelam Bansode[2]

[1]Research Scholar, Nursing, J.J.T.U. Rajasthan, India.

[2]Dr.Neelam Bansode, A.D.H.S. Nursing, Maharashtra.

***Corresponding Author**: Jyotsna Budhagaonkar. **Email Id:** jyotsnab2010@gmail.com

ABSTRACT:-In today's days world is suffering from COVID Pandemics, and we can see that situation is so worst. Everything seems useless and hopeless, and in all we have only one hope, that is "Prayer". Prayer has a power to heal any wound, no matter how deep it is. It gives us strength to fight every kind of situation. Prayer gives an internal peace to our soul, which affect positively on our mental health. The objective of this present study is to review the subjective experiences of nursing students regarding effect of prayer on mental health during COVID pandemic. 10 nursing student were participated in this study using a convenience sampling. Participants were asked to pray daily in the morning for 30 days and after 30 days, write their own experiences regarding effect of prayer on mental health during COVID pandemic. The result showed that, prayer has a desirable effect on mental health of nursing students while working during COVID pandemic.

Keywords: - prayer, mental health, nursing students, COVID pandemic.

INTRODUCTION:- Now a day, we all know the world is suffering from the COVID pandemic and ultimately resulting in the crisis. A KFF Health Tracking Poll from July 2020, found that, many adults are reported negative impacts on their mental health because home isolation and job loss, which is associated with increased depression, anxiety, distress, and low self-esteem. It may lead to higher rates of substance use disorder and suicide[1].

Many studies have suggested that prayer helps to reduce psychological stress. According to a study by Centrastate Healthcare System, the psychological benefits of prayer may help to reduce stress and anxiety, it will promote a more positive outlook, and it also strengthen the will to live a peaceful life.[2]

Fransis et al, 2008 done a study on *prayer and psychological health.* They used Eysenck's dimensional model of personality based on neuroticism and psychoticism to assess the mental health of high school students based on their self-reported frequency of prayer. The result of study shows that, the students of both schools, Catholic and Protestant, have higher levels of prayer associated with better mental health as measured by lower psychoticism scores and the students of Catholic schools have higher levels of prayer were associated with higher neuroticism scores[3].

Chittaranjan Andrade and Rajiv Radhakrishnan in their study (2009), on praying and healing: A medical scientific perspective on randomized controlled trails stated that, prayer has been reported to improve outcomes in human as well as nonhuman species. Religious traditions across the world display beliefs in healing through prayer. Here the healing powers of prayer have been examined in triple blind, randomized controlled trials by illustrating randomized controlled trails on prayer and healing, with one study in each of different categories of outcome. Also they provided a critical analysis of the scientific and philosophical dimensions of such research [4].

The science of prayer news on May 20, 2020, from the Wall Street Journal, many people are looking to a higher power for mental and physical comfort these days. In March, according to the University of Copenhagen, the number of Google searches for prayer skyrocketed. In March a Pew Research Centre survey found that more than half of Americans had prayed to end the spread of corona virus [5.]

A study in the Journal of Behavioral Medicine (2005), compared secular and spiritual forms of meditation, and found spiritual meditation is more calming. Participants were meditated for 20 minutes a day for four weeks. Researchers found that the spiritual meditation group showed greater decreases in anxiety and stress and more positive mood. Also they are able to tolerated pain almost double as long when they asked to put their hand in an ice water bath.[6]

A psychologist and director of the Social Psychology of Religion Lab at Indiana University South Bend says that, Prayer can foster a sense of connection- with the higher power, with the environment and with the other people, including the generations of people who have prayed before you.[7]

Researcher aimed to study and review the subjective experiences of nursing students regarding effect of prayer on mental health during COVID pandemic.

MATERIALS AND METHODS:-Study is designed with theoretical perspective similar to qualitative, descriptive study. Here in designing the study, individual theory has been adopted which focus primarily on the individual development, and individual subjective experiences of the 10 participants. The use of qualitative research allowed me to inductively and holistically understand what was being said about nursing student's experiences and their constructed meaning of prayer as a coping strategy during COVID pandemic. These participants were asked to pray daily in the morning for 10 to 15 minutes for 30 days and after 30 days, write their own experiences regarding effect of prayer on mental health during COVID pandemic.10 nursing student were participated in this study using a convenience sampling. These participants were regularly had in practice of prayer regularly since childhood. After 30 days they have sit in one hall and ask to write their subjective experiences regarding effect of prayer on mental health during COVID pandemic. The results drawn from the participant's subjective experiences showed that 100 % participant's experiences, prayer has a desirable effect on mental health of nursing students while working during COVID pandemic.

RESULTS AND DISSCUSSIONS:-The results of this study show that prayer has a desirable effect on mental health of nursing students while working during COVID pandemic. The subjective experiences of participants are analyzed and discussed as following:

Prayer offers a bigger sense of purpose. One participant said while shared her experience that prayer works wonders; faith healing cured many patients miraculously with prayer. She feels better sense of self –praying and said it brings me closer to God. She says, "I feel safe when I was pray in front of God."

Dr. Crystal Park, PhD, a psychology professor at the University of Connecticut in Storrs, cited in his study says that there are several ways in which a regular spiritual practice may improve or protect your emotional health by connection to a greater power or truth can give you a sense of purpose and meaning beyond the day to day.[8]

Provide social support. An August 2015 review of 78 studies by Park and other researcher published in Cancer found that patients who reported a strong religious or spiritual life are able to maintain richer social connections. Park says prayer gives positive physiological effects on the body, such as calming your cardiovascular system and reducing the stress.

3rd year GNM student, a study participant mentioned that, prayer have a positive effect to recovery from mental illness and also for wellbeing of people without mental illness. Prayer is important to reduce loneliness and social isolation. She also said that, "Prayer help to regulate my heart beats while I am in stressful situation." Prayer has been known to speed up the recovery of the heart attack & cardiac surgery.

Coping is contextual. Folkman, Lazarus, Dunkel-Schetter, Delongis, & Gruen (1986), state that coping focuses on what a person does in a specific stressful encounter and how this as the encounter unfolds. Coping is contextual; it is influenced by the person's appraisal of the actual demands in the encounter and managing the stressful situations.

According to one of the participants, prayer can positively impact on stressors. She experiences, that prayer help her to reduce anxiety, and feel her relaxed while working in COVID wards. She says, "Prayer increases positive thinking and gives positive outlook and make me happy and thus I am able to manage the stressful situations."

Sense of well-being. Sanjivani says, "I do prayer twice in a day. My prayer life and relationship with the God keep me grounded and give me sense of peace, hope and gratitude in my heart. God is always walking with me and doing all the things for good. I believe that god is source of my energy. He can do beyond medicine for my healthy life and well-being."

Folkman et al. (1986) state that, Prayer is an important motivation for emotional well-being, and it reduces distress. People cope more effectively with the stressors in their lives with the interventions of prayer. According to Harvard scientist Herbert Benson, M.D. (cited by Davis, 2001), prayer also has a physiological effect upon the person praying. He has conducted studies on prayer for over 30 years, and the result showed all forms of prayer evoke a relaxation response that quells stress, quiet the body, and promote healing. A report written by Dr. Deborah Cornah on Behalf of Mental Health Foundation 2006, stated the impact of spirituality on mental health has positive contribution. Service users and survivors have also identified the ways in which spiritual activity can contribute to mental health and wellbeing, mental illness and recovery.

Life is a part of divine master plan. According to Jainina, In today's days we can see, that situation is so worst, everything seems useless and hopeless, but in all this we have only one hope and that is "Prayer'. Prayer has the power to change a person from negative to positive, from worst to best, from sad to happy. She says, prayer is the only a ray of hope for all of us. The person who is broken asks him to listen to music, he may not feel that good, but ask him to pray and you will see a shine, a faith in him. Always remember, no matter how hard the situation seems keep praying, may be not now but soon you will receive your answer. According to Utkarsha's view, she says, "I thought the spiritual believe on god provide a positive environment around us. I believe on Jesus and the bible says Ask and it will be given; search it will find and knock the door will be opened for you. (Mathew 7:7).Our responsibility is that shares your problem with God and sees the miracles are happen. Folkman & Moskowiz,2004, in their review shown, during the 1990s stress and coping theorists began to research the areas of religious coping, which investigated coping, religiousness, and spirituality. In a study of Ellison, Boardman, Williams and Jackson(2001),

discussed that individuals who respond affirmatively may feel greater peace and assurance that their life is a part of a divine master plan, and the spiritual power play an important role on mental health benefits.

CONCLUSION:-Present study shows that prayer has a desirable effect on mental health while working in COVID pandemic. It increases the coping ability of a person in challenging situations. It helps to reduce anxiety and fear within the person. Prayer has physiological and psychological effects on human body which promotes healing. This study has limitations because we cannot analyze the subjective experiences of the participants statistically. Similar study can be done by using interventions and observations.

REFERENCES

1. Albert L. Ly1 • Anondah R. Saide2 • Rebekah A. Richert3 Perceptions of the Efficacy of Prayer and Conventional Medicine for Health Concerns, Published online: 12 October 2018 Springer Science+Business Media, LLC, part of Springer Nature 2018.
2. Centra State Healthcare System, From Health Library Section at the Wayback machine, Mind and spirit Archived 2009-02-01, Accessed May 18, 2006.
3. Francis Leslie et al. "prayer and psychological health: A study among sixth-form pupils attending Catholic and Protestant schools, in Northen Ireland". Mental Health, Reliogion& Culture. 11(1): 85-92. Doi:10.1080/1367467070179055.(2008)
4. https://www.psychologicalscience.org/news/the-science-of-prayer-2.html
5. Jain S, Shapiro SL, Swanick S, Roesch SC, Mills PJ, Bell I. A randomized controlled trial of mindfulness meditation versus relaxation training: Effects on distress, positive states of mind, rumination, and distraction. Ann Behav Med. 2007;33:11–21
6. Koenig HG. Research on religion, spirituality, and mental health: A review. Can J Psychiatry. 2009; 54:283–91. [PubMed] [Google Scholar]
7. Lazarus, R. S., &Folkman, S. (1984). Stress, appraisal, and coping. New York: Springer
8. Pargament, K. I., Koenig, H. G., & Perez, L. M. (1998). The many methods of religious coping: Development and initial validation of the RCOPE. Journal of Clinical Psychology, 54(4), 519-543
9. The Implications of COVID-19 for Mental Health and Substance Use NirmitaPanchal , Rabah Kamal , Cynthia Cox Follow @cynthiaccox on Twitter , and Rachel Garfield Follow @RachelLGarfield on TwitterPublished: Feb 10, 2021
10. Prayer and healing: A medical and scientific perspective on randomized controlled trials. Indian J Psychiatry. 2009 Oct-Dec; 51(4): 247–253.doi: 10.4103/0019-5545.58288 PMCID: PMC2802370 PMID: 20048448 ChittaranjanAndrade, Professor of Psychopharmacology and Rajiv Radhakrishnan, Research Officer
11. S. Sharp. **How Does Prayer Help Manage Emotions?** *Social Psychology Quarterly*, 2010; 73 (4): 417 DOI: 10.1177/0190272510389129
12. The Wall Street JournalThe Science of PrayerMay 20, 2020Journal of Religion and Health (2020) 59:1–18 https://doi.org/10.1007/s10943-018-0704-1(0123456789().,-volV)(0123456789().,-volV)
13. Taylor, R. J., Chatters, L. M., & Levin, J. (2004). Religion in the lives of African Americans: Social, psychological, and health perspectives. Thousand Oaks: Sage.
14. Wachholtz AB, Pargament KI. Is spirituality a critical ingredient of meditation? Comparing the effects of spiritual meditation, secular meditation, and relaxation on spiritual, psychological, cardiac, and pain outcomes. J Behav Med. 2005;28:369–84.
15. www.mentalhealth.org.uk Registered charity number 801130 The impact of spirituality on mental health.ISBN: 978-1-903645-85-7 © Mental Health Foundation 2006.

ADOPTION OF ELECTRIC VEHICLE: RIGHT TO LIFE AND HUMANITARIAN LAW DURING COVID-19

Rahul Ratnakar Kulkarni[1*],Dr. K. H. Munde[2], Dr. S. Chakradhar Goud[3]
[1]Research Scholar of Shri JJT University, Jhunjhunu, Rajasthan-333001, India.
[2]Department of Mechanical Engg., APCOER, Parvati, Pune, Maharashtra-411009, India.
[3]Department Mechanical Engg., Shri JJT University, Jhunjhunu, Rajasthan-333001, India.
[1]rahulrkul@gmail.com, [2]kashinathmunde@gmail.com,[3]comcgsakki@gmail.com

Abstract:-The Electric Vehicle (EV) segment in India has gathered momentum in recent years, but a mismatch in intent and action has resulted in limited on-ground adoption of EVs. However, the expected growth of the automobile sector due to the ongoing COVID-19 pandemic and people's increased understanding of vehicular emissions, creates immense scope for the exponential growth of the EVs industry in India. Essential decisions and investments are required to facilitate this. As the government introduces stimulus-based investments to mitigate the fallout of the pandemic, the EV sector must be made a beneficiary as well.

Keywords:-Introduction, EV Policy ecosystem in India, FAME-I, FAME-II

I.INTRODUCTION:-India's Electric Vehicle segment has grown in recent years. The pace of such growth, however, has been slow; policy support has been insufficient for realizing the full potential of the EV market. The sale of EVs remains low, especially when compared to Internal Combustion Engine vehicles. According to recent industry data,[1] in the first eight months of financial year 20 (April 2019 to November 2019), EV sales were a mere 0.7 % of total passenger vehicle sales in the country. This is much lower than the global average of 2.7 % (share of EV sales in total PV sales), which, too, is on the lower side, due to the slow growth in emerging economies.[2] In financial year 20, the total passenger EV sales (including two-wheelers) were 0.15 million in India in comparison to an annual sale of 2.1 million globally in 2019.[3] The onset of the COVID-19 pandemic has necessitated a policy shift, or even an overhaul, in various sectors of the economy. Within this shift, the Indian government must also rework its policy approach for the EV sector.

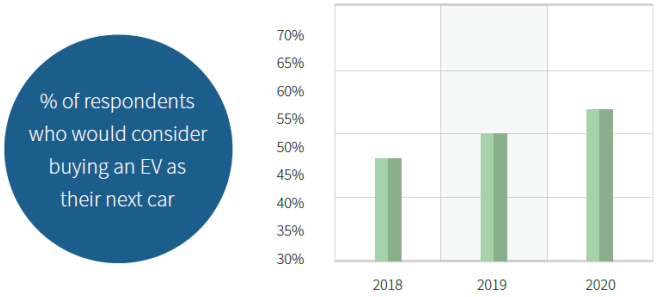


Fig.1: Consumer Attitudes Towards Electric Vehicle Ownership

II.EV POLICY ECOSYSTEM IN INDIA

The increased use of EVs could reduce CO_2 emissions by 37 %.[4] It could also help curtail India's dependence on oil imports and lower its massive import bills. India's dependence on oil imports is steep, at around 85 % (as of financial year 19) while the last import bill (financial year 20) was at a staggering US$102 billion despite a crash in crudeoil prices in the latter half of financial year 20.[5] Enhanced EV implementation will also enable India to fulfil the global commitments it has made to lower carbon emissions and increase cleaner

sources of energy and transportation, including the Nationally Determined Contributions (NDCs) under the United Nations Framework Convention on Climate Change[a] and EV30@30.[b] To facilitate the higher and faster rate of adoption of EVs in the country, a clear policy directive is essential. Indeed, some key policy decisions to this effect have been taken in recent years, e.g., the National Electric Mobility Mission Plan (NEMPP) 2020, launched in 2013 by the Department of Heavy Industry (DHI) as a roadmap for the faster manufacture and adoption of EVs in the country.[6] Under this plan, the Government of India aims to reach sales of 6 to 7 million hybrid vehicles and EVs by 2020.

Segment	FY 15	FY 16	FY 17	FY 18	FY 19	FY 20
e-2-wheelers	--	20,000	23000	54,800	126,000	152,000
e-4-wheelers	--	2,000	2000	1200	3600	3400
Buses	--	--	--	--	--	600
Total	16,000	22,000	25,000	56,000	129,600	156,000

Table 1: EV sales in India (2014-15 to 2019-20)

Table 1 shows the EV sales in the country since the initiation of the scheme. The total sales are approximately 400,000. This does not include three-wheeler EVs (e-rickshaws), dominated by unorganized sector sales, estimated to be at 1.5 million and catering to a population of almost 60 million users daily.[11] India's e-mobility segment is being driven by e-rickshaws at present, providing an affordable, cleaner and more efficient last mile commute. With the comparatively lower upfront cost and the low average per passenger and per kilometer energy consumption, electric three-wheelers are considered one of the best ways for enhancing e-mobility in India. Companies such as Amazon are also considering electrifying their freight fleet.[11]As part of the NEMMP 2020, the Faster Adoption and Manufacturing of (Hybrid and) Electric Vehicles in India (FAME India) Scheme was notified in April 2015, to promote the manufacture of electric and hybrid vehicle technology. Initially launched for a period of two years, FAME-I, the first phase of the scheme, was extended to a period of four years, until 31 March 2019. The focus areas of this phase included demand creation, technology platform, pilot project and charging infrastructure. A total of INR 5.29 billion was earmarked and utilized under the scheme, a major portion of which was demarcated for demand incentive (approximately INR 3.43 billion).[12] To encourage wider adoption, buyers were given demand incentive in the form of an upfront reduced purchase price. Phase-II of the FAME Scheme was rolled out on 1 April 2019, to be implemented for a period of three years, until 31 March 2022. FAME-II received a massive outlay of INR 100 billion, compared to the meager funding of FAME-I, of which only 60 % was utilized. Thus, the outlay for FAME-II is almost 19 times more than the fund utilization of FAME- I. This is a significant budget jump for a continued policy and can be attributed to the fact that the government views FAME-I as a way to set up the stage for enhanced EV mobility, FAME-II will then aim to increase EV adoption in the country. The budget allocation also indicates the government's commitment to the EV sector, which in turn can motivate companies, researchers and buyers to allocate resources for the sector. However, it is equally possible that the increase in budget is entirely arbitrary, as the projected financial outlay lacks clarity on both expected results and how best to allocate the funds. The initial notification of the scheme was not without hiccups, as it received mixed responses from industry experts. The incentives under FAME are applicable for EVs fitted with advanced chemistry battery and those used as commercial vehicles for public transportation. Further, there are maximum price and minimum top speed requirements, amongst several conditions that must be met to avail incentives. Some of these conditions for FAME-II are different from those for the first phase. Some experts claim that those of FAME-II are so stringent that over 90 % of electric two-wheelers are

Fig.2: Factors that Discourage Electric Vehicle Purchases

likely to lose the subsidy. This directly impacts EV sales, which are further dampened because electric two-wheelers with an advanced lithium-ion battery are double in price, compared to those with the more popular lead-acid battery, which is excluded from FAME-II. EV sales in India are mostly driven by electric two-wheelers and three-wheelers, and the four-wheeler segment is still small. The pace of this segment will continue to be slow, since there are limited incentives for the adoption of EVs in personal mobility, and none for four-wheelers. This is considered a shortcoming of FAME-II, since it leaves out incentivizing a complete segment of mobility, which may impact the long-term adoptability of EVs in India. While it is a well-intentioned scheme, FAME-II may fail to deliver due to the sudden introduction of the stringent conditions. These should have been implemented in a phased manner and included sunset clauses for the benefit of the manufacturers, investors and consumers.

Moreover, if FAME-II delivers on the desired outcomes despite these conditions, supported by state-level policies, it will still be insufficient for the EV sector. To address this, a more consistent policy approach is required, which is holistic and will result in an enabling ecosystem for the sector. Currently, government support comes mostly in the form of "demand incentives," with minimal efforts towards improving the infrastructure. Since the sector is still in a nascent stage in India, policy support is required to encourage EVs through an ecosystem of research, manufacturing, storage and charging infrastructure, along with disincentivising use of conventional fuel vehicles. As India moves from relief to recovery response for COVID-19, the government has the opportunity to take stock of the post-pandemic changes in buyer preferences and economic stimulus needs to help accelerate the EV sector in a holistic manner.

III.THE WAY FORWARD

The path to post-COVID-19 recovery is not clear and is going to be a difficult one. The government is taking measures on social and humanitarian grounds to save lives and provide immediate relief but will have to engage in many long-term revival measures as well. Such post-pandemic measures will establish the direction of various economic sectors for the future. The EV sector has only just started to move towards its potential in India, and in light of the COVID-19 outbreak, the government's response could go either way, the pandemic could either force the government to strike it off the priority list or take the slowdown as an

opportunity to promote the sector. Since stimulus must be provided to revive the economy, clean energy such as EV should be the government's priority. For the EV sector, the government should work towards developing an ecosystem across the value chain. Now more than ever, policy actions with a long-term vision have become critical. The government can potentially focus on the EV sector as part of its recovery stimulus to veer the economy back to pre-COVID-19levels. The sector has massive growth potential and is being increasingly recognized as a viable alternative for cleaner mobility. So far, the key reasons for the slow uptake of Enslave been the concerns of reliability and affordability due to the higher upfront pricing, range anxiety, and lack of charging stations. To make EVs more affordable, manufacturing must be increased. This can lead to economies of scale, with equal effort being made to increase the demand by lowering upfront pricing through incentives and subsidies. Reliability issues can be solved by having a clearly chalked-out charging infrastructure plan. Currently, the EV sector is trapped in a cycle-manufacturing and charging stations remain limited due to a lack of demand, and the demand is poor because of a lack of economies of scale, keeping prices upand limiting the availability of charging stations. With a stimulus package, the government can provide a solution by promoting an ecosystem of manufacturing, demand, ancillary infrastructure, R and D and other relevant factors. A key area where government stimulus can be critical for the EV sector is innovation. Adequate support must be provided for innovation in manufacturing, conversion kits, and end-of-life vehicle management for EVs. This requires both fiscal and non-fiscal incentives and a strong focus on innovative startups. The sector is still heavily dependent on imports, especially for batteries, which make up almost 50 % of the cost of an EV. To create an EV-intensive future, it is critical to combat this import dependence, but it needs to be done in a phased manner. Imports have naturally been affected during the pandemic; it provides a window of opportunity to make a policy shift. To push for increased manufacturing in India, along with the ongoing efforts for battery manufacturing, such as through the National Mission on Transformative Mobility and Storage, the government must invest in battery-recycling or end-of-life management and EV retrofitting.

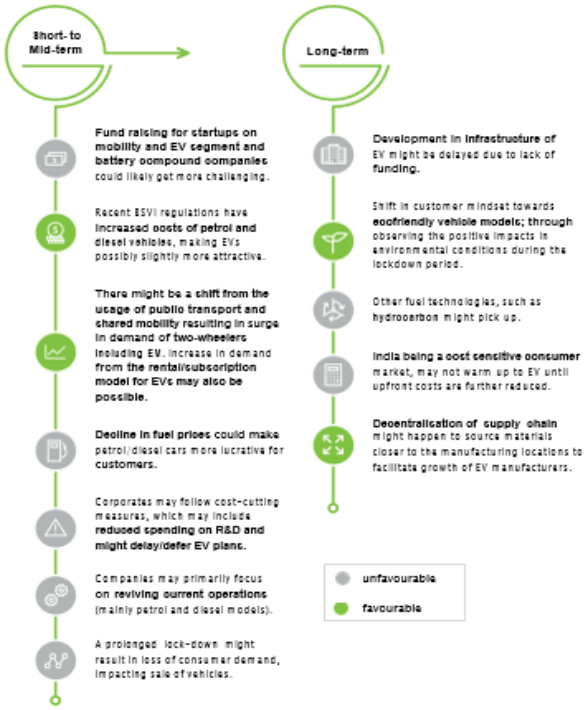


Fig. 3: COVID-19: Bearing on The EV Segment

The pandemic has created a fear of using public transport, and an increase in personal mobility is expected. In this scenario, it will be beneficial to provide short-term incentives or

higher subsidies to increase the use of EV two-wheelers and four-wheelers. This will not only control pollution levels but also push the demand and supply for EVs in the long run, eventually creating a price parity between EVs and ICE vehicles. EVs are currently priced at almost double that of ICE vehicles of the same category, making the former the less preferred option. The government can possibly use the COVID-19 recovery stimulus to help consumers meet this gap. This can be combined with a 'nudge approach', where the long-term benefits of EVs can be highlighted, such as reduced pollution and clean air, as witnessed during the countrywide lockdown. Consumers can be nudged to pay the price premium as their contribution to their and their family's health and well-being. In the short term, the government can also extend the benefits of FAME-II to a wider range of EVs, currently limited to a few models and vehicles. In making policy changes, India can learn from how EV incentives work in other 15 countries around the world. While quality concerns of the Indian government are valid, they can be enforced in a phased manner and are also expected to be reinforced by the market forces in the long run. Another important opportunity lies in the skilling of labour for the EV sector. The pandemic and the resultant nationwide lockdown will lead to many informal workers losing their stable stream of income for the foreseeable future. The government must provide such workers with an opportunity to engage in learning skills that are relevant to the EV ecosystem. The low pollution levels in the cities due to the lockdown have made citizens aware of the harmful effects of tailpipe emissions from conventional vehicles. Moreover, the push for a "self-reliant India" and an increase in manufacturing in the EV sector will create more jobs. Retrofitting EV swill require a different skill set, including an understanding of ICE technology. This provides an excellent up skilling opportunity for ICE technicians. Beyond its borders, India can enhance cooperation in the EV sector with its Asian counterparts. Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) countries are in nascent stages of EV adoption. Thailand, for instance, has a young EV industry, which employs[15] approximately 890,000 people; the country is gearing up for a National EV Policy and for attracting foreign direct investment (FDI). In Bangladesh, much like India, two-wheelers[16] and three-wheelers lead the way, but for now, the country has highly limited charging infrastructure. Bhutan, too, is making headways in the EV sector, with over 200 taxi drivers expressing an interest in purchasing [17] EV taxis. Cooperation for developing a stronger value chain and a better EV ecosystem will prove beneficial in the long run. India must also explore cooperation and learning exchange on charging stations, EV conversion kits, and other such crucial[18] elements with its BIMSTEC counterparts.

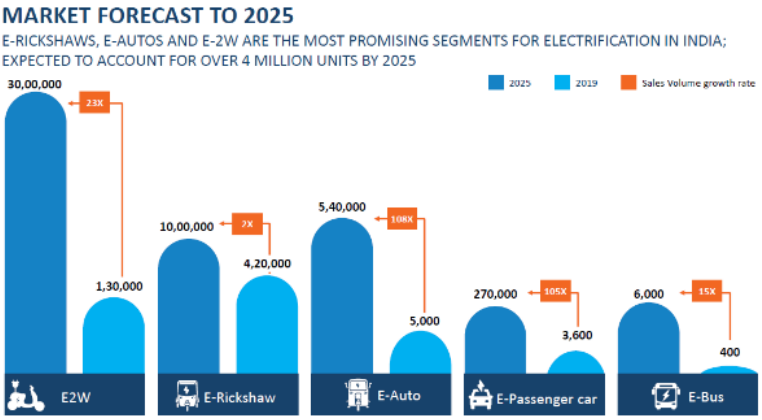


Fig. 4: EV Market Forecast in India by 2025

IV.CONCLUSION:- There is an urgent need for a clear government policy roadmap to overcome the ill-effects of the pandemic on the people and the economy. Government must take the opportunity to focus on the EV sectors. The EV sector supports the recovery of the economy with an added benefit of cleaner mobility. The government has an opportunity to

invest in skilling, infrastructure and manufacturing in the EV sector to provide the required reboot to the economy. It is an opportune moment for the government to undertake the much-needed re-skilling of labour to fit the green sectors such as EV. This will not only support people who have lost their jobs due to the pandemic but also provide them a more stable and secure career pathway, supporting innovation and small-scale businesses in promoting the EV sector in India. The imperative is enabling a holistic growth for the EV sector and developing a strong EV value chain in the country. This will also support the government's objective of the country becoming self-reliant and enhancing domestic manufacturing. The government must treat the recovery stimulus as a startup capital in the EV sector, which can then provide the working capital for taking the sector to new heights.

REFERNCES

1.Only 1,309 Electric Cars Sold in India during April-Nov 2019-ETAuto.Com, December 28, 2019.
2. Electric Vehicle Outlook 2020, BNEF EVO Report 2020 -Bloomberg Finance LP. BloombergNEF.
3. BNEF EVO Report 2020.
4.IndiaEVStory Emerging Opportunities. Innovation Norway
5. India's Crude Oil Import Bill Fell 9% to $102 Billion in 2019-20. Sanjeev Choudhary, TheEconomic Times.
6.Implementation of National Electric Mobility Mission Plan. Press Information Bureau, July8, 2019.
7. Electric Vehicles Sales Grow by 37.5 per cent in FY 2015-16.Carandbike. April 6, 2016.
8. Gujarat Clocks Highest Electric Vehicle Sales, Followed by West Bengal And Uttar Pradesh:Report. Inc42 Media, Nov. 28, 2017.
9.EV Sales in India Cross 750,000 Units in FY2019 but FAME II May Spoil the Run. AutoCarPro, April 20, 2019.
10.Electric Vehicle Sales in India Up 20% In 2019-20, Industry Body Says. BloombergQuint.April 20, 2020.
11.World Environment Day: Non-Polluting e- Rickshaws to Lead India's EV Revolution. The Financial Express. Shilpi Samantray and Aishwarya Raman, 5 June 5, 2020.
12.FAME India Scheme. Press Information Bureau, July 9, 2019.
13.Unplugged! Subsidy Ends for-95% of Electric Scooters. CRISIL, April 8, 2019.
14.How Electric Car Incentives around the World Work, Volkswagen AG, May 28,2019.
15.Thailand's EV Industry - ASEAN Demand Grows. Industry Today. June 2, 2020.
16. EV Market Profile: Bangladesh. Stephen Fogel. What Auto, May 30,2018.
17.Bhutan's Government Ramped Up Support for More to Drive Electric Vehicles,Help ReduceHarmful Emissions. Usha Drukpa. Daily Bhutan, Jan 16, 2020.
18.Post Covid Stimulus for Clean Energy: Govt Must Focus on Developing an EVEcosystem.Purva Jain. ORF, April 21, 2020.

a. NDCs are actions that Parties to the Paris Agreement plan to undertake to address climate change. The Paris Agreement requests each country to outline and communicate their post-2020 "nationally determined" climate actions, known as their NDCs, according to their national circumstances and priorities.
b. The EV30@30 campaign sets the objective for participating countries to reach a 30% sales share for EVs by 2030. Participants include Canada, China, Finland, France, Germany, India, Japan, Korea, Mexico, the Netherlands, Norway, South Africa, Sweden, the United Kingdom and the United States. The campaign is organised by the CEM-Electric Vehicles Initiative, coordinated by the International Energ Agency.

IMPACT OF ONLINE EDUCATION ON EYE HEALTH AMONG HIGHER SECONDARY SCHOOL CHILDREN

Reshmi John* Dr. Achamma Vargheese**
*** Research Scholar, Department of Nursing Shri Jagdishprasad Jhabarmal Tibrewala University, Jhunjhunu, Churu Rd, Vidyanagari, Churela, Rajasthan 333001.**
****Pro. Dr. Achamma Vaghese, Principal, Anushree Collage of Nursing, Jabalpur, Madhya Pradesh.**
E- mail- reshmiboby82@gmail.com

ABSTRACT

Background- Higher Secondary school based health promotion programme is effective way to raise students' health awareness. Goal of this study was to see how eye health promotion activities affected school children's eye health literacy.

Method- Being at Higher Secondary School comes with lot of eye problems. It's practically unavoidable for students to spend so much time reading textbooks, writing papers, & looking at illuminated displays such as laptops, social media, online gaming, & television/movie viewing.

Results- For this purpose, 402 students (257 females, 145 males) with mean age of 20.26 from different faculties were asked about eye health by e-mail between 8-13 July 2020. Also, eye fatigue questionnaire was applied to evaluate eye fatigue. For reliability analysis, corrected item-total correlations & Cronbach Alpha internal consistency coefficient approaches were applied. Online education eye health measure in Covid-19 pandemic was shown to have favorable relationship with eye tiredness questionnaire in this investigation. online education eye health scale in Covid -19 pandemic strongly predicted eye tiredness, according to findings of simple linear regression analysis done to establish predictive value of online education eye health scale in Covid -19 pandemic to eye tiredness.

Conclusion- According to results of simple linear regression analysis conducted to determine predictive value of online education eye health scale in Covid -19 pandemic to eye fatigue, it was found that online education eye health scale in covid-19 pandemic significantly predicted eye fatigue. Data analysis were conducted with SPSS 21.0 statistical package program in 0.01 significance level.

KEY WORDS- Online Education, Eye Health, Students, Practice Eye Fatigue.

1. BACKGROUND

With about 4 million new cases & 60,000 new fatalities recorded worldwide, rate of new cases & fatalities from corona virus disease 2019 (COVID-19) pandemic continues to rise. Approximately 53.7 million COVID-19 infections & 1.3 million deaths were confirmed & reported to World Health Organization1 till November 15, 2020. As part of broader measures to combat spread of COVID-19, 191 countries have taken steps to close educational institutions across country, including nurseries, schools, vocational training colleges, & universities, according to United Nations Educational, Scientific, & Cultural Organization. Approximately 1.58 billion kids were absent from school at this time, accounting for nearly 90% of all pupils enrolled worldwide—an unparalleled scenario in history of education. effects of home confinement on children's eye health might have substantial influence on their general development and/or myopia worsening. “Quarantine myopia,” which first appeared in juvenile population, might jeopardize these children's vision in future. Increased scholastic pressure & less time spent outside are two major risk factors for myopia development. During epidemic, enough exposure to sunshine for at least 1 hour per day may be reached by effectively using locations around home such as terrace, balcony, & garden, which have very high illumination levels, even in shaded areas, compared to inside areas. [1] To manage advancement of myopia, post-pandemic ophthalmological surveillance

programme for children with myopia should be considered, including decision-making based on demographic & clinical features, risk factors, & individual choice. Universities & Schools were also shuttered as part of COVID-19 span curve flattening initiatives, & classroom teaching was substituted by online education. During pandemic, online schooling may have role in both lowering virus's transmission rate & having detrimental consequences for students' eye health. 402 university & School students, with average age of 15-26 years, were assessed for eye health & asthenopia or eye fatigue associated to online education. Study found that online education had detrimental impact on university students' eye health during COVID-19 epidemic. In other words, asthenopia (or eye tiredness) rose as result of online education aggravating eye health impairment. Excessive usage of devices with digital screens, employed without enough pauses, exhibited as part of digital asthenopia spectrum, may have exacerbated effects of online instruction on students' eye health. In addition to assessing refractive error under cycloplegia, students' ophthalmological examination should include vergence accommodation tests, as well as evaluations of extrinsic ocular motility, lacrimal film, & ergonomics linked to usage of electronic devices. Students should be taught to observe 20–20–20 rule, which requires them to take 20-second break every 20 minutes & concentrate their attention on items at least 20 feet (6 metres) away from their gadgets. Then they should blink as much as they can, willingly & thoroughly, to lessen symptoms of asthenopia & dryness of eyes. Excessive use of electronic devices has been linked to accommodative dysfunctions such as accommodative spasm (pseudomyopia) & acute esotropia, according to research. Students should be informed about online programmes based on Family Link (by Google) that may be put on digital devices to monitor & restrict screen time & establish breaks & sleep time as alternative to wearing blue light-blocking spectacles. Eye health is crucial for everyone, but notably for children, especially in these times of social isolation when we use digital world more frequently, practically continuously, & with significant functional & emotional role. All health experts, parents, teachers, & stakeholders must work together to provide safe visual environment for children during & after COVID-19 epidemic. There is little question that national eye health policy must be developed with goal of postponing beginning & progression of myopia in school pupils as much as feasible. [2]

Common Eye Problems in Higher School Secondary Students during Online Education

Screen time isn't good for child's eye health in general, so problems linked with digital learning aren't limited to school. That's why, especially when your child is young, optometrists usually advise minimizing your child's screen time. Degree of exposure is what makes online learning possibly more damaging than watching movie or playing hour of Mine craft. Children in digital classrooms spend around 6 hours per day, 5 days per week in front of computer screen. More time your child spends in front of screen, more probable he or she may develop vision problems. [3]

Digital Eye Strain

Anyone who spends lot of time in front of screen might get digital eye strain.

Our eyes aren't built to stare at close-up objects for long periods of time. After retaining what is essentially same position for lengthy periods of time, eyes, like any other part of your body, become fatigued & unpleasant.

The following are some of signs & symptoms of digital eye strain:

- Tiredness or difficulty keeping your eyes open
- Eyes that are dry
- aches & pains
- Pain in neck & shoulders
- Back ache
- Burning or itchy eyes Difficulty focusing

- Vision is blurry.
- Light sensitivity is term used to describe person's sensitivity to light[4]

MYOPIA :- Nearsightedness, or myopia, has become more widespread in recent years. Children are contracting disease at earlier & earlier age. This tendency is especially concerning because childhood myopia worsens as children grow older. It can progress to extreme myopia without treatment, increasing risk of retinal detachment, macular degeneration, glaucoma, cataracts, & other potentially serious disorders. Myopia has yet to be identified as direct cause. Myopia appears to be partly inherited, according to some data. However, growing body of data shows that recent increase in myopia is linked to introduction of digital gadgets, but not in way you might imagine. According to recent research, it's not screen time that causes myopia; rather, its lack of time spent outside. Your child's eyes are built to focus on variety of distances & lighting situations. Kids have been less willing to spend time playing outside as video games, smart gadgets, & general internet use have grown in popularity. If your child's school day no longer includes recess & lunchtime outside, he or she may not be getting enough natural light to keep his or her eyes healthy.

The following are some of early signs of myopia:

- Double eyesight or hazy eyesight
- Squinting
- Close your eyes partially.
- Blinking too much[5]

Dry Eyes:-Dry eye disease is chronic medical problem that requires medication or therapy treatments to manage. It's fairly unusual for those who spend lot of time in front of computer to acquire dry eye problems. Your eyelid uniformly distributes tears across surface of your eye as you blink, moisturizing, cleansing, & protecting it. We blink about 20 times every minute on average. When we use computers & mobile gadgets, however, our blink rate drops to about 15 times per minute. Because there are fewer blinks, eyes have more time to dry up, which can cause symptoms such as:

- Light sensitivity
- Discharge that is stringy
- Excessive crying spells
- Feelings of grit, dryness, or burning
- Having sensation that something is caught in your eye[6]

PROBLEMS WITH SLEEPING:- Over last few years, blue light has been big issue in world of eye care. Blue light from digital gadgets, according to some sources, can induce retinal damage such as macular degeneration. These statements, however, are false. Although high amounts of blue light may cause retinal damage, quantity of blue light emitted by our displays is insufficient to hurt your eyes. While blue light is unlikely to harm your child's retinas, it may have adverse effect on their general health. Circadian rhythm (or wake/sleep cycle) is internal clock that your child's brain utilizes to essentially schedule their hormones. Hormones influence hunger, drowsiness, body composition, & even mood in human body. Light is necessary for circadian rhythm to work. When sun shines brightly outside, body recognizes that it is time to be active & attentive. Body understands it's time to sleep & rejuvenate when it's dark. When used late at night, blue light generated by computers & tablets might disrupt your child's circadian cycle. Your child's digital sessions, of course, take place during day. However, if kids use digital displays to complete homework or after-school activities within two hours of bedtime, it may hinder their capacity to function & learn. [7]

Computer Vision Syndrome:-Digital eye strain is another name for it. It is defined by American Optometric Association (AOA) as set of eye & visual disorders caused by extended computer, tablet, e-reader, & mobile phone use. Complete eye examination is used

to identify computer vision syndrome. Treatment may include computer-specific eyewear, vision therapy/eye exercises, & change in how you see screen. Adjusting computer tilt, seating posture, lighting, installing anti-glare screen filter, & taking periodic blinking & rest breaks are just few examples.

Eye Infection:-Bacterial, viral, & parasite diseases are other major possible eye concerns in school. Infectious eye infections may swiftly spread in crowded classrooms, cafeterias, dorm rooms, gyms, & other school public areas. Conjunctivitis is condition that affects eyes. Conjunctivitis, often known as Pink Eye, occurs when infection affects eye surface & inner surface of eyelids. Eyes become swollen, inflamed, & irritated, & they may discharge. Conjunctivitis, both viral & bacterial, is highly infectious & may be shared by close physical contact, coughing & sneezing, & touching object or surface that has germs on it & then touching your eyes. (Atopic conjunctivitis, third form, is not contagious). Keratitis due to Herpes simplex virus causes infection of eye. It produces eye discomfort, redness, discharge, & impaired vision & is very infectious. Herpes keratitis can cause serious eye damage if left untreated. [8]

Vision Problems & Their Causes of Online Education

While many of symptoms are transient & go away after you get off computer, some people may experience persistent visual loss that, if left untreated, might worsen over time.

Here are few more specific causes of School eye problems:

- Spending excessive amounts of time in front of computer
- Studying & reading under dim illumination, such as all-night cramming sessions in dorm rooms.
- A computer screen with glare
- Being too close or too far away from computer screen
- Unhealthy sitting position
- Vision abnormalities that are uncorrected due to lack of blinking
- Inadequate sleep
- Inadequate nutrition
- Inadequate hygiene practices, such as hand washing seldom & touching eyes
- Make-up swapping
- Swimming or showering while using contact lenses[9]

How can online classes/studies minimize eye strain?

Most schools, universities, & coaching's have adopted online teaching frameworks as result of widespread outbreak of COVID-19. Both of them are now using online courses to deliver regular lectures. In this period of heightened security, online courses have proven to be valuable resource for students who want to resume their studies without interruption. Teachers & students have begun to follow this modern style of learning & are studying through it on regular basis, much as they will in traditional classrooms. Given current situation & status of online classes in world, we may conclude that there are numerous advantages & disadvantages to online learning. One of pitfalls of online learning is that it is impossible to prevent eye pressure entirely. As result, we've included several suggestions for reducing eye pressure caused by online courses & tests.

The below are few guidelines for students to observe in order to minimise eye pressure caused by 4-5 hour online courses.

Use Laptops/Tablets- first rule that students can follow is to stop using their cell phones for online classes or tests. Students are encouraged to use bigger screens, such as smart phones, monitors, or tablets, to reduce eye pressure.

Adjust screen brightness- To minimize eye pressure, students should regulate brightness of their laptop or tablet displays. For improved viewing, students should lower screen's brightness & increase contrast. These modifications may be made from device's settings.

Change lighting in room- In addition to changing screen brightness, students can make sure that lighting in room is appropriate for online learning. To minimize eye pressure, ideal lighting for room should be dimmer than computer screen. Room's lighting can be perfectly calibrated to minimize glare to make it easy for students to see screen.

Do not stare at computer screen. Students are told not to stare at computer screen incessantly. Students cannot take rest while lecture is being given, so they should search somewhere else for 10 or 20 seconds to relieve eye pressure. During change in lessons, students should also give their eyes rest.

Take proper rest- Students can take proper rest after completing lectures for day, in addition to practicing above tips to minimize eye pressure caused by online courses. This would provide consolation & much-needed rest for their eyes.

Avoid playing video games- Since students are still on electronic devices for at least 4-5 hours day due to online lessons, it is recommended that they refrain from playing video games or streaming videos on their phones for extended periods of time. Students may engage in non-electronic leisure activities such as playing indoor sports, listening to music, & so on. If it is not practicable to refrain from using Smartphone & other devices for leisure purposes, students should set time limit for their use.

Aside from these suggestions, students should aim to sit in ergonomically correct posture to avoid eye pressure. Student should sit in ergonomic posture with his or her feet down on floor, shoulders relaxed, lower back supporting, & arms at right angle & forearms resting on keyboard in straight line. Students can scrub their computer screens on daily basis as well. [10]

WHAT CAN PARENTS DO FOR CHILDREN?

This year, online schooling might not be best option for your family. However, there are ways to preserve your child's eyes so that they can get most out of their online studies.

Purchase Computer Glasses.

While blue light from electronics is unlikely to harm your kid's eyesight, computer glasses may be useful, especially if your child has lot of schoolwork or wants to use computer for other activities in nights. [11]

Plan To Spend Time Outside On Daily Basis.

Spending time outside can help decrease progression of myopia. Make sure your youngster gets outside to play at least once day. Of course, once our really cold winter weather arrives, this may become difficult. On frigid days, my advice is to wrap up & take advantage of sunshine as much as possible. [12]

Set Up Work Space that is Ergonomic.

No matter whom you are, workplace ergonomics are critical for reducing digital eye strain. Same broad rules that apply to adults also apply to children:

- Place screen approximately arm's length away from your child's face, slightly below their eye level.
- Place their screen in way that reduces glare & keeps it as dust- & fingerprint-free as possible.
- As much as possible, have your child sit with their back against backrest & their feet flat on floor.
- Encourage your youngster to sit with his or her shoulders relaxed & backwards.
- If your child has to use keyboard at school, make sure it's at least level with their elbows. They should be able to type comfortably with their elbows at their sides.

Because most furniture isn't designed for them, you'll have to become inventive. Place box or tiny stool underneath your child's feet if their feet don't touch floor while they sit in their chair. If your youngster is too short to sit on chair, prop them up with some cushions. It may seem inconvenient, but it will make your youngster feel more at ease & pay attention. [13]

2. METHOD

2. 1 Study Group

Our research group consists of 402 university students enrolled at Pamukkale University's several faculties for 2019-2020 academic years. Students from faculties of education, arts & sciences, engineering, Kale Vocational School, Tavas Vocational School, & medicine took part in this research. This survey includes 257 (63.9 percent) female students & 145 (36.1 percent) male students. Participants' average age was 20.26 years.[14]

2.2 Procedure

First, literature on idea of eye health in Covid-19 epidemic was examined, as well as knowledge & theories in this subject. Examining relevant literature resulted in creation of pilot test. It was sought of 5 field & measurement/evaluation professionals to reflect test to be measured during design of pilot test. Pilot test was set up & applied to suitable sample. Pilot test application was conducted with 78 university students to see whether scale's components would be understandable to students. Researcher completed this application online, & students' input was taken into account. Five questions were deleted from draught scale based on examination of student response. As result, four-item scale was ready to be put to test. Item-factor analysis was used to determine items. In addition, to obtain proof of construct validity researchers used Exploratory Factor Analysis (EFA) & Confirmatory Factor Analysis (CFA). Finally, in Covid-19 epidemic, online education eye health assessment was created. study's flow diagram is presented in Figure 1. [15]

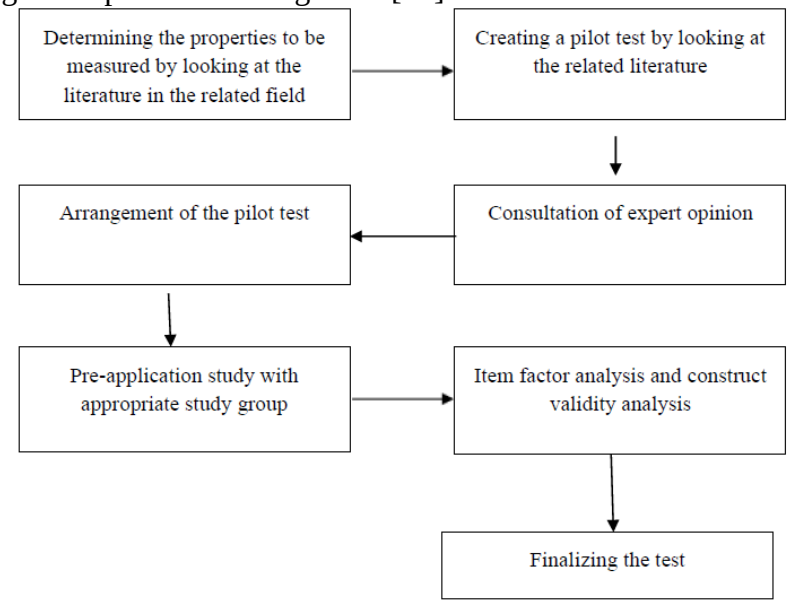


Figure-1- Flow Diagram of Study

2.3 Statistical Analysis:-Before beginning statistical analysis, it was determined whether there were any missing data in data set. Study data were evaluated after confirming that data set had normal distribution. For reliability analysis, Cronbach Alpha method was chosen. In addition, data was analyzed using Pearson correlation & basic linear regression analysis. With 0.01 threshold of significance, analysis was evaluated using IBM SPSS software. [16]

3. **Results;-**Construct validity analysis, reliability analysis, correlation, & basic linear regression analysis are all covered in this section of study.

3.1 Construct Validity:-Exploratory Factor Analysis (EFA) was used to establish parameters of factorial design. Before EFA, Kaise-Meyer-Olkin (KMO) test was used to assess whether

sample size was sufficient for factoring. KMO value was determined to be.798 as consequence of analysis. According to these results, sample size for exploratory factor analysis may be considered "adequate" (Field, 2009). Furthermore, findings of Barlett's Test of Sphericty indicated that chi-square value x2= 922.98 (p.001) was significant. After gathering these proofs of data set's appropriateness, principle components analysis approach was used to undertake factor analysis. [17]

Table-1- Findings on Psychometric Properties of Eye Health (EFA & CFA)

Sr. No	EFA λ 2	Standardized Coefficient	*t*-value (C.R)
1	.83	.95	4.91
2	.79	.75	10.29
3	.81	.93	6.02
4	.81	.77	10.22

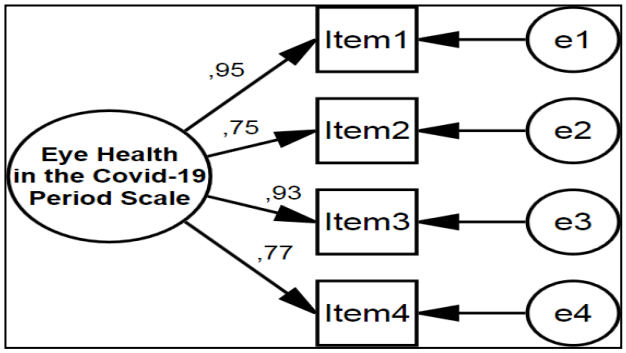


Figure-2- Eye Health Path Diagram & Factor Loadings in Covid-19 Period Scale

Various fit indices are used to evaluate Confirmatory Factor Analysis (CFA). Chi-square fit (2) & ratio of chi-square to degree of freedom (2/sd), Comparative Fit Index (CFI), Root Mean Square Error of Approximation (RMSEA), Goodness of Fit Index (GFI), Adjustment Goodness of Fit Index (AGFI), & Standardized Root Mean Square Residual are among most commonly used (SRMR). Model data compatibility is shown by less than 3 computed 2/sd ratios, lower than.08 RMSEA & SRMR values, & more than.90 GFI, AGFI, & CFI values. Confirmatory factor analysis revealed single component for scale (2/sd= 0.22, p0.001, RMSEA=0.00, SRMR=0.00, GFI=1.00, AFGI=0.99, CFI=1.00). According to findings, Eye Health in Covid-19 Period Scale has satisfactory level of model-data consistency. [18] C.R. (critical ratio) values, which are recognized as t- values in AMOS software, were evaluated to see whether these values were acceptable, & each item was found to be over lower limit of 2.56 for significance at the.01 level. Items on scale had t-values ranging from 4.91 to 10.29. As result, there is no need to delete any items from scale, & results of confirmatory factor analysis show that single factor structure works effectively. [19]

Table-2-Eye Health Scale Reliability Analysis

Item No	Corrected item-total correlation	M (SD)	Skewness	Kurtosis
1	.84	2.05	-0.11	-1.71
2	.80	2.11	-0.23	-1.59
3	.80	2.08	-0.16	-1.62
4	.83	2.07	-0.15	-1.67
*Cronbach Alpha = 0.92				

For dependability of online education eye health measure in Covid-19 pandemic, corrected item-total correlations & Cranbach Alpha internal consistency coefficient analyses were utilised. Scale's adjusted item-total correlations range between 0.80 to 0.84. According to findings, scale's Cranbach Alpha reliability coefficient is 0.92. [20]

Table 3: Correlation Values Indicating Eye Health-Eye Fatigue Relationships

	Eye Fatigue
Eye health in Covid-19 period	.78**

p<0.01

According to findings, eye tiredness & online education eye health measure in Covid-19 pandemic have positive (r =.78, p.01) association. [21]

Table 4 shows results of simple linear regression analysis of online education eye health scale's ability to predict eye tiredness in survey.

Predictor variable	R	R^2	F	B	Standard error B	*T*	*P*
Eye health in the Covid-19 period	.78	.62	652.44	4.20	0.16	25.54	.000

p<0.01**

According to findings of simple linear regression analysis, eye health scale strongly predicted eye weariness over Covid-19 period. These analyses found that eye health in covid-19 era explained 62 percent of overall variation in eye tiredness (R2 =.62; FReg = 652.44; p.01). [22]

4. DISCUSSION & CONCLUSION

The impact of online education on eye health throughout Covid-19 era was explored in this study, & scale was constructed on issue. In addition, scale was used to assess association between eye health & eye fatigue in online education throughout Covid-19 era. First & foremost, according to scale's analysis, scale has been introduced to literature as legitimate & trustworthy instrument (see Tables 1, 2 & Figures 1, 2). Online teaching of Covid-19 pandemic procedure had detrimental impact on ocular health of university students, according to created scale. In addition to this finding, positive link was discovered between worsening of eye health & eye tiredness in online education over Covid-19 era. In other words, as result of online schooling, eye tiredness increases, resulting in poor eye health. Use of internet & screens by teenagers has risen dramatically in recent years. This rise may have harmful impact on eye health. Previous research has found that screen usage has negative impact on eye health. Digital displays, such as tablets, laptops, & cell phones, can injure users by emitting brief, high-energy waves that can enter eye tissues & cause photochemical damage to retinal cells. It is necessary to accept that prevalence of myopia & high myopia is growing over world, including among ourselves, & that bioenvironmental variables are primary cause of this growth. As result, eye health education campaigns should focus largely on environmental & behavioural changes in our children. [23] They should keep in mind that even minor successes in preventing and/or delaying myopia progression will result in considerable reduction in number of persons with extreme myopia & irreparable vision loss in future. Use of internet & screens by teenagers has risen dramatically in recent years. This rise may have harmful impact on eye health. Previous research has found that screen usage has negative impact on eye health. Digital displays, such as tablets, laptops, & cell phones, can injure users by emitting brief, high-energy waves that can enter eye tissues & cause photochemical damage to retinal cells. Harmful waves can induce wide range of eye diseases, from dry eye to age-related macular degeneration, in this way. Effects of eye tiredness were

assessed in mornings of third & fourth days. Patients sleeping at 10 lux light intensity experienced much more eye strain, trouble focusing, & ocular pain.

5. REFERENCES

1. Afacan, E., & Avcı, N. (2020). Koronavirüs (Covid-19) örneği üzerinden salgın hastalıklara sosyolojik bir bakış [A sociological overview of outstanding diseases through coronavirus example]. Eurasian Journal of Researches in Social & Economics, 7(5), 1-14.
2. Agarwal, S., Goel, D., & Sharma, A. (2013). Evaluation of factors which contribute to ocular complaints in computer users. Journal of Clinical & Diagnostic Research: JCDR, 7(2), 331–335. https://doi.org/10.7860/JCDR/2013/5150.2760
3. Bayram, N. (2016). Yapısal eşitlik modellemesine giriş AMOS uygulamaları [Introduction to structural equation medeling SEM applications]. (3th ed.). Bursa: Ezgi Yayıncılık.
4. Bhattacharya, S., Saleem, S. M., & Singh, A. (2020). Digital eye strain in era of COVID-19 pandemic: emerging public health threat. Indian Journal of Ophthalmology, 68(8), 1709–1710. https://doi.org/10.4103/ijo.IJO_1782_20
5. Brown, T. A. (2006). Confirmatory factor analysis for applied research. New York, NY: Guilford Press.
6. Chen, N., Zhou, M., Dong, X., Qu, J., Gong, F., Han, Y., … & Zhang, L. (2020). Epidemiological & clinical characteristics of 99 cases of 2019 novel coronavirus pneumonia in Wuhan, China: descriptive study. Lancet (London, England), 395(10223), 507–513. https://doi.org/10.1016/S0140-6736(20)30211-7
7. Field, A. (2009). Discovering statistics using SPSS. London: SAGE Publications Ltd.
8. Gowrisankaran S, Nahar NK, Hayes JR & Sheedy JE (2012). Asthenopia & blink rate under visual & cognitive loads. Optom Vis Sci 89, 97-104
9. Guo, F., Zhang, Q., Fan, M. N., Ma, L., Chen, C., Liu, X. H., … & Liu, Y. (2018). Fruit & vegetable consumption & its relation to risk of asthenopia among Chinese college students. International Journal of Ophthalmology, 11(6), 1020-1027. https://doi.org/10.18240/ijo.2018.06.21
10. Han C.C, Liu R, Liu R.R, Zhu Z.H, Yu R.B,, & Ma, L. (2013). Prevalence of asthenopia & its risk factors in Chinese college students. Int J Ophthalmol, 6, 718–722
11. Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y., … & Cao, B. (2020). Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. Lancet (London, England), 395(10223), 497-506. https://doi.org/10.1016/S0140-6736(20)30183-5
12. Kim, D. J., Lim, C. Y., Gu, N., & Park, C. Y. (2017). Visual fatigue induced by viewing tablet computer with high-resolution display. Korean Journal of Ophthalmology: KJO, 31(5), 388–393. https://doi.org/10.3341/kjo.2016.0095
13. Lee, Y., Min, P., Lee, S., & Kim, S. W. (2020). Prevalence & duration of acute loss of smell or taste in COVID-19 patients. Journal of Korean Medical Science, 35(18), e174. https://doi.org/10.3346/jkms.2020.35.e174
14. Lu, R., Zhao, X., Li, J., Niu, P., Yang, B., Wu, H., Wang, …& Tan, W. (2020). Genomic characterisation & epidemiology of 2019 novel coronavirus: implications for virus origins & receptor binding. Lancet (London, England), 395(10224), 565–574. https://doi.org/10.1016/S0140-6736(20)30251-8
15. Neugebauer A, Fricke J & Russmann W (1992). Asthenopia: frequency & objective findings. Ger J Ophthalmol 1, 122-124
16. Ostrovsky A, Ribak J, Pereg, A., & Gaton, D. (2012). Effects of job-related stress & burnout on asthenopia among high-tech workers. Ergonomics 55, 854-862

17. Schumacker, R.E., & Lomax, R.G. (2010). beginner's guide to structural equation modelling (3th ed.). New York, NY: Routledge.
18. Suh, Y. W., Na, K. H., Ahn, S. E., & Oh, J. (2018). Effect of ambient light exposure on ocular fatigue during sleep. Journal of Korean Medical Science, 33(38), e248. https://doi.org/10.3346/jkms.2018.33.e248
19. Tabachnick, B.G., & Fidell, L.S. (2012). Using multivariate statistics (6th ed.). New York, NY: Harper Collins College Publishers.
20. Tian, S., Hu, N., Lou, J., Chen, K., Kang, X., Xiang, Z., ... & Zhang, J. (2020). Characteristics of COVID-19 infection in Beijing. Journal of infection, 80(4), 401–406. https://doi.org/10.1016/j.jinf.2020.02.018
21. Wang, N., Shi, X., Jiang, L., Zhang, S., Wang, D., Tong, P., … & Wang, X. (2013). Structure of MERS-CoV spike receptor-binding domain complexed with human receptor DPP4. Cell research, 23(8), 986–993. https://doi.org/10.1038/cr.2013.92
22. Xu, Y., Deng, G., Wang, W., Xiong, S., & Xu, X. (2019). Correlation between handheld digital device use & asthenopia in Chinese college students: Shanghai study. Acta Ophthalmologica, 97(3), e442–e447. https://doi.org/10.1111/aos.13885
23. Yuan, J., Yun, H., Lan, W., Wang, W., Sullivan, S. G., Jia, S., … & Bittles, A. H. (2006). climatologic investigation of SARS-CoV outbreak in Beijing, China. American journal of infection control, 34(4), 234–236. https://doi.org/10.1016/j.ajic.2005.12.006

Dealing with stress in clinical setting during nursing training - A systematic review

Mrs. Madhuri Sharma Research Scholar

Shri JJTU University

Abstract

The goal of this study is to determine the primary cause of stress for nursing students, as well as the progression of stressors during nursing competency training. **Background**: Health professionals experience higher levels of stress than other workers. Stressors with poor health implications are more prevalent, particularly among nursing workers. Stress is a psychosocial element that has an impact on this group's academic performance and well-being. The reason for the interest in analyzing sources of stress in nursing students is because their training time may have an impact on their perception of stress in their future employment. Academics are the most prevalent source of stress, according to the findings (reviews, workload and problems associated with studying, among others). Clinical sources of stress are another form of anxiety (such as fear of unknown situations, mistakes with patients or handling of technical equipment). In general, there are no changes between the years of a student's schooling. **Conclusion**: Because of the differences across research, comparing them is challenging. (for example, designs, instruments, and the amount of stressors). Our modifications, on the other hand, include the most up-to-date information and contain descriptive material that may be beneficial for future study. We also make some suggestions for enhancing the design of the curicula while taking stress sources into account.

Introduction:-The dynamic interplay between the individual and the environment is referred to as stress. Demands, limitations, and possibilities connected to employment may be seen as threatening to exceed the individual's resources and talents throughout the engagement. In the event of a misalignment, this interaction may result in cognitive and behavioural changes. During their training, nursing students endure not only academic but also work-related stress. One area of research into workplace stress is the cause of stress, or stressors, which interact and contribute to the beginning of workplace stress. Time demands, workload, making judgments, constant changes, and economic mistakes at work are some of the most prevalent stresses. In recent decades, research on workplace health has shifted from an emphasis on physical risk mitigation to a more holistic approach. Emergent psychosocial hazards, such as occupational stress, are of particular interest in this context. Physical, psychological, and behavioural problems are among the harmful impacts of stress on individuals. Stress is linked to difficulties at the organizational level, such as higher absenteeism, lower job quality, and lower production. There are three types of stresses: I academic stressors (testing and assessment, fear of failure in training, workload issues, etc.), and (ii) clinical stressors (work, fear of making mistakes, negative thoughts to the death and suffering of patients, relationship with other memebers of organization, etc.) and (iii)personal/social stresses (economic issues, a disparity between chores and schoolwork, and so forth.)We offer a comprehensive review of research that quantifies the source of stress in nursing students in this publication. We deliberately select studies that employ standardised measures for measuring situations that lead children to become stressed. This systematic review, in comparison to other reviews, covers a large number of papers.

Objective;-The purpose of this article is to find stressors among nusing students. Beyond this broad goal,we examine the circumstances and stresses, taking into account the pupils'

academic years. This review covers cross-sectional research comparing various academic sources and longitudinal studies examining the change of stress sources for the same group through time.

Data source and searches:-The databases used for the search were MEDLINE and PsycInfo. We also utilised PsycInfo since stress has a psychological element, and PsycInfo is the American Psychology Association's data that incorporates information from several disciplines, including nursing.Articles from the previous week of 2010 were included in the search. We set the following search parameters: Humans were sampled only in English-language publications published in scientific journals using an anonymous peer review procedure. An extra search was done based on references found in chosen articles from the database search.Articles about data interaction and research selection criteria if they satisfied these three requirements, they were considered for the review. In the event of disagreements among the researchers, a discussion meeting assisted in reaching a consensus. Finally, studies that analysed data using a qualitative interpretation (e.g. discourse analysis, conversation analysis) were excluded.

Specific results

Thus, the specific results of this systematic review were evaluated based on the following criteria: I study goals, (ii) stress analysis by academic courses, (iii) stress sources linked with clinical practise, and (iv) stress sources in terms of curriculum.The bulk of the samples in several of the examined studies were students enrolled under new qualifications with a higher academic load (Brown&Edelmann2000;Clarke& Ruffin1992;Evans&Kelly2004).

Comparisons between cultures Cross-cultural comparisons have been the focus of another set of investigations. Timmins & Kaliszer (2002) reviewed research that looked at the sources of stress among nursing students in several countries and compared the results to Ireland. They discovered that clinical learning environments, academic stress, the degree of stress among nursing students, and stress due to interpersonal interactions are the most prevalent factors. Burnardetal. (2008) found similar results when they compared data from five nations (Albania, Brunei, Czech Republic, Malta, and Wales).Because clinical practise is critical for future professionals to gain competence, a set of research has focused only on the analysis of these activities as sources of stress. Academic and social stresses emerging from work experience at health centres due to conducting clinical procedures are the subject of the research presented here. ,Using the same instrument and a comparable sample of nursing students, Chanetal. (2009) found that the most prevalent kind of stressors among students was a lack of knowledge and professional abilities, followed by task and workload stress. The stress caused by patient care came in third as the most prevalent stressors.

Discussion:-We may deduce from this systematic review that the majority of the research took place in Europe, with England accounting for more than a quarter of the studies on stress among nursing students. Although they are discovered in isolated studies, data from samples of students from all continents exist. While 30% of the research were longitudinal, 70% of the investigations were cross-sectional in nature. When it comes to the instruments utilized, there is a lot of variation. Eight of the research created stress measurement devices. Only three instruments were utilized in many studies, but minor modifications were made in certain situations.In most research, students' views of the elements that cause stress did not alter much as they progressed through training (Brown & Edelmann 2000; Edward setal. 2010; Jones & Johnston 2006). Only Lindop's (1991) study looked at changes in the upper grades (second and third years compared to first year). Students in the upper grades are

subjected to increased academic and clinical stress. The variables that eventually lead to stress are more closely linked to the academic environment. Evaluations or tests, as well as the fear of failing, are the elements or aspects that students are most concerned about, a heavy workload, maintaining grades, and studying abilities.

Implications for practice:- Dealing with unexpected situations, making mistakes with patients, learning to implement clinical processes, and handling technological tools were among the clinical sources identified as the most stressful. Students should realize, according to McVicar (2003), that their apparent lack of skill in dealing with these circumstances fades with more experience.

Conclusion:-Because of the methodological variations across the research, it was difficult to compare them. Our version, on the other hand, provides current state-of-the-art and descriptive material that may be beneficial for future study. We emphasize the significance of educators and clinical facilitators being aware of these stresses and providing students with good coping skills for dealing with the unavoidable sources of stress that will arise during nurse education and training. These techniques may result in the reemergence of unpleasant psychological symptoms linked to stress perceptions. Reviewing publications that have utilized qualitative techniques to provide information to this study should be considered in future research.

Diabetes foot care

Megilin Bose.C

Ph.D Scholar

Reg No 17219058

Department of Nursing

JJTU, Rajesthan

Introduction-Diabetes can betreacherousto your feet—even a small cut can produce serious consequences. Diabetes may cause nerve impairment that takes away the feeling in your feet. Diabetes may also reduce blood flow to the feet, making it harder to heal an injury or resist infection. Because of these problems, you may not notice a foreign object in your shoe. As a result, you could develop a blister or a sore. This could lead to an infection or a nonhealing wound that could put you at risk for an amputation.To avoid serious foot problems that could result in losing a toe, foot or leg, follow these guidelines.

Inspect your feet daily:-Check for cuts, blisters, redness, and swelling or nail problems. Use a magnifying hand mirror to look at the bottom of your feet. Call your doctor if you notice anything.

Bathe feet in lukewarm, never hot, water:-Keep your feet clean by washing them daily. Use only *lukewarm* water—the temperature you would use on a newborn baby.

Be gentle when bathing your feet:-Wash them using a soft washcloth or sponge. Dry by blotting or patting and carefully dry between the toes.

Moisturize your feet but not between your toes:- Use a moisturizer daily to keep dry skin from itching or cracking. But don't moisturize between the toes—that could encourage a fungal infection.

Cut nails carefully:-Cut them straight across and file the edges. Don’t cut nails too short, as this could lead to ingrown toenails. If you have concerns about your nails, consult your doctor.

Never treat corns or calluses yourself:- No “bathroom surgery” or medicated pads. Visit your doctor for appropriate treatment.

Wear clean, dry socks.:-Change them daily.

Consider socks made specifically for patients living with diabetes:- These socks have extra cushioning, do not have elastic tops, are higher than the ankle and are made from fibers that wick moisture away from the skin.

Wear socks to bed:-If your feet get cold at night, wear socks. Never use a heating pad or a hot water bottle.

Shake out your shoes and feel the inside before wearing:-Remember, your feet may not be able to feel a pebble or other foreign object, so always inspect your shoes before putting them on.

Keep your feet warm and dry:-Don’t let your feet get wet in snow or rain. Wear warm socks and shoes in winter.

Consider using an antiperspirant on the soles of your feet- This is helpful if you have excessive sweating of the feet.

Never walk barefoot-Not even at home! Always wear shoes or slippers. You could step on something and get a scratch or cut.

Take care of your diabetes-Keep your blood sugar levels under control.

Do not smoke- Smoking restricts blood flow in your feet.
Get periodic foot exams-Seeing your foot and ankle surgeon on a regular basis can help prevent the foot complications of diabetes.

Tingly Feet-Tingly feet can be a sign of nerve loss. The nerves in the feet come from the lower back. Pressure or chemical change in the nerve can cause a tingling feeling in the feet. Any sensation that is out of the ordinary can be an early sign of neurologic or vascular problems. In addition to tingling, feet may feel numb or feel like they are falling asleep. There may also be a burning sensation in the feet.
Diabetes is one of the most common medical conditions with which tingly feet can be associated. A thorough evaluation by a foot and ankle surgeon is advised to determine the cause of tingly feet.

Cracked Heels-There are many potential causes of cracked heels. Dry skin (xerosis) is common and can get worse with wearing open-back shoes, increased weight or increased friction from the back of shoes. Dry, cracked skin can also be a subtle sign of more significant problems, such as diabetes or loss of nerve function (autonomic neuropathy).Heels should be kept well moisturized with a cream to help reductionthe cracking. If an open sore is noted, make an appointment with a foot and ankle surgeon for evaluation and treatment.
Foot Health Facts for People Living with Diabetes-Having diabetes increases the risk of evolvinga wide range of foot problems, often because of two complications of the disease: nerve damage (neuropathy) and poor circulation.
For those living with diabetes, foot problems, such as the following, can lead to serious complications:

- ulcers (sores) that do not heal
- corns
- calluses
- cracked heels
- hammertoes
- bunions
- ingrown toenails
- skin infection (cellulitis) from an open wound
- abscess formation (collection of pus under the skin)
- bone infection

Untreated diabetes can result in other conditions, such as:
Diabetic peripheral neuropathy—this condition does not emerge overnight. Instead, it usuallyprogresses slowly and worsens over time. Some patients have this condition long before they are diagnosed with diabetes. Having diabetes for several years may increase the possibilityof having diabetic neuropathy.

Charcot foot—a condition in which the bones of the foot are weakened enough to fracture. With continued walking, the foot eventually changes shape. As the disorder progresses, the joints collapse and the foot takes on an irregularshape, such as a rocker-bottom appearance.

Conclusion:-To prevent complications of diabetes, patients are advised to follow diabetic foot care guidelines. Sometimes special diabetic shoes are prescribed to evadepressure and rubbing on the feet caused by regular footwear.

References

- Janice L.Hinkle, Brunners&Suddarth's Textbook of Medical-Surgical Nursing ,Volume 2 ,13th edition, Wolters Kluwer publication,page no 1416-1470.
- American college of foot and ankle surgeons- Foot health facts .org

SUBSURFACE DRAINAGE TECHNOLOGY AS A REMEDIAL MEASURE FOR LAND DRAINAGE

[1]Arti Khandelwal,Research scholar, JJTU University, Civil Engg., Vidyanagari, Jhunjhunu, Rajasthan – 333001
[2]Dr. Anil Achyut Kunte, Associate Professor, Shree JJTU University,Rajasthan
[3]Dr. Anil Vasant Shirgire, Associate Professor, JSPM Imperial College of Engg., Wagholi, Pune

Abstract

Waterlogging and Soil salinity problems are prominent in Maharashtra. Under the command of selected Major and Minor Irrigation projects the total area of affected land is 22472Ha. Construction of Open Drainage Schemes are formulated by the Government and total 23269 Ha of area is protected. Advantage is there but this comes with the requirement of regular maintainence of open drains and repairs. If we cannot maintain and repair the Open Drains regularly, the extent of Water logging and Salinity becomes more and more serious. Sub Surface Drainage Schemes can become the best option to open drains, as they are constructed under the ground, do not need to acquire valuable and cultivable lands of the farmers. Similarly they also do not need regular maintenance and repairs and save the M&R expenses. Similarly, the Government of India is also insisting to all State Governments to adopt the subsurface drainage(SSD) Technology for land Reclamation, instead of Open Drainage Schemes. Subsurface drainage installation involves high initial cost per hectare of area as compared to other options of reclamation. It is important that optimum design criteria are adopted to keep the cost at minimum. All the design criteria and materials are explained in this paper along woth the installations guidelines.

Keywords:-Open Drainage, Salinity, Water logging, Land Reclamation. Subsurface drainage(SSD)

Introduction:-In Maharashtra, a large area of cultivable land is affected by the salinity and water logging. These soils are locally called khar, Chopan or Karal. They occur in sizeable area under the canal and lift irrigation commands especially in western Maharashtra.

Waterlogging and soil salinity is usually caused by:

1. Obstructions of natural drainage
2. Excess Irrigation
3. Excess seepage from canal system
4. Improper maintenance
5. Inadequate or lack of flood control device
6. Lack of water distribution and drainage systems

There are three approaches to deal with the salt problem. These are

1. Use of chemicals gypsum and ion exchange.
2. Cultural methods, agro techniques, mulching polythene covering.
3. Drainage Methods.

Objective

1. The main objective of this paper is to study the data of watelogged, saline lands and area under land reclamation in Maharashtra state of India.

2. Introduction of Technologies like Subsurface drainage for land raclamation and their effectiveness.

Land Reclamation – Maharashtra Scenario:-The Government of Maharashtra is tackling the problem of Water Logging and Soil Salinity through its Water Resources Department (Formerly known as Irrigation Department) in the command of selected Major and medium Irrigation Projects. For this, periodical observations are taken in the command area two times in a year, namely post monsoon and pre monsoon seasons and the extent of water logging and soil salinity is determined yearly.The below table shows areas affected by water logging and soil salinity problems in various regions of Maharashtra State under the command of selected Major and Medium Irrigation Projects. (Year 2016-2017)

Sr. No.	Name of Region	Number of Irrigation Projects/ Canals	Observed ICA in Ha.	Total Affected Area in Ha	Land Damage Index	% of Affected Area with State
1	PUNE (WESTERN MAHARASHTRA)	33	723597	18272	2.52	81
2	NASHIK (NORTH MAHARASHTRA)	20	378884	2624	0.69	12
3	AURANGABAD (MARATHWADA)	9	453189	1387	0.31	6
4	NAGPUR (VIDARBHA)	6	53500	119	0.22	0.50
5	AMARAVATI (VIDARBHA)	16	153006	70	0.046	0.50
6	KONKAN	0	0	0	0	0
	TOTAL	**84**	**1762176**	**22472**	**1.27**	**100**

From the above Table, it is seen that out of Total Affected Area of Maharashtra, 81 % Area lies in Western Maharashtra. Also the Land Damage Index of Western Maharashtra is 2.52 which is very high as compared to other regions of Maharashtra.Hence I am focusing the attention towards Western Maharashtra which is more serious from the point of view of water Logging and Soil salinity as compared to rest of Maharashtra.

Remedial Measures for Reclamation of Waterlogged and Saline Lands

The main remedial measures adopted by Government of Maharashtra to reduce the water Logging and Soil salinity problem is "Construction of Open Drainage Schemes" in the vicinity of water logged and saline lands, and to drain out the excess ground Water and to

reduce the ground water table below the root zone.From the last 50 Years, the Government of Maharashtra have constructed about 900 open Drainage schemes in the State, by which 232639 ha. area is protected. Out of total affected area of 62848 Ha. The area reclaimed is 52009 Ha. during the course of time. This means that still 10839 ha. area is remaining to be reclaimed.

Evaluation of Completed Drainage Schemes

The following Table shows the details of completed Open Drainage Schemes in Maharashtra State.

Sr. No.	Region	No. of completed Dr. Schemes	Protected Area in Ha.	Estimated Affected Area in Ha.	Present Affected Area (2016-2017) in Ha.	Area reclaimed in Ha.	Efficiency Index (%)
1	Western Maharashtra (Pune)	422	87334	26734	9349	17385	65
2	North Maharashtra (Nashik)	241	86838	27854	1158	26696	96
3	Marathwada (Aurangabad)	228	57755	8036	324	7712	96
4	Vidarbha (Nagpur)	0	0	0	0	0	0
5	Vidarbha (Amravati)	9	712	224	8	216	97
6	Konkan	0	0	0	0	0	0
	Total	900	232639	62848	10839	52009	83

From the above table, we find that in Western Maharashtra, where the Water Logging and Soil Salinity Problem is more serious than rest of the Maharashtra State, approximately 65 % efficiency of the completed Drainage Schemes is observed.

Now, if we further focus our attention on Western Maharashtra, we can see the extent of Water Logging and Soil Salinity Problem in command areas of various Projects/ Canal Commands as shown in below table.

Sr. No.	Project /Canal Name	No. of completed Dr. Schemes	Protected Area in Ha.	Estimated Affected Area in Ha.	Present Affected Area (2016-2017) in Ha.	Area reclaimed in Ha.	Efficiency Index (%)
1	Krishna Canal	33	6904	3578	1344	2234	62
2	Dhom Left Bank canal	18	933	330	166	164	50
3	Dhom Right Bank canal	10	628	207	105	102	49
4	Kanher Left Bank canal	2	130	30	62	(-) 32	(-) 1
5	Kanher Right Bank canal	21	1744	480	275	205	43
6	Warna Left Bank canal	6	206	96	22	74	77
7	Warna Right Bank canal	2	108	33	11	22	67
8	Ghod Right Bank Canal	28	5926	1578	769	809	51
9	Nira Left Bank canal	78	26207	9357	3102	6255	67
10	Nira Right Bank canal	59	21178	5336	1408	3928	74
11	Ujjani Left	59	8236	2758	699	2059	75

	Bank canal						
12	Ujjani Right Bank canal	11	649	232	74	158	68
13	New Mutha Right Bank Canal	95	14485	2719	1311	1408	52
	TOTAL	**422**	**87334**	**26734**	**9349**	**17385**	**65**

By constructing 422 open drains , the area protected is 87334 ha. The affected area while constructing the Drains was 26734 Ha. As per observations taken during year 2016-2017, 9349 Ha. affected area is still remaining. That means 17385 Ha. Area is improved during a long span of 25 years. This means that the overall efficiency of the completed Drainage Schemes is 65 %.All the above open Drains need regular Maintenance and repairs, because of growing grass, trees, encroachment by the farmers and siltation, they become ineffective and lose their drainage capacity in the course of time. Regular Maintenance and repairs of Open Drains is becoming more and more difficult due to inadequate financial provisions and inadequate financial norms and consent of Farmers due to encroachment. If we cannot maintain and repair the Open Drains regularly, the extent of Water logging and Salinity becomes more and more serious. Hence, it is the need of coming time to find alternate solution to open Drains so that future damage of cultivable and valuable lands can be controlled.Sub Surface Drainage Schemes can become the best option to open drains, as they are constructed under the ground, do not need to acquire valuable and cultivable lands of the farmers. Similarly they also do not need regular maintenance and repairs and save the M&R expenses.Similarly, the Government of India is also insisting to all State Governments to adopt the SSD Technology for land Reclamation, instead of Open Drainage Schemes.

Advantages on Implementation of Subsurface Drainage

- Salinity in the farmland is drastically reduced resulting into fertile soil layer.
- Excess water logging in farmlands or non-farmlands is drained away
- Abundant oxygen supply below soil surface for roots. This evolves into deeper and more complete root development.
- Allows good surrounding for soil, beneficial development of microorganismsand earthworms.
- Good wet soil conditions due to SSD system facilitates on time tillage, planting and harvesting. A bit earlier planting before schedules dates is possible. Avoids planting delays. Avoids gradually reducing yield percentage caused by planting delays.
- Lessens the fear of seeds getting decomposed before sprouting.
- Relatively long duration crop season can be achieved with addition in quantity.
- Water table being lowered, increased availability of nitrogen to soil can be obtained resulting in reduced use of nitrogen supplying fertilizers.
- Poisonous substances and disease organisms are taken out from the soil aling with drainage water

- Hold rainwater resulting in les run off and reduce soil erosion
- Plan can obtain moisture and nutrients conductive to root development. Plants sustain drought due to deeper root development.

Subsurface Drainage (SSD) – A Review

What is Subsurface Drainage (SSD)?

- The ground water and irrigation water contains salts and minerals, which get accumulated in the root zone and more at the soil surface due to evaporation.
- Due to rise in water level plant roots are deprived of sufficient air and oxygen.
- To remove the salt and other contaminated minerals from the root zone, installation of farm drainage system is a must.
- This system of installation of perforated pipe with filter material giving designed gradient is Sub Surface Drainage (SSD).

Design Criteria and Materials:-Subsurface drainage installation involves high initial cost per hectare of area as compared to other options of reclamation. It is important that optimum design criteria are adopted to keep the cost at minimum. It is therefore always desirable that test plots of SSD installation at normally three drain spacing based on preliminary investigations of physical properties of the soil and climate is done particularly if installation is planned in large area. The drain depth could be selected considering outlet conditions and the Crops. The system performance is monitored for one or more rainy season and the design criteria are finalized on the basis of performance, local limitations and the acceptability by the beneficiaries.The performance monitoring data analysis of some existing systems if available in the vicinity of the proposed area with similar problem and agro-climate could also be used to develop design criteria. In the present case, recommendation for SSD design Criteria are given on the basis of experience from other subsurface drainage projects in the state as well as the SSD work in the black soils in Chambal Command, Rajasthan, under RAJAD. These may be appropriately modified once the experimental findings are generated from Research Stations in the state.

Main Drain and Sub-main Drain Design

A) Main Drain Design (Collector Pipe System):

For efficient working of sub surface drainage system it should be connected with main drains. In this project open main collector drain is avoided as this requires frequent maintenance, wastage of land and hindrance to farming operations as per previous experience of various concerned department. Instead of this DWS (Double Wall Corrugated) HDPE pipe as main collector drain collector drain will be installed. Drainage water will be collected through RCC manholes provided on main collector pipes. Total 26232 running meter length main drain collector system is proposed.

Sub-components of Main Drain System:

i. Excavation
ii. Material - DWC (Double Wall Corrugated) HDPE Pipe
iii. Installation and Fitting of DWC (Double Wall Corrugated) HDPE Pipe
iv. RCC main hole pipe
v. Installation and fitting of RCC manhole pipe
vi. Backfilling

B) Lateral and Collector Pipes:

UPVC (Un-plasticized Poly Vinyl Chloride) Single Wall corrugated (SWC) perforated pipes (80- 355 mm diameter) are widely used. The flexible lateral pipes (80 and 100 mm) which

are manufactured in accordance with 1S 9271:2004 will be preferred. Main function of collector pipe diameter (90,100, 135, 150,170,200, 250, 400, S00,600 mm) depend on the expected flow. Moulded pipe fittings (coupler, reducer, and cap, saddle tee, bend, etc.) will be used for pipe connection and installation.

C) Synthetic Filters:

Synthetic filter is better in quality, cheaper in cost and easier to transport and handle than the gravel envelopes and the former is preferred. Non-woven fabric with needle punched geo textile for heavy textured soils will be used for lateral pipes whereas woven nylon 60 mesh socks will be used for perforated collector pipes which are manufactured and tested in accordance with IS 13162 (Part -1 &5): 1991 and 1992 Geo textile filter wrapped perforated pipes which are relatively better and cheaper than locally wrapped pipes may be preferred for quality installation.

D) Structures:

Prefabricated Reinforced Cement Concrete (RCC) pipes of 900-1200mm diameter and 2.5 m length will be used for gravity outlet system. These NP-3 class RCC pipes which are manufactured in accordance with IS 458:2003 will be used. Under gravity outlet system, a small masonry structure at outlet with rodent guard will be provided to Safeguard the pipe edge from collapsing and rodent damaging.

E) Installation:

Semi-mechanical of fully mechanical methods of SSD installation are widely adopted. In former method, a 100-150 hp hydraulic excavator is used for digging trenches, laying pipes, and providing a grade manually, and backfilling. In later method, a self-propelled 130-450 hp trencher or trenchless machine with automatic laser control is used for large scale installation of lateral and collector pipes. For salinity control, a DC of 1.5 mm/day is recommended for the design of laterals. If seepage control, in addition to salinity control, is desired, a DC of 2 .0 and 2.5mm/day should be used for those laterals which serve as partial seepage interceptor drains or full interceptor drains respectively. The DC for collector pipe capacity is recommended to be 3 mm/day to allow for extra flow in the laterals. This also allows farmers to install additional laterals later, if desired, in their fields to provide greater water table control during the monsoon season.

Drain Depth: Soil properties, crops, extent of salinity control, water table control, construction methodology and the availability of gravity outlet govern subsurface drain depth. More the drain depth, higher will be drain spacing however depth of excavation limits the selection of depth. In case the depth of disposal drain is shallow, and the natural drain/river restricts deepening, then pumped outlet is provided. A practical depth of 1to 1.5m (an average of 1.2m) is considered adequate. In Krishna lift command, the Surface drains are considerably deep and a depth or 1.2m of the laterals is feasible. The depth of collectors may go up to 2m.

Depth of Impermeable Layer:-An impermeable layer for the purpose of subsurface drainage design is the one, which has Ksat in the range of one fifth to one tenth of the Ksat of upper soil layer. Hence test measurements up to 5m depth should be done and depth of impermeable layer ascertained. Soil sampling from test excavation holes from deeper depths should be taken and textural analysis done to verity availability of hard soil layers. In case of inadequacy of information on depth of impermeable layer, a depth of 5m below drain can be safely taken for design purpose.

Maintenance in Post SSD Precaution:

If installed properly as per specifications, this system should work for years. Only cleaning of Nallah is to be done time-to-time so that all the outlets flow freely all the time. Clearing of weeds once in two years and desilting of nallah in five years generally three yield good

results. In first one to three years, there may be occasional clogging of a collector lateral line, which could easily be identified by the farmers and that could be corrected cheaply it prompt action is taken. Purposely only few manholes instead of junction box is provided in the entire works so that the local people can understand the functioning of the SSD system. It is recommended that manhole should always be locked. No debris or any foreign material should be put in it.

Conclusion:-The study of the data of waterlogged, saline lands and land reclamation of Maharashtra state proved to be very advantageous, and it is found that the need of SSD methodology for land reclamation is very much required. From the comparative study of Subsurface Technology and Open drainage system, we can conclude that subsurface drainage technology is more effective and can be utilized on larger scale. Both the objectives of this paper are achieved and proved to be very useful. The severity of the salinity and so dicity of soils is being further aggravated by the arid climates, undulating topography of the land, mainly indiscriminate use of irrigation water and restricted drainage. Further with the increase in temperature, particularly in summer, the salts move upward with capillary water and get deposited on the surface and in the root zone as soil water evaporates. Land reclamation with the help of subsurface drainage system to remove soluble salts in the soils both in farm and non-farm sector.Therefore, keeping in view of the expanse of the water logging and salinity problem. Irrigation provides water that a particular crop needs but excess irrigation causes water logging, followed by increasing soil salinity and decreasing crop productivity. Therefore, irrigation can either enhance or degrade the crop productivity. Well-designed subsurface drainage system can restore the productivity of land and at the same time, enhance the environment.

OPTIMIZATION OF SHREDDER MACHINE COMPONENTS

Sandip S. Nehe[1], Dr. S ChakrdharGoud[2],Dr. Annasaheb S. Goje[3]

[1](Phd Scholar,Mechanical Engineering Department, JJTU University, Rajasthan,India)

[2](PhdGuide ,Mechanical Engineering Department, JJTU University, Rajasthan,India)

[3](Phd Co-Guide, Mechanical Engineering Department, JJTU University, Rajasthan,India)

Abstract-Plastic is light, easy to store and transport, comes in an endless variety of textures and shapes, and can hold almost anything. These properties make plastic attractive to manufacturers. Plastic is in almost everything we touch. It's used to make our clothes, cars, toys, and household products. Many of the food, health, and beauty products we enjoy come in plastic packaging. Plastic may be convenient for manufacturers and consumers alike, but this convenience carries a significant cost. Plastic is made from petroleum and the production, consumption, and disposal of petroleum products contribute significantly to global warming and a host of other environmental and human health problems. Plastics are complex chemical compounds with thousands of different varieties, and therefore much more difficult to recycle than simpler materials like glass, aluminum, or paper. In order for plastic to be recycled, it must be collected, sorted by exact type, kept clean, processed, and delivered to a manufacturer that has the intention and capacity to use the material to make a new product. Attempting to reduce the quantum of plastic wastes that fill our landfills, we decided to fabricate a Plastic Recycling Machine. In this connection, we also took into consideration the fact that the demand for bricks for housing and general construction purposes is on the rise. Thus it was felt that fabrication of a machine for manufacturing bricks by using plastic wastes as one of its components will reduce plastic waste menace to a great extent and at the same time we will also get a novel building material for construction purpose. The machine essentially consists of a cutting unit, recycling unit and a mixing unit. The machine parts are made of mild steel, because of its availability and versatile mach inability. The efficiency of the machine was established using plastic wastes, cement and other aggregates. Plastic waste, after chipping into finer granules, was added to cement and aggregates in definite proportion. Then the mixture is allowed to pass through recycling unit to form a mix, and then packed into mold box, before manually rammed and compacted with machine-molded envelope. This process allows the formation of required shape, which is sent for curing to obtain stronger bricks.

Keywords -Recycling; plastic; polyethylene; waste; cement; disposal, composites; recycling; mechanical recycling,

1. Introduction- Plastics are inexpensive, lightweight and durable materials, which can readily be moulded into a variety of products that find use in a wide range of applications. Recycling is one of the most important actions currently available to reduce these impacts and represents one of the most dynamic areas in the plastics industry today. The most beneficial and durable way of waste problem solution is avoidance of waste formation and waste treatment promotes 3R principle:

1.The first principle Reduce reminds about possibility of waste quantity reduction by limitation of unnecessary products consumption.

2.The second one Reuse takes into consideration a possibility of products reuse which are generally recognize as disposable.3. The third principle Recycle speaks that not all waste can be avoidance like not all kinds of products can be repeatedly usage. Mechanical recycling methods to make plastic products and feedstock recycling methods that use plastic as a raw material in the chemical industry have been widely adopted, and awareness has also grown recently of the importance of Thermal recycling as a means of using plastics as an energy source to conserve petroleum resources. This project aims at design and fabrication of a Eco-friendly paver blocks manufacturing machine which brings down the plastic wastes which is primarily responsible for environmental pollution. In this project we are trying to manufacture a machine in which we can manufacture the paver blocks which are widely use on footpath and many light load applications by using the mixture of plastic and sand in various proportions. Recycling has been debated endlessly for many years now. There are two points of view regarding this issue. The argument in support of recycling concerns the negative impact of waste and emissions on our planet. The counter case is that costs undertaken to recycle are smaller than the revenue returns. Only recycles 5% of its plastic waste even though it is one of the largest industrial cities in the country and there is growing concern about its part in the release of greenhouse gases from industry and the waste system. The two vital elements of cost and gas emissions both decrease the more you recycle. Decreasing costs will be favorable for all parties since they can show higher revenues. Decreasing greenhouse gas emissions is also favorable to all for environmental reasons.

The trend between the emissions and the cost can be deduced. It will be a strong, positive, linear correlation. The cost and the emissions can be kept low simultaneously using an increased recycle rate. It is important to note that several assumptions were made in the

calculations. One assumption made is that only the production Energy contributes emissions; incineration has not been taken into account.

2.Literature Review

Dr. Jassim, et.al, (2016) has studied "Design and Fabrication Recycling of Plastic System". Plastics are inexpensive, lightweight and durable materials, which can readily be moulded into a variety of products that find use in a wide range of applications. Recycling is one of the most important actions currently available to reduce these impacts and represents one of the most dynamic areas in the plastics industry today. The present work en compass (design and fabrication shredder/crusher and extruder of plastic machines) the shredder/crusher of plastic machine is consisting of the four main parts; they are system drive, box, hopper and three blade rotating cutter. The crushed particles there after moves into the extruder of breaking down the plastic.The extruder of plastic machine is consisting of the five main parts; they are hopper, drive of screw, barrel, and nozzle (die), heaters and control system. Extruder is the prime part of the machine where in the crushed particles gets drawn into wires through a die. Screw is the heart of the extruder, which employs heating element through its length .The heat for melting the Crushed plastics is controlled using a heating control unit. The Screw, which is motor driven conveys the molten Plastic to the opening of the die[3].

Dr. G Kaliavarathan et.al, (2015) has studied"Design and fabrication of a plastic reinforced brick manufacturing machine" Demand for building materials is going up tremendously day-by-day in view of the ever increasing requirement of housing and habitat sectors. Such a crisis prompted the researchers to re-orient themselves so as to evolve a new technology to manufacture appropriate masonry products, using locally available low cost materials. The concept of construction using green materials was aptly conceived in research realms so as to employ marginal materials and deploy unskilled labours in massive production schemes. At the same time, considering earth as a sustainable material, there is a growing interest in the maximum use of its resources as modern ingredients in the construction sector. **Dr. S. senthamilkumar (2010),** has studied the recycling rate of plastics (the actual utilization of waste plastics in plastics production) is declining mainly because recyclers suffer from lack of supply of waste plastics. Import of waste plastics can partially reverse this trend. Yet, critics of trade in waste plastics argue that this type of imports are in reality a disguise for waste dumping by the exporting country. Moreover, cheap imports of waste allegedly Crowd out the local recovery system leading to a domestic waste disposal problem. To further

analyze these issues, various scenarios are operated, based on a sectorial cradle-to-grave planning model using the mass balance approach. This model has a dual purpose. The first is to investigate how the India plastics sector can face the acute shortage of plastics in an economically and environmentally sound manner Options at hand are, on the one hand, to increase domestic production of primary and/or secondary resin, or on the other hand, to expand imports of primary and/or secondary plastics commodities. The second purpose of the model is to shed more light on the trade of waste and to test the claims put forward by the critics. The model integrates financial, environmental transport and trade issues. Obviously, it is neither economically nor environmentally feasible to recover all waste plastics for purposes of mechanical recycling. Such a recycling hierarchy becomes ever more appropriate with the expected diversification of technologies and recovery systems. The main conclusions of the modeling exercises are: The financial and economic costs of the plastic cycle in India can be reduced by increasing the capacity of the domestic recycling industry. Most of the simulated scenarios highlight the limited existing capacity of the recycling industry. This shortage forces the final goods manufacturing sector to use a higher proportion of primary resin in their final goods than what is economically and technically desirable. This has been one of the reasons for the large import of primary resin.

P. Manikandan (2010) As we are living in 21st century, new technologies are being invented in almost every sector to make human life fast and easier. Beside this we are still finding the solutions to problems related to our environment, energy and natural resources. Construction industry produces large amount of waste throughout the year. Most of the time Construction and demolition waste ends up in landfills disturbing environmental, economic and social life cycle. Construction and demolition waste is the waste materials that are produced in the process of construction, renovation or demolition of residential or non-residential structures. Components of construction and demolition waste typically include concrete, asphalt, wood, metals, gypsum wallboard, roofing, paper, plastic, drywall and glass. Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs; and can be considered as one of the solution to solve construction and demolition waste problem. Sustainable development in construction will help a lot to reduce the problems related to environment and natural resources as construction industry is a major.In addition to the availability of waste plastics on the international market, the effects of imports of waste plastic on the plastic cycle in India are addressed. We assess the risk that imported secondary materials are substituted for

domestic secondary materials. In this case, the domestic recovery sector suffers from increased imports. As a result, increased amounts of solid waste are generated. The modeling exercise, however, demonstrates that under current circumstances, this crowding-out effect does not take place[4].

P.M.Subramanian (2012) has studied Plastic waste is recycled in India in an "unorganized" way. 60% of the plastic- waste collected and segregated gets recycled back into materials for further processing into consumer products, while the balance is left unutilized. Regulations and legislations are being enforced in two States of India viz. Haryana and Himachal Pradesh, while a National Plastic Waste Management Council Task Force has been set up by the Government of India, Ministry of Environment of Forests, with the association of Department of Petroleum and Chemicals, Ministry of Urban Affairs, Municipal Corporation of Delhi and various groups/associations of plastic manufacturers. Scope is there for the recycling/management of plastic waste, as an organized activity in India.Municipal solid waste in India contains 1 to 4 % by weight of plastic waste. India‟s rate of recycling of plastic waste is the highest (60%) in the world as compared to other countries (China 10%, Europe 7%, Japan 12%, South Africa 16%, and USA 10%). As a source of hazard to environment, plastic account for 16% of chlorine in the environment and have 54 carcinogens, polythene bags for disposal if burnt irresponsibly releases highly toxic gases like phosgene, carbon monoxide, chlorine, sulphur dioxide, nitrogen oxide, besides deadly dioxin. Polymers are gradually replacing natural materials like metal, timber and fibers and thereby conserving the natural environment. The range is wide and includes discarded PVC chapels /shoes in varied colors and grades of plastics material. Discarded PVC mineral water bottles/PET mineral water and liquor bottles and PS ice cream/Cold drink cups/disposable catering plates and grays and expanded PS and PE. Plastic Waste Management has assumed great significance in view of the urbanization Activities. Plastic waste generated by the polymer manufacturers at the production, extrusion, Quality control & lab. Testing etc., stages, as well as, by the consumers require urgent disposal and recycling to avoid health hazards. Various strategies are being devised to mitigate the Impact of plastic waste in India.

JaveriyaSiddiqui and GovindPandey (2013) Plastics have been used widely in both water and food packaging due to their natural properties such as inertness and low bulk densities, which make them suitable mover materials and little risk to contaminants. Plastic bottles and sachets have become prevalent all over the country, particularly, urban areas. The packaging revolt has not been backed by proper plastic waste management policy, which has left a lot of

cities in India littered with plastic wastes, hence, creating horrible visual troubles and other community health problems. Growing environmental awareness and reduction in available landfill capacity have prompted plastic recycling programs in most developed countries. Currently, however only between 5 to 25% of plastic waste is being recycled. The paper discusses prospects of plastic waste management schemes. It is concluded that the existing rate of environmental worsening is likely to continue unless long term remedial measures are adopted for plastic wastes management in the country.

Puttaraj Mallikarjun Hiremath et.al, (2014) has studied "Utilization of waste plastic in manufacturing of plastic-soil bricks" Soil is a loose, unconsolidated material on the earth's crust and it is formed by the weathering of solid rocks. The laterite formation was named in southern India1807, and it was de-scribed by Francis Buchanan-Hamilton. He named it from the Latin word "later" which means brick. This rock can be easily cut into brick shaped blocks for building construction. The laterite stone is rich in iron and aluminium and it is formed in hot and wet tropical areas. A good reservoir of laterite stone is present in the coastal Karnataka and some northern parts of Karnataka and also in the northern parts of Kerala, due to which lot of quarrying of laterite bricks takes place. In quarries while cutting out the laterite stones with the help of cutting ma-chines which produces 15-20% of soil wastes which pose a problem of disposal. Thus disposal of waste plastic is a serious problem globally, since they are non-biodegradable and also researchers have found that the plastic materials can remain on earth for 4500 years without degradation. Plastic have many good characteristics which include versatility, light-ness, hardness, and resistant to chemicals, water and impact[6].

Noel Deepak Shiri et.al, (2016) has studied "Processing of waste plastics into building materials using a plastic extruder and compression testing of plastic" The main aim of this work is to reduce the plastic waste that is rising in the present world and to achieve this; a system is designed incorporating a plastic extruder which plays a prominent part in recycling waste plastic into useful products. This work uses waste plastics and converts them into building materials with the help of an extruder, thereby reducing the plastic waste which is a key factor for environmental pollution.

3. Construction And Working

Fig no. 4.1 Paver Block Manufacturing Machine

1. Hopper

2. Frame

3. Motor

4. Vent pipe

5. Heating coils/Heater

6. Mixing Chamber

7. Adjustor

8. Feed Pipe

9. Cooling tank.

4. Design Considerations

5.1 Types of plastic used:

i. PET (Polyethylene terephthalate)

ii. HDPL (High density polyethylene)

iii. PVC (Poly vinyl chloride)

iv. LDPL (Low density polyethylene)

v. PP (polypropylene)

From all these materials PET is the mostly used plastic in industries.

Design consists of application of scientific, principles, technical information and imagination for development of new or improvised machine or mechanism to perform a specific with maximum economy & efficiency.

Hence a careful design approach has to be adopted. The total design work has been split up into two parts;

- System design
- Mechanical Design

System design mainly concerns the various physical constraints and ergonomics, space requirements, arrangement of various components on main frame at system, man + machine interaction, No. of controls, position of controls, working environment of machine, chances of failure, safety, measures to be provided, servicing aids, ease of maintenance, scope of Improvement, weight of machine from ground level, total weight of machine and a lot more.

In mechanical design the components are listed down and stored on the basis of their procurement, design in two categories namely,

- Designed Parts
- Parts to be purchased

For designed parts detached design is done & distinctions thus obtained are compared to next highest dimensions which are readily available in market. This amplifies the assembly as well

as postproduction servicing work. The various tolerances on the works are specified. The process charts are prepared and passed on to the manufacturing stage.

5.2 System Design:-In system design we mainly concentrated on the following parameters:-

5.2.1 System Selection Based on Physical Constraints:-While selecting any machine it must be checked whether it is going to be used in a large – scale industry or a small scale industry. In our case it is to be used by a small scale industry .So space is a major constrain. The system is to be very compact so that it can be adjusted to corner of a room.The mechanical design has direct norms with the system design. Hence the foremost job is to control the physical parameters, so that the distinctions obtained after mechanical design can be well fitted into that.

5.2.2 Arrangements of Various Components:-Keeping into view the space restrictions the components should be laid such that their easy Removal or servicing is possible. More over every component should be easily seen none should be hidden. Every possible space is utilized in components arrangements.

5.2.3 Components of System:-As already stated the system should be compact enough so that it can be accommodated at a corner of a room. All the moving parts should be well closed & compact. A compact system design gives a high weighted structure which is desired. Man Machine Interaction

5.References

1. Sekar L.R.,Vinoth Kumar S. (2018): Utilization of Upgraded Shredder Blade and Recycling the Waste Plastic and Rubber Tyre, International Journal of Science and Research (IJSR), ISSN:2319-7064: Vol.7, No.9, pp 160-165.
2. L. Recchia,M.Daou,M.Rimediotti,E.Cini,M.Vieri(2018): New shredding machine for recycling pruning residuals, Bio mass and bioenergy (Science Direct),33 (2009), pp 149-154.
3. Atadious David,OyejideOluwayomi Joel (2018): Design and Construction of a Plastic Shredder Machine for Recycling and Management of Plastic Wastes, International Journal of Scientific & Engineering Research (IJSER), ISSN: ISSN 2229-5518: Vol.9, No.5, pp 160-165.
4. Ankit B. Raut, Mr. Vinayak D. Wagh, Mr. Bhushan G. Pawar(2018) : Design and Fabrication of Paper Shredder Machine, International Journal for Research in Applied Science & Engineering Technology (IJRASET), ISSN: 2321-9653: Vol.6, No.4, pp 485-492.
5. Sudhakara Reddy,ThungaRaju(2018): Design and Development of mini plastic shredder machine, Series: Materials Science and Engineering, 012119,pp 1-4.
6. Matin A. Shaikh, Mr. Vijay D. Kadam, Mr. Dnyaneshwar S. Jagtap, Mr. Prashant S. Khadtare, Mr. Santosh S. Kabugade (2018) : Manufacturing of Shredder for used Plastic

Bottle, International Journal for Scientific Research & Development (IJSRD), ISSN (online): 2321-0613: Vol.6, No.3, pp 212-214.

7. LhakpaWangmoThinghTamang,TsheringWangmo, Karma TsheringDarjay Karma SangayPhuntsho, PhuntshoNamgyal, UgyenWangchuk(2017) : Use of Plastics in Concrete as Coarse Aggregate, International Journal of Education and applied research (IJEAR), ISSN : 2348-0033 (Online) ISSN : 2249-4944 (Print): Vol.7, No.2, pp 9-13.
8. JibrinSule,Sule Emmanuel1, Ismaila Joseph, OsagieIbhadobe, Buba Y. Alfred, Farida IdrisWaziri , Emeson Sunny(2017): Use of Waste Plastics in Cement-Based Composite for Lightweight Concrete Production, International Journal of Research in Engineering Technology (IJRET), ISSN: 2455-1341: Vol.2, No.5, pp 44-54.
9. MullaIrfanFaiyyaj,Mete RushabhPradip, BhosaleJaydeepDhanaji,Dange Prasad Chandrashekhar, JadhavSurajShivaji (2017): Design and Development of Plastic Shredding Machine, International Journal of Engineering Technology Science and Research
   (IJETSR), ISSN: 2394 – 3386: Vol.4, No.10, pp 733-737.
10. Darshan R, Gururaja **S** (2017): Design And Fabrication Of Crusher Machine For Plastic Wastes, International Journal of Mechanical And Production Engineering (IJMPE), ISSN 2320-2092: Vol.5, No.10, pp 733-737.
11. Adepo, S. O.,Obanoyen, N. O (2017): Design And Construction Of A Plastic Shredding Machine, Journal of Multidisciplinary Engineering Science and Technology (JMEST), ISSN: 2458-9403: Vol.4, No.9, pp 8190-8193.
12. Ganesh U L, Vinod V Rampur, Ashok R Banagar (2017) : Design and Fabrication of Organic Portable Shredder Machine, International Journal of Engineering Research & Technology (IJERT), ISSN: 2278-0181: Vol.6, No.8, pp 358-361.
13. Noel Deepak Shiri,Gedrick Pinto,Amith Almeida,JoshwinSequeira (2017): Fabrication of a Washing and Shredding Machine for Processing of Commingled Waste Plastics, Journal of Mechanical Engineering and Automation (IJERT), DOI: 10.5923/j.jmea.20170704.07: Vol.7, No.4, pp 119-123.
14. Sreenivas H T,Sundeep Y, Ajay Krishna T M, Naveen Kumar K H, Dr. N Krishnamurthy (2017): Conceptual Design and Development of Shredding Machine for Agricultural Waste, International Journal of Innovative Research in Science Engineering and Technology (IJRSET), ISSN(Online) : 2319-8753, ISSN (Print) : 2347-6710: Vol.7, No.9, pp 160-165
15. M. Muthukumaran,P.MurasoliMaran, M.PorulSelvam, S.Saravana,Kumar, C.Praveen(2017): Design And Farication Of Plastic Waste Shredder Machine, International Journal For Research & Development In Technology (IJRDT), ISSN (Online) :- 2349-3585: Vol.7, No.4, pp 210-214.

A Study to Assess the Effectiveness of Self Instruction Module on Level of Knowledge regarding Diabetic Mellitus among Primary School Teachers in selected Primary School of Aurangabad City

Dr. Pratibha Aurn Chandekar, Ms. Donit John

Introduction: - Diabetic Mellitus (DM) is a chronic multisystem disease characterized by hyperglycemia related to abnormal insulin production, impaired insulin utilization, or both. DM is a serious health problem throughout the world, and its prevalence is rapidly increasing[1].It is estimated that more than 29.1 million people in the united state have diabetes. India is fast gaining the title of diabetes, second only to China in number of cases. The prevalence of DM in India ranges from 5-17% with higher levels found in the southern part of the country and urban areas. Indians are at a greatest risk for insulin resistance and strong genetic predisposition to diabetes[2].The long- term complications associated with diabetes can make it a devastating disease. Diabetes is the leading cause of adult blindness, end-stage renal disease, and non-traumatic lower limb amputations. It is also a major contributing factor to heart disease and stroke. Adults with diabetes have heart disease death rates two to four times higher than adults without diabetes. The risk for stroke is also two to four times higher among people with diabetes. In addition, more than half of adults with diabetes have hypertension and high cholesterol level[1].

Objectives:-

1. To assess the existing level of Knowledge among Primary School Teachers.
2. To determine the effectiveness of Self Instruction Module on level of Knowledge regarding Diabetics Mellitus among Primary School Teachers.
3. To compare the Post test level of knowledge with selected demographic variables.

Hypothesis

H_{00}-There is no significant difference in the Knowledge score after administers Self Instruction Module.

H_1 -There is a significant difference in the Knowledge score after administers Self Instruction Module.

H_{02}–There is no significant association of post test Knowledge score with selected demographic variables.

H_2–There is no significant association of post test Knowledge score with selected demographic variables.

Review Of Literature:-The extensive review of the literature has been done and arranged in the following headings,

- **Literature review related to Diabetes**
- **Literature review related to recognition and management of Diabetes**
- **Literature review related to teachers knowledge regarding Diabetes with interventions.**

Materials and Methods

- **Research Approach-** Evaluatroy
- **Research Design-** Pre experimental one group pretest posttest
- **Sample-** Primary School teachers
- **Sample Size-** 30
- **Sampling Technique-** Non probability purposive sampling
- **Setting-** ACE Academy CBSE School Aurangabad

Tool-

- **Section A-** Demographic variable consist of 5 questions. Age, Gender, Residence, Education and Previous Knowledge regarding diabetes.
- **Section-B-** Structured questionnaire on Knowledge regarding Diabetics Mellitus consist of 30 questions. The score is divided into three category Poor (0-10), Average (11-20) and Good (21-30).

On the first day samples finished with Pretest and Self Instruction Module was given to them. On the seventh day samples were finished with post test. The study was conducted in ACE Academy CBSE School Aurangabad with 30 Primary school Teachers. Prior permission is taken from the college authority and informed consent taken from participants. The content validity of structured questionnaire was found by submitting the tool to the experts in the field of Psychiatry (Psychiatrist, Psychologist and Mental health nursing). A pilot study was conducted on 10 Primary School Teachers in the selected school of Aurangabad. Reliability of tool was established by Karl Pearson's Correlation coefficient. The reliability of tool was calculated and it was 0.87.

Results

1. Related to Socio demographic variables of Primary School Teachers:

According to sample characteristics of Primary School Teachers the majority of Teachers 18 (60%) was in age group 30-35 years and females were more in number 17(56.6%).The maximum Teachers 23(76.6%) belongs to semi-urban area. According to educational standard of Teachers the maximum Teachers 19(63.3%) were completed M A B. ed. The majority of Teachers 20(66.6%) had a previous knowledge regarding Diabetes.

2. Evaluating the effectiveness of SIM

Pretest		**Posttest**		**'t' Value**	
Mean	**SD**	**Mean**	**SD**	**Calculated**	**Table**
13.1	1.74	23.9	3.03	8.19	2.05

Table 1- Effectiveness of Self Instruction Module

3. To find-out the association between level of Anxiety and Demographic Variables:-

Association was done using Chi Square test. It is inferred that there was a significant association between age (X^2-7.86) and previous knowledge regarding Diabetes(X^2-12.8) (Less than 0.05) with level of Knowledge in Primary School Teachers in selected Primary School in Aurangabad city.

Recommendation

1. Replication of the study could be done with large samples to validate and generalize the findings.
2. Comparative study can be carried out to determine the relationship between Knowledge and attitude and Practice.
3. An experimental study can be conducted with Knowledge and some other intervention.
4. The study can be carried out in a different setting with different samples.

Conclusion:-The study depicted that Self Instruction Module helps to increase the level of Knowledge regarding Diabetes among Primary school teachers.

Reference:-

1. Lewis's Medical Surgical Nursing Assessment and management of Clinical Problems. Elsevier Publication. Third South Asia Edition. Volume-II. ISBN-9788131247440. PP-1077.
2. Brunner and Suddarth's Textbook of Medical Surgical Nursing. Wolters Kluwer Publication. South Asian Edition. Volume-I. PP-1088.

A descriptive study to assess the health status of industrial worker in factory of Ahmednagar District

Mrs.Jayashree Rajesh Salvi (JJTU Research Scholar)
Specialty - Nursing
Registration No – 22418007
Email ID – jayashree.salvi@somaiya.edu
Contact No - 9819842664

Industrialization is necessary for prosperity and at times for the survival of a nation. The production is the real wealth of a Nation. Only industrialization is not enough, real benefit is brought by continuous top performance of the worker which is only possible by their good health. Industrial workers constitute only a segment of general population and the factors that influence the health of the population also apply equally to industrial workers. Occupational safety and health is the science of anticipation , recognition, evaluation and control of hazards arising in or from the workplace, which could impair the health and well-being of workers, and also impact the surrounding communities and the environment. Occupational hazard is defined as the "potential risk to the health of a person emerging from an unhealthy environment" which is a significant public health issue. It can also be referred to as any activity, materials, processes or situation that is likely to cause an accident or disease at the work place. Although improvement in occupational health have been seen in many developed countries, however, the protection of workers from work-related disorders is not a priority in many developing countries, partly because several other health issues have competed with occupational health. This situation has existed for long owing to various socio-economic, cultural and political challenges which often make occupational health not prioritized. This has made occupational health and safety which is a fundamental right in maintaining workers' wellbeing to remain neglected in developing countries.Workers in their own workplaces are exposed to many different hazards and hazardous conditions that can threaten health and life. Although some hazards are less likely to happen in some work spaces than others, it's important to assess which hazards are most damaging to the organization and its employees. Apart from the chemical, physical, mechanical, biological, and ergonomic agents, spiritual pressure and mental tensions exist in workplaces. These factors and their effects on humans must be controlled. If anybody spent about one-third of their own day at work, it is necessary to assess and control adverse situations based on this fact**.**The interaction between

man and his working environment may lead to betterment of health, when work is fully adapted to human needs and factors, or to ill health, if work stresses are beyond human tolerance. Occupational diseases and injuries result from specific exposures at work. In addition, work exposures may aggravate certain illnesses or be a factor of varying importance in causing diseases of multiple etiology

NEED OF STUDY:-Health is complete state of physical mental and social wellbeing and not merely absence of disease. Workers in their own work places are exposed to many different hazards and hazardous conditions that can threaten health and life. Apart from the chemical, physical, mechanical, biological and mental tension exists in workplaces. Everybody has their own coping mechanism to fight against infections in certain environment. Because of that there is need to assess the health status of industrial workers.

As a researcher during community health posting observed that many workers are having health issues like Pulmonary tuberculosis, Asthma, Allergic Reactions, etc. which are not limited only to the workers but also carried by the family members causing the entire family and spreading to the community .The main goal of study is to assess the health status of the workers for early identification of their problems and early intervention for health protection and health promotion.

OBJECTIVES OF THE STUDY:

1) To assess the health status of Industrial worker in factory of Ahmednagar District.

2) To associate the health status of industrial worker in factory of Ahmednagar district with selected demographic variable**.**

RESEARCH METHODOLOGY:

Research Approach:

A descriptive non –experimental method is used for the study.

Research Design:

A descriptive quantitative research design is used for the study.

Setting of the Study:

Study was conducted in Godavari Bio refineries Chemical Factory at Sakarwadi in Ahmednagar District.

Population:

Population of the study consist of 70 factory workers of Godavari Bio refineries Chemical Factory.

Sample & Sampling Technique:-The sample of the study consists of 70 factory workers of Godavari Bio refineries Chemical Factory.

Sampling technique was used purposive sampling technique.

Sample Size:

Sample size is of 70 factory workers of Godavari Bio refineries Chemical Factory.

Sampling Criteria:

The sample collected were those who are available in the Chemical Factory in morning shift.

DEVELOPMENT OF RESEARCH TOOLS:-In present study, interview method through valuable questionnaire and physical examination techniques were used.

TOOLS: -It includes

- Section A : Demographic data
- Section B : Physical examination
- Section C : Personal health questionnaire
- Section D : Occupational health
- Section E : Workplace stress checklist

DESCRIPTION OF THE TOOLS:-The tools was divided into 4 sections

Section A: consists of demographic data of samples. The items includes,

- Age
- Sex
- Marital status
- Education
- Years of experience
- Department of work
- Mode of work in department
- Sample no, height, weight, BMI, Hb
- Medical history

Section B: Consist of physical examination of sample. Its items includes

- General appearance
- Body type

- Assessment of head , eyes, nose, ears ,mouth, neck, chest, abdomen, upper and lower extremities, back, skin, Gastrointestinal, Genitourinary etc

Section C :- Consist of personal health questionnaire about

- Diet
- Exercise
- Habit
- Health check up
- Any acute problem
- Pain
- History of fracture
- Experience of drowsiness, dizziness during work

Section D: Consist of occupational health which includes

- Experience of injury
- Facilities of break, mediclaim, sick leaves, personal protective equipments by company.
- History of inhalation of chemicals, allergy and infection

Section E: WORKPLACE STRESS CHECKLIST:-This checklist is for to assess the level of stress among the factory workers. The checklist is consist of ten questions and each question carries 10 marks so total score will be 100

- 10-30 score indicates workers can handle stress on job well
- 40-60 moderately well
- 100- encountering problems that needs to be resolved.

1 A: Distribution of subject in relation to their age in years.

Majority of Industrial worker 28 (40%) belongs to age group >41 years, and 17 (24.28%) industrial worker were found to be in between 34-41 years, whereas 15 (21.42 %) industrial worker were in between 26-33 years and only 10(14.28%) industrial worker were in between 18-25 years.

1 B: Distribution of subject in relation to their gender

Majority of Industrial worker 66 (94.28%) are male and female are only 4 (5.71%).

1 C: Distribution of subject in relation to their Marital Status

Majority of Industrial worker 65 (92.85%) are married and only 5 (7.14%) industrial worker are unmarried and no industrial worker are divorced, widower or widowed.

1 D: Distribution of subject in relation to their Educational level

Majority of Industrial worker 44 (62.85%) had completed their secondary level of education, 22 (31.42%) industrial worker had completed their education up to primary level and only 3(4.28%) industrial worker had completed their graduation, 1(1.42%) industrial worker are illiterate and none of the industrial worker are post graduated.

1 E: Distribution of subject in relation to their years of experience in job

Majority of Industrial worker 34 (48.5%) have more than 10 years of experience, 11(15.71%) industrial worker have 3-5 years of experience, 11(15.71%) industrial worker have 8-10 years of experience and only 4 (5.71%) industrial worker have 0-2 years of experience,

1 F: Distribution of subject in relation to their mode of work

Majority of Industrial worker 40 (57.14%) are on temporary work and 30 (42.85%) industrial worker are permanent in factory.

1G: Distribution of subject regarding medical history

TABLE 1G: DISTRIBUTION OF SUBJECT REGARDING MEDICAL HISTORY

Sr. no.	Present medical condition	Frequency	%
1	Heart disease	1	1.42
2	Asthma	0	0
3	Hypertension	7	10
4	Thyroid disease	0	0
5	Diabetes mellitus	3	4.28
6	Kidney disease	0	0
7	Arthritis	7	10
8	Cancer	0	0

19	Tuberculosis	0	0
10	Spondylitis	0	0
11	Allergy	5	7.14
12	Having no medical illness	47	67.14

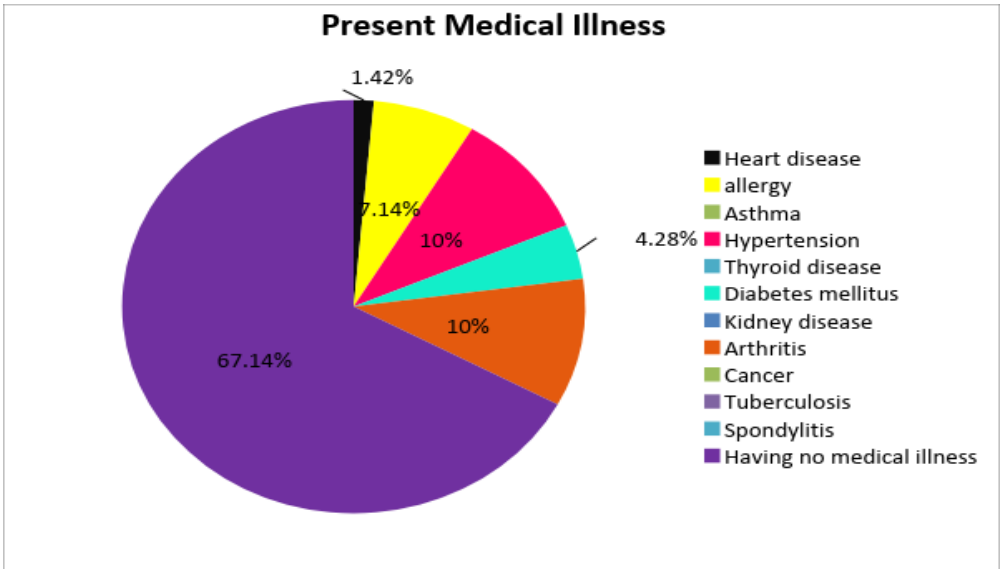


Fig. 1G

This table reveals that majority of industrial worker 47 (67.14%) are having no medical illness but 7 (10%) industrial worker are having hypertension and arthritis, 5(7.14%) industrial worker are having allergy due to dust, penicillin, etc, 3(4.28%) industrial worker are suffering from diabetes mellitus and 1(1.42%) industrial worker is having heart disease.

SECTION 2:-This section deals with the percentage wise distribution of industrial worker in relation to their Physical health status

2A: Distribution of subject in relation to their general appearance

Majority of Industrial worker 70(100%) are having happy facial expression and are oriented to time, place and person.

2B: Distribution of subject in relation to their body type.

Majority of Industrial worker 40 (57.14%) are having average body built , 22 (31.42%) industrial worker are healthy, 5 (7.14%) industrial worker are thin and only 3 (4.28%) industrial worker are well built.

2C: Distribution of subject in relation to any Illness in their Head.

Majority of Industrial worker 53 (75.71%) are having no illness of head but 17(24.28%) industrial worker are suffering from headache.

2D: Distribution of subject in relation to any Eye Problems.

Majority of Industrial worker 40 (57.14%) uses Spectacles,16 (22.85%) industrial worker are having no problem in eyes, about 6 (8.57%) industrial worker are having Dry eyes, 4(5.71%) industrial worker are having itching problem and 4(5.71%) industrial worker are having redness in eyes.

2E: Distribution of subject in relation to any Nose Problems.

Majority of Industrial worker 69 (98.57%) are having no problem in nose but 1(1.42%) industrial worker is having complaints of running nose.

2F: Distribution of subject in relation to any Ears Problems

All industrial worker 70(100%) are not having any hearing problem or any Ears abnormalities.

2G: Distribution of subject in relation to any Problems in mouth .

Majority of Industrial worker 68 (97.14%) are having no problem in mouth but 2 (2.8%) industrial worker are having missing teeth.

2H: Distribution of subject in relation to any Neck Abnormalities.

All industrial worker 70(100%) are not having any problem in neck.

2I: Distribution of subject in relation to any Chest Abnormalities.

All industrial worker 70(100%) are not having any chest abnormalities.

2J: Distribution of subject in relation to any Abnormalities in Abdomen.

All industrial worker 70(100%) are not having any abdominal problem.

2K: Distribution of subject in relation to any Abnormalities in Upper and Lower Extremities.

Majority of Industrial worker 29(41.42%) are having joint pain, 25(35.71%) industrial worker are having no problem in extremities, 14 (20%) industrial worker are having knee pain and 1 (1.42%) industrial worker is having complaints of numbness and tingling sensation.

2L: Distribution of subject in relation to any Problems in Back

Majority of Industrial worker 36 (51.42%) are having problem of back pain and 34 (48.57%) industrial worker are having no complaints of back problem.

2M: Distribution of subject in relation to any Skin Problems.

Majority of Industrial worker 62 (88.57%) are not having any skin problem but 5(7.14%) industrial worker are having complaints of Itching and 3(4.28%) industrial worker are having allergy to dust, penicillin, etc.

2N: Distribution of subject in relation to any Gastrointestinal Problems .

Majority of Industrial worker 28 (40%) are having problem of Acidity, 24 (34.28%) industrial worker are having complaints of indigestion, 11(15.71%) industrial worker are not having any GI problem, 5(7.14%) industrial worker are suffering from constipation and only 2(2.8%) industrial worker are having nausea/vomiting

2O: Distribution of subject in relation to any Genitourinary Problems .

Majority of Industrial worker 68 (97.14%) are not any GU problem but 2 (2.85%) industrial worker are having complaints of burning micturation.

SECTION 3:-This section deals with the percentage wise distribution of industrial worker in relation to their personal habit.

3A:Distribution of subjects in relation to they perform any exercise to improve their health.

Majority of industrial workers 48 (68.57%) don't perform exercise and 22(31.42%) industrial workers perform exercise.

3B: Distribution of subjects regarding balanced diet.

All industrial workers 70 (100%) eat balanced diet to improve their health.

3C:Distribution of subjects in relation to their bad habits.

Majority of industrial workers 26(37.14%) chews tobacco,18(25.70%) industrial workers doesn't have any bad habits and 17(24.28%) industrial workers drink alcohol,8(11.42%)industrial workers smokes and 1(1.42%)industrial workers use betel leaves.

3D:Distribution of subjects regarding health check up.

All of the industrial workers 70(100%) go for health check up.

3E: Distribution of subjects in relation to their frequency of health check up.

Majority of industrial workers 37(52.52%) go for health check up every 6 month and 27(40%) industrial workers worker go for yearly health check up and industrial workers 6(8.57%) go for monthly health check up.

3F:Distribution of subject regarding acute problem.

Majority of industrial workers 15(21.42%) suffer from cough and cold,15(21.42%) industrial workers doesn't have any problem, 10(14.28%) industrial workers use to have fever,10(14.28%)industrial workers have backache, 9(12.8%) industrial workers have vomiting and diarrhoea, 8(11.42%) industrial workers having headache, 2(2.85%) industrial workers have joint pain and only 1(1.42%) industrial workers suffer from abdominal pain.

Table 3G:Distribution of subjects about pain limiting their activity.

Majority of industrial workers 67(95.71%) doesn't have any pain that limits their daily activity but 3(4.28%) industrial workers has pain limiting them doing their daily activity.

3H:Distribution of subjects about their history of fracture.

Majority of industrial workers 60(78.57%) doesn't have any history of fracture, and 10 (8.57%) industrial workers has history of fracture.

3I: Distribution of subjects whether they have ever experienced drowsiness during working hours.

Majority of industrial workers 66(94.28%) don't experience drowsiness during working hours but 4(5.71%) industrial workers experiences drowsiness during working hours.

SECTION 4:- This section deals with the analysis of occupational health status of industrial worker.

Table 4: Distribution of subjects regarding their occupational health status.

- Majority of industrial workers 67(95.70%) doesn't have any injury while handling machine.
- Majority of industrial workers 55(78.50%) get breaks between shifts and 15(21.40%) industrial workers doesn't get break between shifts.
- Medi-claim are provided by company to 45(64.2%) industrial workers.
- Majority of industrial worker get sick leaves by company 64(91.4%).
- Majority of industrial workers 69(98.5%) did not inhaled any chemical while work.
- All industrial workers 70(100%) used to get personal protective equipment by company.

SECTION 5:-This section deals with analysis of mental health status of industrial worker by using checklist method:

Table 5: Distribution of subjects regarding their mental health status

- Majority of industrial workers 40(57.14%) agree somewhat that things getting off their chest at work.
- Majority of industrial workers 52(74.92%) strongly agree that they have a lot of responsibility but not authority.
- Majority of industrial workers 58(82.85%) strongly agree that they can do better job if given more time.
- Majority of industrial workers 53(75.71%) strongly agree that they receive appreciation when the work done is good.
- Majority industrial workers 63(90%) strongly disagree that they are proud with their job.
- Majority of industrial workers 64(91.42%) strongly disagree that they picked on against a work.

- Majority of industrial workers 46(65.71%) agree somewhat that working environment is not safe.
- Majority of industrial workers 57(81.42%) agree somewhat that their job interferes with their personal needs.
- Majority of industrial workers 46(65.71%) agree somewhat that they tend to have frequent argument with colleagues.
- Majority of industrial workers 36(51.42%) agree somewhat that they feel little control over life at work.

Personal experience :- Research was carried out in sakarwadi, Godavari Bio-refineries which is a chemical factory. The objectives of our research was to assess the health status of factory workers. During the process of data collection the industrial workers co-operated very well with the researcher where they were patient and interested in the assessment. But some of the workers were expecting more of interventions rather than history and data collection. The other thing which researcher noticed is due to limitation of time and shift duties of workers. It was difficult to collect data but the researcher made it by Coordinating with them and by doing home visiting on respected time.The overall experience of research was amazing. It offered us tremendous opportunities and we learned the communication skills, being patient, it improved our nursing skills which will help us in our further life. Apart from that it gave us determination, perseverance, compassion, autonomy, critical thinking and hardworking aspects which are important in career as well as daily living.

Implication of the study;-The findings of the study have certain important implication for nursing service , education , administration and nursing research.

Nursing Services:-Nurses serve a agent in providing education about the safety measures and can help industrial workers to plan their diet and daily schedule according to their shifts.Mental health promotion is a vital function of the nurse and nurses can prevent psychological factors leading to mental problems which are caused by workplace.

Nursing education:-Nursing students must be encouraged to utilize knowledge about industrial health hazards of using working in a chemical industry to give health education to the workers and community.Nursing education should help in inculcating a sense of responsibility in the students to identify needs and problems as to render optimum care.

Nursing administration:-The nurse administrator can provide in service education to the industrial workers regarding the occupational health hazards and prevention of those.

Nursing Research:-The tool can provide guidelines for the future investigators who are interested in conducting similar studies. The present study may serve as a reference material.

Suggestions and recommendation :

1. This study could have been conducted on a large sample to get more accurate result.
2. This study could have been conducted in proper setting like factory where they are working, to get more sample for research.
3. A comparative study could be taken in various factory settings to assess the health status of workers.
4. Protocol could be made for reducing occupational hazards and evaluation of the protocol can be carried out.
5. A study could have been conducted other than chemical factory.

Limitations :

1. This study was time consuming.
2. Some of the industrial worker were reluctant in sharing their personal information.
3. Some of the industrial workers have not given appropriate feedback.
4. No interventions were carried out to improve health status of industrial workers, hence limited to self reporting.
5. More time could have been spent with the samples for increasing the data authentically.

Conclusion :-The following conclusions were drawn from the study,

1. This study proved that most of the factory workers were having health problems due to working environment.
2. Majority of industrial workers were male.
3. Majority of industrial workers were having health problems such as hypertension, acidity, arthritis etc.
4. No as such intervention was done for workers the study was only limited to self reporting.

BIBLIOGRAPHY

BOOKS

1. K. Park textbook of preventive and social medicine 21ar edition Bhanot publication.
2. Swarnakar's textbook os community health nursing 3rd edition N.R.Brothers
3. Suresh .K. Sharma textbook of nursing research and statistics 2nd edition Elseiver
4. Veerabhadrappa GM the short textbook of community health nursing 2nd volume Jaypee publication.

WEBSITES

1. Pubmed mobile website http://www.ncbi.nlm.nih.gov Isara AR ital afr med.J 2016
2. Pubmed mobile website http://www.ncbi.nlm.nih.gov Das B Int J occup med.env health 2014
3. Pubmed mobile website http://www.ncbi.nlm.nih.gov Shankar S ital work 2017
4. Pubmed mobile website http://www.ncbi.nlm.nih.gov De lima ital work 2016
5. Pubmed mobile website http://www.ncbi.nlm.nih.gov Shritharan J ital AM med 2019
6. Pubmed mobile website http://www.ncbi.nlm.nih.gov Estil CF Safety Res 2017
7. Pubmed mobile website http://www.ncbi.nlm.nih.gov Halwani GH ital J med env health 2009
8. Pubmed mobile website http://www.ncbi.nlm.nih.gov Nasterlack M int Arch Occu env health 2009
9. Pubmed mobile website http://www.ncbi.nlm.nih.gov Motvani A ital med env health 2016

JOURNAL

1 International Journal of Community Medicine and Public Health Singomestty Bhaskar and Paron Kumar Gallopudi.

A study to assess perception of nursing students about the effectiveness of Objective Structured Clinical Examination (OSCE) during perineal care procedure in the selected college of Metropolitan city.

Name - Mrs. Shweta Saisagar Kshirsagar. (JJTU Research Scholar)

Specialty - Nursing

Registration No–22418006

Email ID – shwetanaik333@gmail.com

Contact No - 8693031515

ABSTRACT

Aim:

1. To conduct OSCE

2. To assess the perception of nursing students about OSCE

3. To compare the perception of nursing students between traditional evaluation (TE) and Objective Structured Clinical Examination (OSCE).

Material and methods:-The research approach and design were Qualitative Descriptive. The subjects were 30 students of 4th year Basic B.Sc. Nursing. OSCE conducted under 4 stations namely Hygiene, Execution, Interaction, and Feedback. Data was collected using Demographic data profile; Clinical checklist for hand washing, perineal care SOP; related viva and opinionnaire. Data were analyzed using descriptive and inferential statistics.

Results:

Hygiene- 16.69% (5) had excellent, 66.6% (19) had Very good, 19.98% (6) had Good score & none of them had an Average or poor score in hand washing. **Execution**- 73.26% (22) had excellent, 16% (5) had Very good, 9.99% (3) had Good score & none of them had an Average or poor score in vital signs assessment. **Interaction**- 56.61% (17) had excellent, 43.29% (13) had Very good score &none of them had a Good, Average or poor score in viva. **Feedback**- 10 Opinionnaire on personal perception about OSCE administered to participants. 100% (30) of them had positively responded.

Conclusion:-OSCE proved to be an excellent method of clinical evaluation than traditional evaluation.

Key words:-Perception, Nursing students, Effectiveness, OSCE, Perineal care

Introduction:-Evaluation is the systematic process of determining the extent to which the pupil achieves educational objectives. Evaluation is a continuous process of collecting, recording and interpreting information. Teaching, learning, and evaluation are interdependent. The evaluation includes selecting appropriate technical methods, its administration, and interpretation of results. The purpose of the evaluation is to improve learning. Evaluation helps the learner to know what they should learn. It also provides information about their progress and recognizes the areas of learning difficulties. Clinical evaluation is a critical element in the professional education program. It is very important to assess the student's competency in actual practice. The main purpose of the clinical evaluation is to assess quality and standards of clinical performance and to give them feedback to facilitate achievement of objectives. Evaluation is always based on objectives. The method used for evaluation should be flexible, reliable, valid, feasible and acceptable to clinical instructors and students. In nursing education, assessment of theory and practically done often simultaneously. It is three dimensional which includes the cognitive, psychomotor and affective domain of learning to provide a holistic picture of student's performance. The current problems of clinical teaching are lack of observation and inadequate feedback to the students. The clinical settings in which the students practice also influence the holistic development of clinical skills. The method used for assessing and evaluating the student's performance also affect the quality of clinical teaching. The traditional method assesses the overall performance of the student.

A. Methodology

The research design and approach were a descriptive survey. The subjects were 30 students of 4th year Basic B.Sc. Nursing. OSCE conducted under 4 stations namely Hygiene, Execution, Interaction, and Feedback. The study conducted with the aim to conduct Objective Structured Clinical Examination (OSCE), assess the perception of nursing students about Objective Structured Clinical Examination (OSCE), compare the perception of nursing students between traditional evaluation (TE) and Objective Structured Clinical Examination (OSCE).Station I was **Hygiene** session held for 3 mins which included pre and post procedure hand washing using 6 steps of it.

Station II was **Execution** which included the actual procedure of perineal care. Under this tray set up, procedure steps, scientific principles, proficiency in a skill, patient information and preparation, recording and reporting included.

Station III was **Interaction** which included procedure related viva to assess students corresponding knowledge.

Lastly, Station IV **Feedback** conducted to assess feedback from students about OSCE.

Data was collected using Demographic data; Clinical checklist for hand washing, perineal care procedure, related viva and 10 opinionnaires about OSCE. Data were analyzed using descriptive and inferential statistics.

B. Variables under study:

Dependent variables: perception of nursing students

C. Independent variables: OSCE.

Demographic variables: Demographic variables under the study were age, Sex, Previous knowledge about OSCE, previous exposure to OSCE

D. Settings of the study

The investigator conducted the study in MCH laboratory of selected nursing college. MCH laboratory set into different stations of OSCE namely Hygiene (3 Mins), Execution (7 Mins), Interaction (10 Mins), Feedback (5 Mins). Pre and Post OSCE candidates were separated.

Population: 4th year Basic B.Sc. nursing students

Sample: Sample consisted of 4th year Basic B.Sc. nursing students of the selected nursing colleges of Mumbai city.

Sample size: Pilot study was conducted on 5 students of 3rd Basic B.Sc. nursing and the Main study was performed on 30 students of 4th year Basic B.Sc. nursing.

Sampling criteria:- Purposive convenient sampling technique.

E. Inclusion criteria:

1. Students who are willing to participate in the study

2. Students of 4th year Basic B.Sc. nursing.

3. Students present on the day of the main study.

4. Students who are able to understand and speak English.

F. Exclusion criteria:

1. Students other than 4th year Basic B.Sc. nursing.

2. Students are absent on the day of the main study.

3. Students who are not willing to participate.

Limitations: Study is limited to:

1. 4th year Basic B.Sc. nursing students only.

2. A sample size of30.

3. Perineal care procedure

4. Structured checklist-based evaluation and feedback only.

5. Only framed formulated questions for Viva.

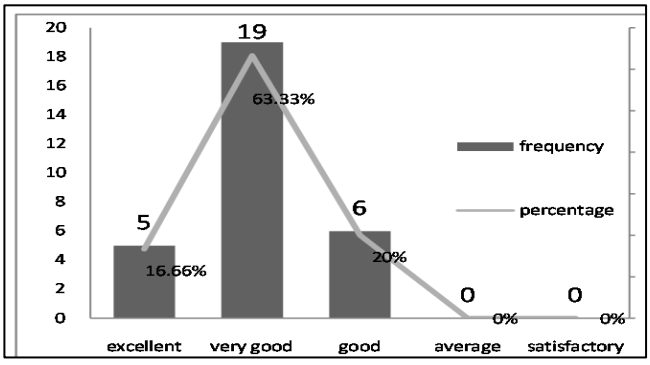
6. Only one supervisor per station

G. Ethical considerations:

Ethical approval was sought from Principal and class coordinators of the respective class. The researcher also obtained permission from a sister in charge to relieve subjects during data collection. Permission from MCH lab in charge also secured. Written informed consent was obtained from each participant. The researcher assured the participants of confidentiality and anonymity and no name or any form of identity was indicated on the tool.

H. Results

I. A)Distribution of frequency and percentage according to hand washing (Hygiene) data



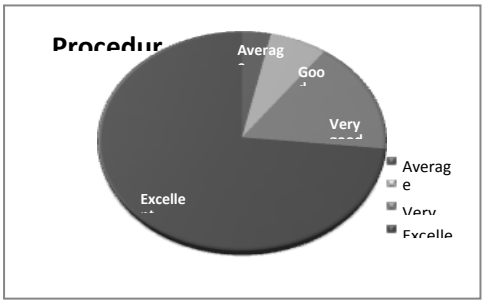
variables.

BB.

J. SN	K. Knowledge score	L. f	M. %
N. 1	Excellent (9-10)	**O.** 5	16.66%
P. 2	Very good(7-8)	**Q.** 19	63.33%
R. 3	Good (5-6)	**S.** 6	**T.** 20%
U. 4	Average (3-4)	**V.** 0	**W.** 0%
X. 5	**Y.** Satisfactory (<3)	**Z.** 0	**AA.** 0%

CC.

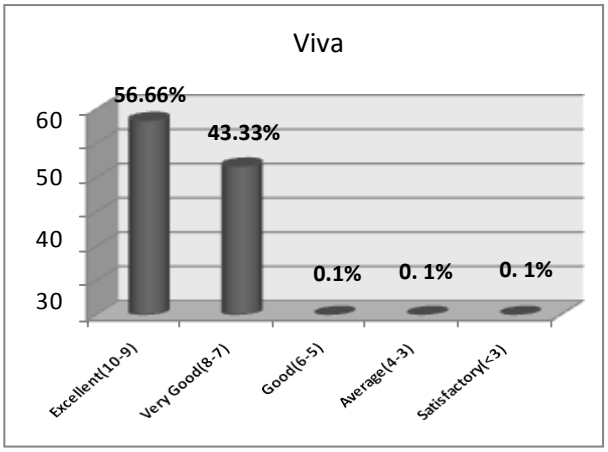
DD. B) Distribution of frequency and percentage according to procedure (Execution)



S N	Knowledge Score	f	
1	Excellent (80 & above)	22	
2	Very good (80-70)	5	
3	Good (70-60)	2	
4	Average (60-50)	1	
5	Satisfactory (<50)	0	

Optimum participants i.e.,63.33% (19) scored very good 76.33% (22) of participants scored Excellent score with 80% and above mark

SN	Knowledge score	f	%
1	Excellent (10-9)	17	56.66
2	Very good (8-7)	13	43.33
3	Good (6-5)	0	0
4	Average (4-3)	0	0
5	Satisfactory(<3)	0	0



A. C) Distribution of frequency and percentage according to viva (Interaction)

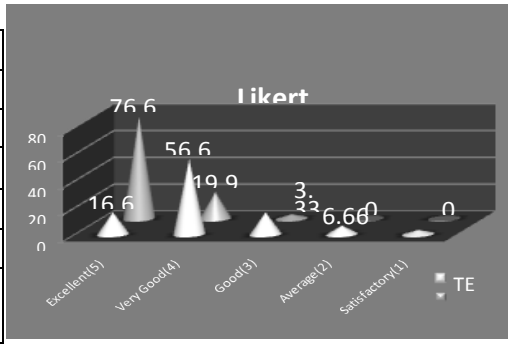
56.66% (17) had an excellent score with 9-10 marks and remaining all i.e 43.33% (13) with a very good score of 7-8 marks.

B. D) Distribution of frequency and percentage according to Student Feedback (Feedback)

S N	Opinionnaire	Frequency and percentage	
		Agree	Disagree
1	OSCE is a new term in clinical evaluation.	93.33%	6.66 %
2	OSCE helps to improve knowledge, attitude, and skills.	96.66%	3.33%
3	OSCE clarified our procedure related doubts.	100 %	0%
4	OSCE helps to reduce clinical errors.	96.66%	3.33%
5	Working in different stations improved my confidence level.	100%	0%
6	Intermittent feedback during OSCE by teachers after each station was beneficial.	100%	0%
7	OSCE helps to perform the procedure in sequential order.	96.66%	3.33%
8	I liked and enjoyed working in various stations of OSCE.	96.66%	3.33%
9	OSCE can be very well implemented in every Procedure	96.66%	3.33%
10	I would like to undergo OSCE again.	96.66%	3.33%

C. E) Routine clinical evaluation versus OSCE

SN	Knowledge score	TE		OSCE	
		Frequency	(%)	Frequency	(%)
1	Excellent (5)	5	16.66	16.66	76.66
2	Very good (4)	17	56.66	56.66	19.98
3	Good (3)	5	16.66	16.66	3.33
4	Average (2)	2	6.66	6.66	0
5	Satisfactory (1)	1	3.33	3.33	0



16.66% (5), 56.665 (17), 16.66% (5), 6.66% (2) and3.33% (1) scored excellent, very good, good, average and satisfactory respectively for RCE. Whereas 76.66 % (23),19.98%(6) and 3.33%(1) scored excellent, very good, good respectively for OSCE. None of them scored average or satisfactory for OSCE.

3. Discussion

The Objective Structured Clinical Examination is a versatile multipurpose evaluative tool that can be utilized to assess healthcare professionals in a clinical setting. It assesses competency, based on objective testing through direct observation. It is precise, objective, and reproducible allowing uniform testing of students for a wide range of clinical skills. Unlike the traditional clinical exam, the OSCE could evaluate areas most critical to the performance of health care professionals such as communication skills and ability to handle unpredictable patient behavior. The OSCE style of clinical assessment, given its obvious advantages, especially in terms of objectivity, uniformity, and versatility of clinical scenarios that can be assessed, shows superiority over traditional clinical assessment. It allows evaluation of clinical students at varying levels of training within a relatively short period, over a broad range of skills and issues. OSCE removes prejudice in examining students and allows all to go through the same scope and criteria for assessment. This has made it a worthwhile method in medical practice.

D. Demographic data

Age distribution is done in 3 categories which includes<18yrs, 18-20yrs, >20yrs. Table reflects that 3.33% (1), 80%(24) and 16.66%(5) subjects from age group <18, 18-20 yrs and > 20yrs respectively. As per **gender**, 13.33% (4) candidates were male whereas majority i.e. 6.66% (26) candidates were female. Distribution of subjects according to a stream of **higher education** revealed that majority of the subjects i.e. 80% (24) were from science field whereas 13.33%(4) and 6.66% (2) from commerce and arts field respectively Distribution of

subjects according to their **previous knowledge about OSCE** did. It was marked under 2 categories i.e Yes and No. All of them i.e. 100 %(30) didn't have any previous knowledge about OSCE.

E. Assessment of Hygiene, Execution, interaction and feedback station

Hygiene: As per checklist 16.69% (5) had excellent, 66.6% (19) had Very good, 19.98% (6) had Good score & none of them had an Average or poor score in hand washing.

Execution: As per checklist 73.26% (22) had excellent, 16.66% (5) had Very good, 6.66%(2) had Good score & 3.33 %(1) had an Average score in vital signs assessment.

Interaction: As per checklist 56.61% (17) had excellent, 43.29% (13) had Very good score &none of them had a Good, Average or poor score in viva.

Feedback: Opinionnaire as OSCE is a new term; improves knowledge, attitude, and skill; clarifies procedural doubts, reduce clinical errors, improves confidence, provides intermittent feedback, sequential procedure, liked OSCE, can be implemented on other procedures and want to have in future given. 100%(30) Agreed to it.

F. TE versus OSCE

16.66% (5), 56.665 (17), 16.66% (5), 6.66% (2) and 3.33%(1) scored excellent, very good, good, average and satisfactory respectively for TE. Whereas 76.66 % (23),19.98% (6) and 3.33% (1) scored excellent, very good, good respectively for OSCE. None of them scored average or satisfactory for OSCE. Paired t-test performed between Traditional evaluation (mean3.77) and OSCE (mean4.77).t test value was 4.9160 with df 29 which shows statistical significance.100 %(30) rated OSCE better than routine clinical evaluation.

G. Conclusion

This study revealed that students and supervisors were very comfortable and friendly with OSCE stations. It also observed that OSCE was more accurate, timely and not biased. They have recommended it for further clinical evaluation methods. OSCE can be effectively used as clinical evaluation method in various nursing procedures.

H.

I. Recommendations

1. The study can be replicated on a larger sample for generalization of the findings.
2. A comparative study can be conducted on TE technique and OSCE method.

J. References

[1] Ananthakrishnan N. Objective structured clinical/practical examination (OSCE/OSPE). Journal of postgraduate medicine. 1993 Apr 1; 39(2):82.

[2] Baskerville R. Risk analysis as a source of professional knowledge. Computers & Security. 1991 Dec1;10(8):749-64.

[3] Bhat, Sham Mary, Anand, Susan. Objective Structured Clinical Examination(OSCE) Nursing Journal of India. Jan2006.

[4] Beck Cheryl, Polit Denise. Essentials of Nursing Research.1st edition. New Delhi: Wolters Kluwer.2009.

[5] Coovadia A. A comparison of traditional assessment with the objective structured clinical examination (OSCE). South African Medical Journal. 1985 May1;67(20):810-2.

[6] Dorothy Devine Rentschler PhD RN, Paula McWilliam MS AR. Evaluation of undergraduate students using objective structured clinical evaluation. Journal of Nursing Education. 2007 Mar 1;46(3):135.

[7] Fidment S. The objective structured clinical exam (OSCE): a qualitative study exploring the healthcarestudent"sexperience.Studentengagement and experience journal. 2012 Feb 3; 1(1).

[8] HalarieAik. Teaching and assessing in nursing. Nurse Education Today;6;p.208-14.

[9] Hilliard RI, Tallett SE. The use of an objective structured clinical examination with postgraduate residents in pediatrics. Archives of pediatrics & adolescent medicine. 1998 Jan1;152(1):74-8.

[10] Ishak IS, Alias RA. Designing a strategic information system planning methodology For Malaysian institutes of higher learning (ISP-IPTA). UniversitiTeknologi Malaysia;2005.

Synthesis, characterization and Microbiological activities of metal chelate of Fe (II) and Cu(II) with ligand 2-amino-1,4-naphthoquinone (ANQ)

Bhimraj Gadekar[1]Suryakant B Dhawale[2]Balasaheb S Jadhav[2], Dr. Rakesh Kumar[2]and Dr. Satish Ingale*

[1]Department of Chemistry,SHRI JAGDISHPRASAD JHABARMAL TIBREWALA UNIVERSITY,
VIDYANAGARI, JHUNJHUNU, RAJASTHAN – 333001, India

[2]Department of Chemistry,SHRI JAGDISH PRASAD JHABARMAL TIBREWALA UNIVERSITY,

VIDYANAGARI, JHUNJHUNU, RAJASTHAN – 333001, India

*Pratibha College of Commerce &Computer Studies, Pune 411019,India.

Abstract:-Copper (II) and Iron (II) metal chelates were synthesized using 2-amino-1,4-naphthoquinone (ANQ). These metal complexes, Cu(ANQ)2 and Fe (ANQ)2, have been characterised using current analytical techniques such as elemental analysis, FTIR, electronic spectra, mass spectroscopy, thermo-gravimetry, NMR, and X-ray diffraction, as well as metal content determination using ICPMS. These chelates are thermally stable up to 7000°C and are naturally coloured. The metal salts and metal chelates were screened for antimicrobial activity against Gram positive and Gram negative bacteria and fungi using the Agar Well Diffusion Method, and the findings were compared to those obtained with Cisplatin as the normal.

Keywords:-2-amino-1,4-naphthoquinone, X-ray diffraction, IR, Antimicrobial activity, Electronic spectra, ICP-MS.

2-amino-1,4-naphthoquinones, for example, contain an active amino group in the 2-position and have a wide range of biological uses, including anti-malarial, antibacterial, anti-tubercular, antitumor, larvicides, herbicides, and fungicides (1-2). As a result, research has consistently concentrated on these compounds, derivatives, and metal complexes. Fe (Symbol: Fe; Atomic mass: 55.845 u; Atomic number: 26; Electron configuration: [Ar]) is a chemical element with the symbol Fe (3d6 4s2). Iron is a chemical element with the atomic number 26 and the symbol Fe. It is a transition metal that is found in group 8 of the periodic table. It is the most abundant substance on Earth, second only to oxygen, accounting for a large portion of the planet's outer and inner cores. Fe is a d-block function that contributes to the completion of the Octet law. Due to the ease at which Fe can contribute two electrons in the outermost valence shell, it can easily donate two electrons and form a stable complex; on the other hand, the ligand 2-amino-1,4-naphthoquinone can accept an electron and form a

stable complex; hence, the synthesis and characterization of these molecules is chosen for study. Copper metal complex, like Fe metal complex, has been studied. Copper is denoted by the symbol Cu; its atomic mass is 63.546 u; its electron structure is [Ar] (3d10 4s1); and its atomic number is 29. Copper is a chemical element with the atomic number 29 and the symbol Cu (from Latin: cuprum). It is a malleable, ductile, and soft metal with an extremely high thermal and electrical conductivity. Numerous methods for the synthesis of the ligand 2-amino-1,4-naphthoquinone have been published (3,4,5). This article summarises the synthesis and characterization of Fe (II) and Cu (II) metal chelates with ligands using current analytical methods. Additionally, the microbiological activities of 2-amino-1,4-naphthoquinone are investigated and published.

I. MATERIALS USED FOR SYNTHESIS AND SYNTHESIS PROCESS

The ligand 2-amino-1,4-naphthoquinone was synthesized from 1, 4 naphthoquinone.1,4 naphthoquinone which was supplied by Fluca chemicals

2.1. Synthesis:

2.1.1 Synthesis of 2-amino-1,4-naphthoquinone from 1,4-naphthoquione: Approximately 8.0 g of 1,4-naphthoquinone was dissolved in 200 mL of a 40:10 mixture of Tetrahydrofuran and water. 10.0 gm Sodium Azide (Saturated) was added to this solution. To acidify the reaction mixture, 40 mL glacial acetic acid was added. At room temperature, this reaction mixture was stirred for 6 hours. The solution can be evaporated to achieve the reddish-brown solid. Recrystallization was carried out using Methylene chloride as a solvent.

2.2.3 Iron chelate with 2-amino-1,4-naphthoquinone : 0.346 g of 2-amino-1,4-naphthoquinone (2 x 10-3 mole) was dissolved in 20 mL of methanol and shaken well to create a smooth solution (Ligand solution); the solution was further refluxed for 15-20 minutes. In 10 mL water, dissolve 0.278 gm ferrous sulphate heptahydrate (1 x 10-3 mole) and stir well to obtain a clean solution. Drop by drop, this solution was applied to the ligand solution under reflux conditions to preserve the solution's temperature about 600C. Then, under reflex conditions, this solution was heated for a half hour. The pH of the solution was determined and modified to 6.5 using a dilute Ammonia solution. Continue refluxing the solution and checking the pH of the solution; if necessary, the pH of the solution was changed to 6.5. Continued the reflux for another two hours. After the second hour, cooled the solution and filtered it to remove the solids. On a hot plate, the solid was dried.

2.2.4 Copper chelate with 2-amino-1,4-naphthoquinone : 0.346 g of 2-amino-1,4-naphthoquinone (2 x 10-3 mole) was dissolved in 20 mL of methanol and shaken well to create a smooth solution (Ligand solution); the solution was further refluxed for 15-20

minutes. 0.25 g copper sulphate pentahydrate (1 x 10-3 mole) dissolved in 10 mL water and stirred well to obtain a clean solution. Drop by drop, this solution was applied to the ligand solution under reflux conditions to preserve the solution's temperature about 600C. Then, under reflex conditions, this solution was heated for a half hour. The pH of the solution was determined and modified to 6.5 using a dilute Ammonia solution. Continue refluxing the solution and checking the pH of the solution; if necessary, the pH of the solution was changed to 6.5. Continued the reflux for another two hours. After the second hour, cooled the solution and filtered it to remove the solids. On a hot plate, the solid was dried.

III .INTERPRETATION OF ANALYTICAL DATA

3.1 Instrumental analysis :-The structure of the synthesized compound was determined using elemental analysis, FTIR, electronic spectra, mass spectroscopy, thermogravimetry, and X-ray diffraction, as well as the metal content using ICP-MS.

3.1.1 Fourier-transform infrared spectroscopicstudy:-The FTIR analysis was performed to determine the functional groups and to validate the structure. FTIR spectra in the range 4000-400cm-1 were recorded on a Perkin Elmer instrument using a KBr matrix. Table-1 summarises typical functional group identifications of ligands and metal complexes using infrared spectroscopy.

Table-1: Typical functional groups by IR spectroscopy of ligand and metal complex,

Functional group→ Compound ↓	**C-H**	**C=C**	**C=O**	**C=N**	**N-H**	**N-O**	**C-Cl**	**M-O**	**M-N**
Typical IR frequencies→ (cm^{-1})	700-880 B 1365-1465 B	790-995 B 1610-1678 S	1650-1685 S	1640-1690 S	2800-3500 S	1500-1550 S	550-850 S	500-700	500-700
L3	Obs.	Obs.	Obs.	--	Obs.	--	--	--	--
Fe $(ANQ)_2$	Obs.	Obs.	Obs.	Obs.	Obs.	Obs.	--	Obs.	Obs.
Cu $(ANQ)_2$	Obs.	Obs.	Obs.	Obs.	Obs.	Obs.	--	Obs.	Obs.

Gaussian 09 programme was used to conduct the IR frequency assessment analysis. The IR frequencies mentioned above correspond to published values. The IR spectra of metal

complexes are shown in Figures 1 to 2.Fig-1: IR spectra for Cu $(ANQ)_2$

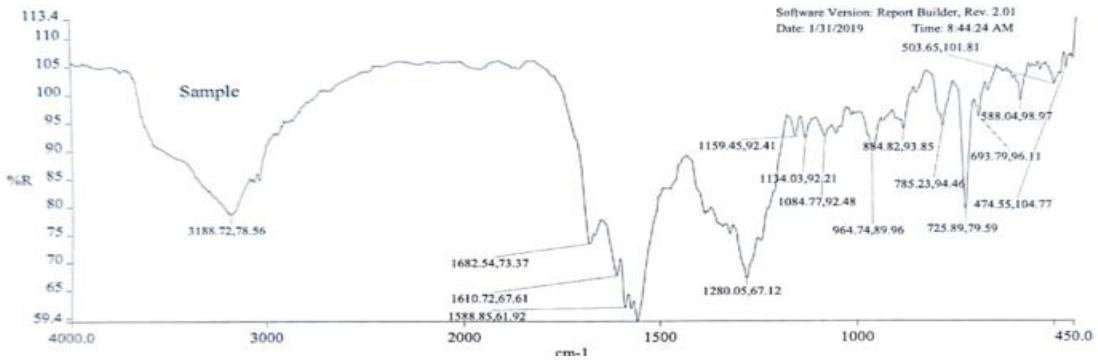
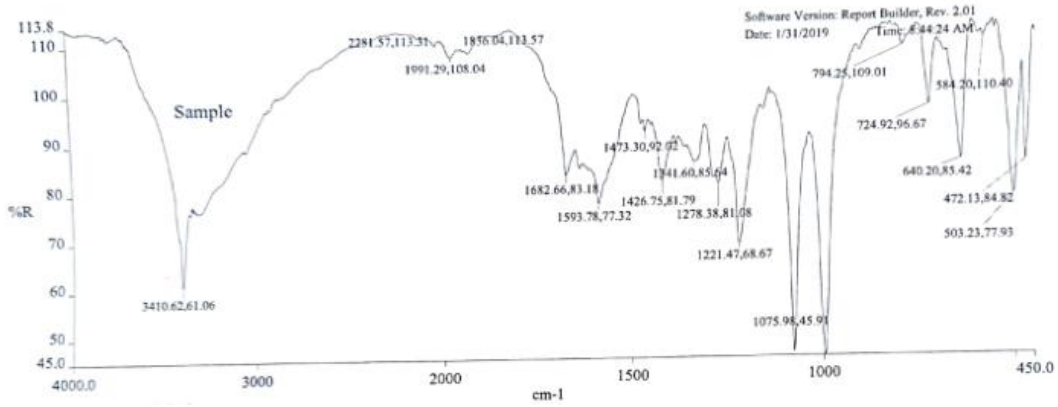


Fig-2 : IR spectra for Fe $(ANQ)_2$



3.1.2 UVspectrophotometric study (Electronic spectroscopy):

Electronic spectroscopy was used to determine the ultraviolet spectrum of metal chelate and its correlation with the ligand. UV spectra of metal chelates were recorded on a Shimadzu instrument in DMSO solvent, while UV scans of ligands were recorded in methanol solvents. UV spectroscopy involves passing a beam of UV-Visible light into a sample solution; a molecule absorbs the UV or visible radiations and decays. The electron transitions from an inhabited to an unoccupied molecular orbital. As a result, this kind of spectroscopy is also known as electronic spectroscopy.

Energy transitions are observed as $\eta \rightarrow \pi^*$, $\eta \rightarrow \sigma^*$, $\pi \rightarrow \pi^*$, $\sigma \rightarrow \pi^*$, $\sigma \rightarrow \sigma^*$.

Table 2 : Experimental λ_{max} observed

$\lambda \rightarrow$ Compound ↓	**λ_{max1}**
Fe $(ANQ)_2$	253 nm, 354 nm
Cu $(ANQ)_2$	272 nm, 350 nm

Observed λ_{max} are due to energy transitions of metal complex.

3.1.3 Mass spectroscopic study:-Mass spectrometry is often used to determine the mass to charge ratio of ions. This method is used in the pharmaceutical industry to determine the mass of molecules.Mass spectroscopy was used to determine the mass to charge ratio of the ligand and metal complex, i.e. m/z. This procedure converts the sample to the vapour phase and then bombards it with high energy electrons to knock out an electron. Thus, a positively charged ion is formed, referred to as a molecular ion, abbreviated M+. Additionally, M+1, M+2 ions are formed as a result of ionisation.

The produced ions are measured and registered under an electric and magnetic field to produce a mass spectrum. The molecular weights of the ligand and metal chelate were determined using a shimadzu quadrupole mass spectrometer; the findings are shown in Table 3.

Table 3: Molecular weights of ligand and metal complex

Mass spectroscopic data → Compound ↓	**Theoretical molecular weight**	**Experimental data**	
		m/z	**Major fragments**
ANQ	173.17	174	175
Fe $(ANQ)_2$	402.18	400	390, 382, 360, 350, 328, 344, 244, 187, 174
Cu $(ANQ)_2$	409.88	410	402, 400, 382, 345, 340,328, 244, 187, 175, 174

Above data is depicted that the experimental data correlates to Theoretical molecular weights.

3.1.4 Elemental analysis:-The CHN research was performed to determine the amounts of Carbon, Hydrogen, and Nitrogen. In CHN analysis, the sample is subjected to flash combustion and then oxidized to produce simple compounds that can be detected using a thermal conductivity detector or infrared spectroscopy. The Perkin Elmer instrument was used to analyze the ligand and metal complexes, and the results are summarized in Table 4. Additionally, the effects were equivalent to theoretical values.

Table 4: Result of Elemental analysis (CHN)

CHN analysis → Compound ↓	**Carbon (%)**		**Hydrogen (%)**		**Nitrogen (%)**	
	Theoretical	**Experimental**	**Theoretical**	**Experimental**	**Theoretical**	**Experimental**

ACQ	69.4	68.7	4.1	4.1	8.1	7.7
Fe $(ANQ)_2$	59.73	54.42	3.51	2.87	6.97	5.96
Cu $(ANQ)_2$	58.61	59.40	3.44	3.36	6.83	6.30

The elemental analysis revealed that the experimental values of ligand and metal complexes are in close harmony with their theoretical values.

3.1.5 Metal analysis by ICP MS: Inductively coupled plasma mass spectrometry (ICP-MS)

The percentage of metal contents was measured and compared to theoretical values using the inductive pair of MS (IPS) and summarised Table 5 results. Table 5 data.

Table 5: Result of Metal content by ICP MS

Metal content → **Compound ↓**	**% Metal content**	
	Theoretical	**Experimental**
Fe $(ANQ)_2$	13.89	13.33
Cu $(ANQ)_2$	15.50	12.82

Experimental results of metal contents are matches with the theoretical contents.

3.1.6 TGA and DSC study: Samples subjected to temperatures in thermogravimetric analysis (TGA) calculate properties such as phase transitions, adsorption, absorptions or desorption.

The TGA has been studied in all metal complexes (Thermo gravimetric analysis). Weight loss against temperature was analyzed for the metal complexes. The research has also been expanded for temperature heat transfer, i.e. DSC.

Fig-3 and 4 indicates the TGA for Fe $(ANQ)_2$ and Cu $(ANQ)_2$.

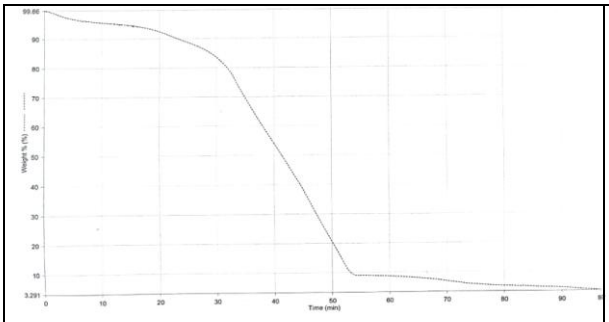


Fig-3: TGA for fe $(ANQ)_2$

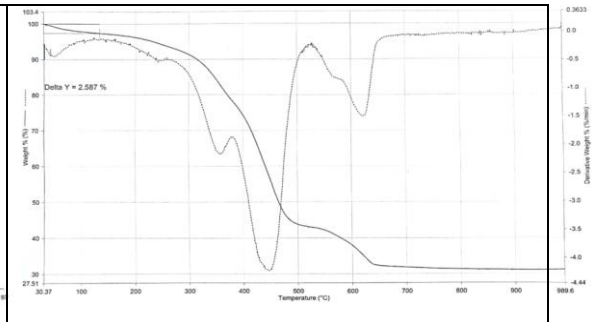


Fig-4: TGA for Cu $(ANQ)_2$

The findings of TGA showed that weight loss is caused by thermal decomposition. Cu (ANQ)2 exhibits weight loss at about 6500 C and Fe (ANQ)2 is decomposed at 530 C and continually shows weight loss.

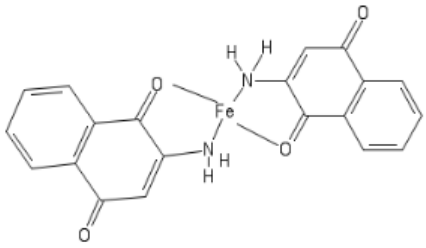
3.1.7 X-ray diffraction study:.The science of X-ray diffraction is used extensively for the identification of compounds' cryptic / amorphous character. It is often used to determine

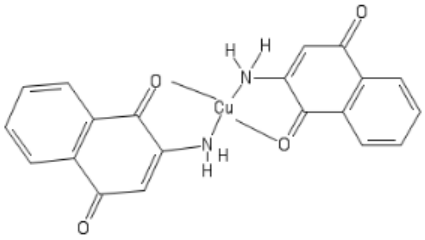
various types with substances with crystalline shape. This technique has extensive applications in the pharmaceutical and research sectors.

The X-ray diffraction metal complexes have been studied and both ligands and metal complexes have been identified as "Crystalline in nature."

Fig 5 show the structure of metal complexes.

Fig 5: Molecular structure for Metal complexes [Fe $(ANQ)_2$, Cu $(ANQ)_2$**]**





Fe $(ANQ)_2$ Cu $(ANQ)_2$

3.1.8 Microbiological study:-The ligand and metal chelates' microbiological activities were assessed and summarised with Cisplantin medicine and records. Agar Well Diffusion Method for antimicrobial action in test substance. Media: Bacterial Nutrient Agar and Fungal Chloramphenicol Yeast Glucose Agar. Cultivations screened for activity: Bacterial crops: NCIM 2063, Staphylococcus aureus NCIM 2079, Escherichia coli NCIM 2061, Proteus vulgaris NCIM 2813. Bacterial crops: NCIM 2063 Cultural Fungal: Candida albicans NCIM 3471 Aspergillus niger NCIM 501. Temperature incubation: 37°C, time of incubation: 24 hrs.

Procedure:-The Agar Well diffusion method was used to conduct antibacterial operation of the test material. A separate 24-hour old crop of several species was packed. The sterile chloramphenicol yeast glucose Agar have been prepared for bacterial colonies as well as for fungal crops. A cultivation of 0.2 mL was distributed to separate plates for each kind of microorganism with sterile swab. In the agar with 8.0 mm cork borer on one platform four or five wells were prepared. Dimethyl sulfoxide (DMSO) has been developed as a stock solution for a 10 mg/ml suspension of the test sample. Each well was fitted with a 50 µl inventory solution. Added the inventory approach. Normal use of cisplatin was 0.5 mg/ml (Std). The plates have been incubated 24 hours at 37°C. The inhibition area was measured in millimetres after incubation (mm). Table 6 presents antibacterial action in the mm inhibition zone against defined species.

Table 6: Antibacterial activity of metal complexes:

Antibacterial activity	**Name of bacteria (Results :Zone of inhibition in mm)**

→ **Compound** ↓	Bacillus subtilis	Staphylococcus aureus	Escherichia coli	Proteus vulgaris	Aspergillus niger	Candida albicans
Fe $(ANQ)_2$	29	20	0	28	15	0
Cu $(ANQ)_2$	24	18	0	0	14	0
Standard	0	0	15	0	0	0

The table above reveals that the complex of cobalt metal has good antibacterial activities relative to normal cisplatin.

IV. CONCLUSIONS:-A synthesis was made of 2-amino-1,4-naphthoquinone and its Cu & Fe complexes. The elementary research, the FTIR, the electronic spectra, mass spectroscopy, thermogravimetry as well as the radiation diffraction and metal content by ICPMS characterized certain ligands and metal complexes. Crystalline in nature, the metal chelates were discovered. Microbiological activities have been identified as well as normal cisplatin. Both structural effects are well in line with the theoretical values. Thermal study showed that the high temperature metal chelates are decomposed.

V. ACKNOWLEDGEMENT:

We special thank Dr. RAKESH KUMAR, JJT/2K9/SC/2364, JJTU JhunJhunu, Rajastan for his valuable support and permission to publish this work.

VI**.REFERENCES**

(1) Prescott B., Potential antimalarial agents. Derivatives of 2-chloro-1,4-naphthoquinone, J. Med. Chem.1969,12, 181-182

(2) E.M. Hodnett, C. Wongwiechintana, W.J. Dunn 3rd, P. Marrs, Substituted 1,4-naphthoquinones vs. theascitic sarcoma 180 of mice, J. Med. Chem. 1983, 26, 570 -574.

(3) Camara, C.A.; Silva, T.M.S.; Silva, T.G.; Martins, R.M.; Barbosa, T.P.; Pinto, A.C.; Vargas,
M.D.Molluscicidal activity of 2-hydroxy- [1,4]naphthoquinone and derivatives. An. Acad. Bras.
Cienc. 2008, 80, 329–334.

(4) Sharma U., Katoch Deepali, SoodSwati, Neeral Kumar, Bikram Singh, Thakur Archana and GulatiAravind, Synthesis and antifungal activity of 2-Amino -1,4- naphthoquinone using silica supportedperchloric acid(HClO4-SiO2) as a mild, recyclable and highly efficient heterogeneous catalyst, IndianJ. Chem., 2013, 52B, 1431-1440.

(5) A.D. Mandke, N.R. Gonewar, R.G. Sarawadekar and A.B. Pawar, International Journal of ChemTech Research, Vol.10 No.9, pp 291-298, 2017.

Production and Optimization of Pectinase Enzyme Using Citrus Fruits Waste.

Sonali Bhagat

shbhagat8@gmail.com

Research Scholar, Department of Microbiology, Shri JJT University, Jhunjhunu, Rajasthan, India – 333001

Abstract:-The rod shape, gram-positive *Bacillus sps* were isolated from the soil sample. The screening for pectinase-producing bacteria was performed by point inoculation on SCA medium with the highest clearance zone of 3 mm. For pectinase production 3 different citrus fruit waste such as orange peel, mosambi peel, and lemon peel were collected separately, sundry them, and grind them into a powder, which is used as substrate. From the result, it can be concluded that orange peel shows the highest production of pectinase enzyme i.e. 46.1 U/ml at temperature 30^{o}C and at pH 10.0 as compared to other citrus fruit waste. During optimization study, various factors such as temperature, pH, and incubation period affect the rate of enzyme production.

Keywords: - Pectinase, *Bacillus*, citrus fruit waste, optimization study.

[I]Introduction:-Enzymes as a biological catalyst which are highly capable to perform all reaction such as synthetic and derivative in living organisms. Also, they are acting as bioactive compounds to control the various chemical changes within living tissues [11].Pectin is a natural, biodegradable, renewable heteropolysaccharide, which has a several specified characteristics as fat emulsifier, gel - forming agent, glazing agent, stabilizer, and are texture thickener and they are utilized for industrial and commercial purposes.[3, 5, 15] Pectin found in the most plants, but maximum accumulation in the fruits such as oranges, lemons, grapefruits, and apple.[16] Pectin is available in varying amounts in a cell wall of fruits having high nutritional value.[8] and also acts as carriers for the nutrients and water. [14]A citrus is the world's most special and economically most predominant fruit crop which is grown all over the place of the world. Fruits like Oranges, lemons, limes, grapes fruits, and tangerines are belonged to the group of citrus. [6] The utilization of citrus fruit is for the production of citrus fruit powder, squashes, marmalade, and flavorants. Carbohydrates, protein and pectin are available in dried citrus peel. The pectinolytic enzymes production by microbial systems; pectin is behaved as the inducer. Bacteria, actinomycetes, yeast, and fungi are a different strain of microbes having the potential to the breakdown of pectin [2, 4]. Although, the bacterial strain is always select over the fungal strain as they are easy in fermentation and strain improvement which is performed simply in the bacterial strain to enhance the yield [12]. In the Genus Bacillus, species are gram-positive, spore-forming, rod-shape; motile bacteria which exist in various environmental conditions but mostly in the soil. [10]

[II]Material and methodology:-

2.1 Isolation of bacteria:-For a soil suspension, 5 gm of soil sample were taken in a sterilized conical flask containing 45 ml distilled water; sample was agitated and then serially diluted up to 10^{-5}. For the isolation of bacteria, take 0.1 ml soil samples from serial dilution were taken and inoculated on the sterile nutrient agar medium by spread plates method, and plate were incubated at 35^{o}C for 24–48 hrs. After the incubation period, morphological and biochemical characteristics of colonies were studied.

2.2 Preparation of substrate:-Peels of different citrus fruits such as orange peel, mosambi peel, and lemon peel were collected separately from the fruit market and brought to the laboratory. The peels of different citrus fruits were clean with water for removing dust, and then fruits peels were cut down into smaller pieces and followed by sundry for 1 to 2 weeks. After sun drying, dried fruits peels were grind into a fine powder and stored in a tightly closed container.

2.3 Screening of pectin producing bacteria:-The screening was performed by point inoculation of selected isolate on SCA (Starch casein agar) medium. Plates were incubated for 24 hrs and the clearance zone was detected by plate flooded with iodine solution, measured in mm.

2.4 Pectinase Production Medium:-For the preparation of crude enzyme which used in pectinase production, a primary liquid medium was used having a composition (g/l); different citrus fruit waste powder (orange, mosambi, lemon) 5 gm each, Sucrose - 10, KH_2PO_4-1, KNO_3 -0.6, $MgSO_4$ -0.25, $CaCl_2$ -0.1, $NaNO_3$ - 2, K_2HPO_3 - 0.5, KCl - 0.5 and yeast extract - 1 [13]. Take 100 ml of primary liquid medium amended with 5 % citrus fruit waste powder, 1 ml bacterial culture which grown overnight were inoculated and the flask was incubated at 37^{o}C for 3 days under agitation with 125 rpm. After incubation, centrifuged the culture medium and the clear liquid i.e. supernatant were used as a source of crude enzyme.

2.5 Quantitative assay of pectinase production:-For quantitative assay of pectinase production with different citrus fruit waste were studied by taking crude enzyme - 0.5 ml and pectin - 0.5 ml in 0.1 M acetate buffer, maintain pH at 6.0, and incubate at 40 ^{o} C for 10 minutes. After 10 minutes 1 ml DNS reagents were added and boiled at 90 ^{o}C for 5 minutes. To stop the reaction 1 ml Rochelle's salt was added. After cooling, the absorbance of the solution was measured on a spectrophotometer at 540 nm also; blank and reagent blanks were measured. [1] During the optimization study, the activity of the enzyme depends on the number of factors such as period of incubation, pH, and temperature so; the activity of the enzyme was carried out on the different pH values, Temperature, and on different incubation periods.

[III]Result and discussion:-For the isolation of microorganism from a soil sample, serial dilution and pour plate method was used. The Characteristics of the selected isolate are rod shape, gram-positive, motile, and having a yellow and white in colour. Hence, from the above characteristics, isolates were considered under the group bacillus as shown in Table No. 1.

Table no 1:- Characteristics of selected Isolates.

Isolates	Colour	Motility	Gram Staining	Species
1	Yellow	Motile	Gram + Rod Shape	*Bacillus Sps*
2	White	Motile	Gram + Rod Shape	*Bacillus Sps*
3	White	Motile	Gram + Rod Shape	*Bacillus Sps*
4	White	Motile	Gram + Rod Shape	*Bacillus Sps*
5	White	Motile	Gram + Rod Shape	*Bacillus Sps*

For the screening of pectinase-producing bacteria, isolate inoculated on an SCA medium plate. After the incubation period, plates were flooded with iodine solution, and measured highest clearance zone was found in isolate 2 i.e. 3 mm shown in Table No. 2.

Table no. 2:- Clearance Zone (in mm)

Isolates	Clearance zone(in mm)
1	2.5
2	3
3	1.2

During quantitative assay of pectinase production with different citrus fruit waste were studied by taking crude enzyme - 0.5 ml and pectin - 0.5 ml in 0.1 M acetate buffer, maintain pH at 6.0, and incubate at 40 ^{o} C for 10 minutes. After 10 minutes 1 ml DNS reagents were added and boiled at 90 ^{o}C for 5 minutes. To stop the reaction 1 ml Rochelle's salt was added. After cooling, the absorbance of the solution was measured on a spectrophotometer at 540 nm [1]. The different citrus fruit showed Pectinase production, but the highest enzyme activity was shown in an orange peel i.e. 46.1 U/ml at 30^{o}C as shown in Table No. 3

The enzyme activity rate depends on many factors such as period of incubation, pH, carbon source, and temperature [9]. During the present optimization study, the result showed that the activity of the enzyme depends on the number of factors such as period of incubation, pH, and temperature. While in an incubation period, there was a large effect on the activity of an enzyme. The orange peel which was used as substrate showed a maximum enzyme activity with 46.1 U/ml after 48 hrs as compared to other substrates i.e. mosambi peel 42 U/ml and lemon peel 40.8U/ml. If the incubation period was increased in time, it will affect and decreased the enzyme activity as shown in Figure No. 1.

Same as an incubation period, pH has also played an important role in enzyme activity; maximum enzyme activity was shown at pH 10.0 with 27.4 U/ml using orange peel. The pH 10.0 considered as optimum pH for the enzyme activity, if there were further increased or decreased in pH value, it directly reduced the activity of the enzyme as shown in Figure No. 2

Again very important factor while studying the enzyme activity i.e. Temperature. The maximum enzyme produced at an optimal temperature i.e. 30^{o}C with 46.1U/ml in an orange peel, mosambi peel, and lemon peel shows 42 U/ml and 40.8 U/ml. the result indicated that if the temperature increased above the optimal temperature i. e. 30^{o}C, the activity of enzyme decreased gradually as shown in Figure No. 3.

Also, the present work showed that orange peels are highly efficient to use as a substrate for pectinase enzyme production at optimum pH 10.0 and 30^{o}C temperature.

Table No 3:-Effect of Incubation Period on Enzyme Activity with Different Citrus Fruit Waste

Sr. No	**Different Citrus Fruit**	**Incubation Period (Hrs)**				
		0	**12**	**24**	**36**	**48**
1	Orange	0 U/ml	15.3 U/ml	27 U/ml	38 U/ml	46.1 U/ml
2	Mosambi	0 U/ml	11.6 U/ml	24 U/ml	34.8 U/ml	42 U/ml
3	lemon	0 U/ml	10.9 U/ml	22.1U/ml	32 U/ml	40.8 U/ml

Table No 4:-Effect of pH on Enzyme Activity with Different Citrus Fruit Waste

Sr. No	Different Citrus Fruit	pH					
		6	7	8	9	10	11
1	Orange	20.2 U/ml	21 U/ml	21.8 U/ml	22.8 U/ml	27.4 U/ml	24 U/ml
2	Mosambi	15.4 U/ml	16.2 U/ml	17.1 U/ml	18 U/ml	23.6U/ml	20 U/ml
3	lemon	15 U/ml	15.8 U/ml	16.4 U/ml	17 U/ml	22 U/ml	19.7 U/ml

Table No 5:-Effect of Temperature on Enzyme Activity with Different Citrus Fruit Waste

Sr. No	Different Citrus Fruit	Temperature(^{o}C)			
		25	30	40	50
1	Orange	21 U/ml	46.1 U/ml	26.4 U/ml	21.8 U/ml
2	Mosambi	19.8 U/ml	42 U/ml	24.3 U/ml	19 U/ml
3	lemon	19.1 U/ml	40.8 U/ml	23.6 U/ml	18.4 U/ml

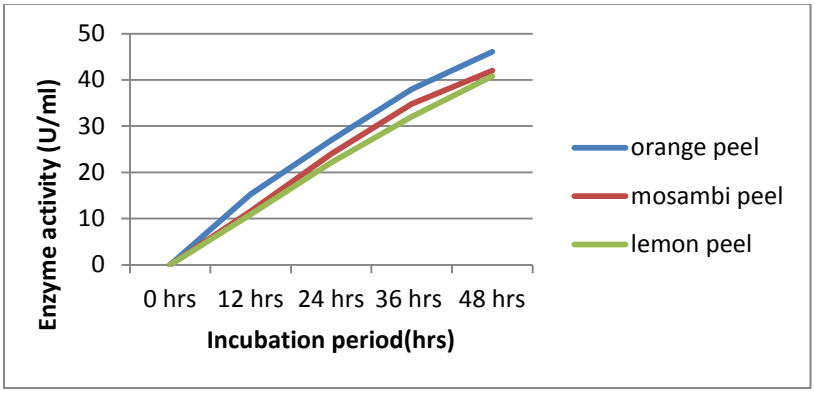


Figure No. 1:- Effect of Incubation Period on Enzyme Activity with Different Citrus Fruit Waste.

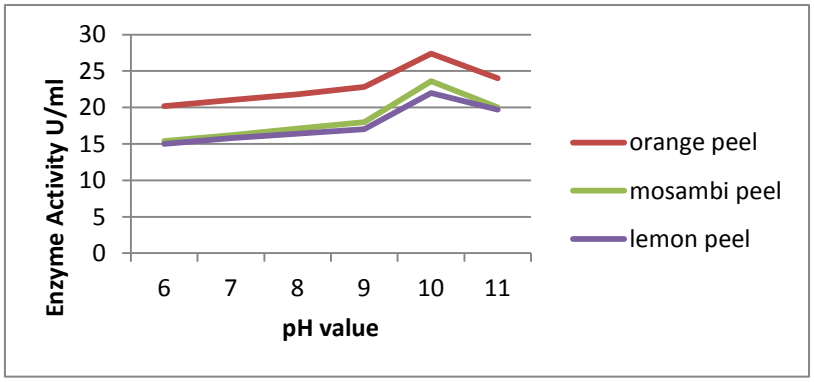


Figure No. 2:- Effect of pH on Enzyme Activity with Different Citrus Fruit Waste.

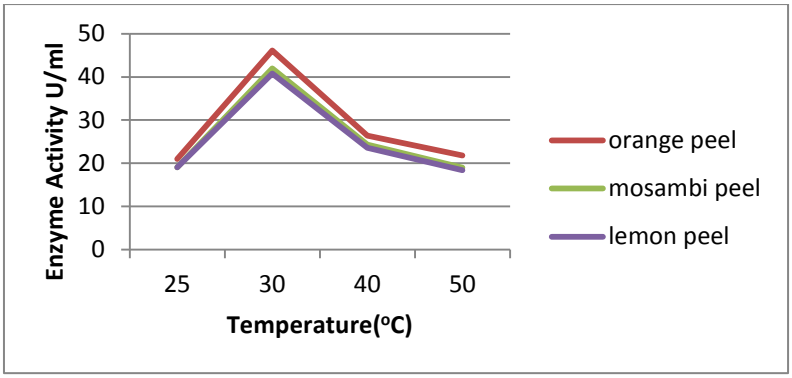


Figure No. 3:- Effect of Temperature on Enzyme Activity with Different Citrus Fruit Waste.

[IV]Conclusion:-The identification shows that a microorganism belongs to the group *Bacillus,* which is isolated from a soil sample. The pectinase enzyme is produced by *Bacillus sps.* at an optimum pH of 10.0 at a temperature of 30^{O}C with 48 hrs of incubation period using different citrus fruit wastes. From these results, it was concluded that highly efficient orange peel could be used as a substrate for maximum production of pectinase enzyme 46.1 U/ml as compare to the other citrus fruit waste i.e. mosambi and lemon fruit. During optimization study, the various factors affect the rate of enzyme production.

Reference:-

1. Ajobiewe H. F., Ajobiewe J. O., Mbagwu T. T., Ale T., Yakubu G. T., 2019, "Demonstration of Pectinase Enzyme Activity from Soil Isolated Bacillus spp. in Karu Nasarawa State of Nigeria Using Orange Peels Substrate", Journal of Microbiology Research 2019, vol 9(1); pp 6-11.

2. Akhter Nazneen , Morshed M. Alam , Uddin Azim, Begum Feroza, Sultan Tipu and Azad Abul Kalam., 2011, "Production of pectinase by Aspergillus niger cultured in solid state media" *Int. J. Biosci.*, vol 1(1); pp 33-42.

3. Bustamante J. et al., 2016, "Microwave assisted hydro-distillation of essential oils from wet citrus peel waste," *Journal of Cleaner Production*, vol 137; pp 598- 605.

4. Chaudhri Apoorvi and SuneethaVuppu., 2012,"Microbially derived pectinases : A Review," *J. Pharm. Biol. Sci*., vol 2(2); pp 1- 05

5. Chin N. L., Liew S. Q., Yusof Y. A., 2014, "Extraction and Characterization of Pectin from Passion Fruit Peels," *Agriculture and Agricultural Science Procedia*, vol 2; pp. 231 – 236.

6. Dhillon, S.S., Gill, R.K., Gill, S.S. and Singh, M., 2004, "Studies on the utilization of citrus peel for pectinase production using fungus Aspergillus niger." *International Journal of Environmental*, vol 61; pp 199-210.

7. Gill Rajwant Kaur, Gill Sikander Singh, Singh Malkiat., 2004, "Studies on the utilization of citrus peel for pectinase production using fungus Aspergillus niger." *International Journal of Environmental Studies*. Vol 61; pp 199-210, DOI: 10.1080/0020723032000143346.

8. Knox JP, Linstead PJ, King J, Cooper C, Roberts K., 1990, "Pectin esterification is spatially regulated both within cell walls and between developing tissues of root apices." *Planta*, vol 181; pp 512-21.

Effectiveness of the proposed awareness teaching curriculum for behavioural support in caregivers with chronic obstructive pulmonary disease

P.Sivamaran
Mailing Address: sivamaran1976@gmail.com
E-Mail: sivamaran1976@gmail.com
Phd scholar
Reg no: 20119012
Under the guidance: Dr.K. Ramu, No : JJT/2K9/SC/2449

Abstract

Background of the study:-COPD is characterized by prolonged blocking and restriction of airflow and interferes with breathing and decreases energy and stamina, causing gradient deterioration and fluctuating symptoms that both patients and their families may experience. The person with COPD also has many complications (physical, psychological and social) and takes more than a drug directed at symptom relief. Many patients and their families are left alone to face the physical and emotional challenges that this irreversible and progressing disorder can cause. Pulmonary therapy in the treatment of COPD patients has evolved over the last 30 years.
Objectives:- To assess the efficacy of the proposed pulmonary rehabilitation awareness programme for pulmonary treatment providers of patients with chronic obstructive disease.
Methods: An evaluative testing methodology was used for this analysis. The Independent Variable of the research is the proposed pathway intervention scheme, and the experience of caregivers about behavioural intervention including pulmonary rehabilitation. Using the "structured interview timetable" the data were gathered on the first day of the course of the programme, and the scheduled teaching programme was administered, with the instrument being used on the seventh day after the evaluation among 60 subjects.

Results:- the present analysis shows that the mean score for administering a planning education programme is 19.63 with an a mean percentage of 59.48 with a standard deviation of 2.3 72. The average score of 78.33 is 25.85; after management of the proposed training curriculum, this is a standard deviation of 1.593.The amount "t" 16,740 is higher than the value of the table at the meaning level 0,01. The "t" meaning is then considered important. This suggests that the extent of experience of caregivers is increasing. This encourages the successful enhancement of awareness of caregivers in the proposed course of teaching on behavioural intervention in lung recovery. Findings found that the participants' average post-test intelligence score of 25.85% was above the average pre-test score of 19.63%.

Interpretation and conclusion: The study aimed to evaluate the efficacy of the planned curriculum for teaching information on behavioural therapy among caregivers of chronic obstructive pulmonary disease (COPD) clients and found that after exposure to the planned educational programme, the level of knowledge of caregivers is increased. This promotes the effectiveness of the proposed instruction on behavioural modification in lung therapy for caregivers in raising the level of awareness in caregivers.

Keywords:-chronic obstructive pulmonary disease,pulmonary rehabilitation,awareness programme

1.Introduction:-A poorly reversible lung disease that is a significant cause of morbidity and mortality globally, the chronic obstructive pulmonary disease (COPD). It is the fourth largest

cause of death after coronary failure, cerebrovascular disease and cancer in the United States. 1.2 By 2020, it will be the world's third largest cause of death. Unlike with other major chronic diseases in the US, the prevalence and death rate of COPD began to climb 3; between 1970 and 2002, 4 death rates doubled for the first time in 2000.Women's deaths exceeded those of men. 2.5 There is officially a diagnosis of COPD in 12 million patients in the US, but at the very least comparable numbers have been assumed to be undiagnosed with compromised lung function. 6 Because most COPD cases are due to smoke, this is mostly a condition that can be prevented.Most COPD patients are of medium age or old age. In 2000, COPD-related terms assigned 16 million bureau visits7, with the caseload anticipated as the population aged. No COPD treatment is available. True breakthroughs in medicine have become elusive, in particular disease modifiers. Smoking abstinence is the only technique known for reducing the prevalence of the disease. The COPD expenses for health insurance come to 18 billion dollars and 14 billion dollars, respectively in direct and indirect costs.2.8 Hospitalizations often arising out of aggressive exacerbations are around 40 percent directly responsible for costs; 20 percent for prescribed medicines. 7 In 2000, COPD visits to emergency services amounted to 1,5 million. 2 Acute exacerbation inpatient mortality is estimated to be 10% by some estimates,9 and almost 60% at 1 year for patients over 65.In spite of this alarming statistic, COPD also mostly does not consider itself as a matter of public health. The Global Initiative for Chronic Obstructive Lung Disease (GOLD) was initiated as a partnership between the National Heart, Lung and Blood Institute, National health institutes and the World Health Organization (GHO), in 1997, to raise awareness about COPD causes and issue recommendations for management. In order to reduce the burdens of PPODs, which include costs to the economic and health system as well as progressive disability and loss of life quality for patients and families, more multidisciplinary interventions, including government, public sector and public health agents are needed. COPD consists of a diverse group of clinical syndromes which share an expiratory airflow restriction. 12 In terms of chronic bronchitis and emphysema, the American Thoraces Society describes COPD. 13 Chronic cough and sputum development are characterized by clinical symptoms; emphysema refers to chronic dyspnea caused by increased airspace and lung tissue loss. COPD is described in the GOLD Initiative as "a disease state that is not completely reversible due to the restriction of airflow. The restriction of airflow is generally progressive and is correlated with the lung's defective inflammatory reaction to noxious particles or gases." 14 Asthma is also distinguished by disruption of circulation and inflammation, but it also requires hyperactivity of trigger airways and is thus differentiated from COPD by reversibility of the asthma's functional deficits.

The major risk factor for COPD is cigarette smoking. But about 1 out of 6 COPD Americans never smoked. 15 Reactions to toxic fumes, dusts and other pulmonary irritants are 10 percent to 20 percent in occupational and environmental situations. 15 People with a history of serious childhood lung infections are more likely to experience COPD. 15 The deficiency of alpha-1 antitrypsin is an uncommon cause of COPD but should be expected in individuals who experience emphysema before the age of 40 or who lack common risk factors. Patients with COPD need to know the co-morbidities that can impair wellbeing and complicated treatment of patients. COPD is linked not only to other respiratory conditions (e.g. pneumonia), but also to organ-system illnesses, such as the musculoskeletal system and the cardiovascular system (e.g. Osteoporosis) (eg, angina). The relative risk of PDPO pneumonia (16.00), osteoporosis (3.14), pulmonary (2.24), Myocardial (1.75), angina (1.67), fractures (1.58), and glaucoma is presented in a sample of co-morbidities in COPD (1.29). 22 Depression has also occurred in the disease. None of the latest COPD drugs have been shown to modify the gradual worsening of the disease's lung function. Treatment aims then at alleviating symptoms, preventing, minimizing, and improving workout intensity and reducing

mortality. 27,33 27. The key pillar of COPD treatment is regular use, alone or in combination, of inhaled bronchodilators to avoid and alleviate symptoms.Where necessary to immediately relieve the symptoms, particularly in mild COPD, short-acting inhaled bronchodilators are often used, but they are more efficient and provide more convenience. 27,33 27. The use with two bronchodilators of different length and action mechanisms will lead to more bronchodilation than one single agent27 and to a reduction in the risk for adverse effects by the increase in the single agent dosage. 33 Beta2 agonists, anticholinergics, and methylxanthines are the most often prescribed bronchodilators. The choice of the right agent depends primarily on the reaction of the patient.In addition to bronchodilators it is advised to use inhaled glucocorticosteroids in patients with frequent exacerbations for the treatment of moderate to extremely severe COPD. 27 The combination of an inhaled (salmeterol) beta2-agonist and an inhaled glucocorticosteroid (fluticasone propionate) has shown a considerably more effective way to reduce moderate or severe excisions and improve your health over the three-year study in the Towards a Revolution in COPD Health (TORCH). 36 However, in comparison with placebo, the hybrid scheme did not substantially reduce the chance of mortality.

2. Objectives of the study

1] Evaluating the information of pulmonary rehabilitation behaviour among caregivers of chronic pulmonary obstructive patients.

2] To assess the effects of a proposed pulmonary intervention awareness network in the treatment of chronic obstructive chronic pulmonary disease clients.

3. Hypothesis

H_1: There will be significant association between pre-test and post-test knowledge scores of care giversregarding behavioural intervention involved in pulmonary rehabilitation.

4. Materials and Methods

This research used an evaluative approach. The thesis has been conducted in selected Bangalore hospitals. The nature of the study was pre-experimental and one pre-test party. There were 60 caregivers in the study. By deliberate sampling the sample was chosen.The pilot and key thesis were received formal approval from the authorities. With the aid of the Karl Pearson Correlation Coefficient the tool's reliability coefficient was found. The reliability of the formal information survey was 0.86 which showed that the method was accurate. A formal interview was carried out on 1 day pre-test and a scheduled teaching session was followed up with a structured interview schedule to determine the skill of caregivers around behavioural management including pulmonary recovery. On 7 day the same schedule was administrated by researchers. Description and inferential statistics were used to interpret the data.

5. Results

Section A: Demographic Variables of care givers

During the age distribution, 41.7% (n=25) of the subjects 18-25 years old, 35% (n=21 years) 26-30 years old, and 23% (n=14 years) of age 21-35 years old revealed. With regard to the religious plurality of the subjects 63,3% (n=38), of them, 13,3% (n=8) were Christians and remaining 23,3% (n=14), were Muslims. The majority is of Hindu religious faith. Regarding school, the bulk of the graduates are 41,7% (n=25), 21,7% (n=13), of whom 11,7% (n=7) have completed PUC and13,2% (n=8) have finished the graduation programme and 11,7%(n=7) of whom have no formal education. The other 11,7% (n=7) have no formal education.Sample occupancy shows a plurality of housewife (n=23), 18.3 %(n=11) self-employed, 10% (n=5) government workers, of which 20% (n=12) remained private employees. The majority of the subjects were housewife. The majority of families (n=52) live in the nuclear family, with 13,3% (n=8) of those left living in the family. The majority of

families were 56,7 percent. With respect to family income, a majority of 46.7% (n=28) of the subjects received income above Rs.20001, 28.3% (n=17), Rs.10001-15000 income, Rs.5002-2000 income for 16.7% (n=10) of the subject, Rs.5001-20000 income for the remaining 8.3% (n=5).Most of them Of the subjects, 60% (n=36) take mixed diets, 35% (n=21) are vegetarians, and 5% (n=3) live above five years. Much of the respondents married 70 percent (n = 42) and remaining 30% (n = 18) were married. With respect to disease period 30% (n=18) were less than one year, 40% (n=24) of those were 1 to 5 yea and 30% of the others (n=18) were over 5 years. The majority of subjects are provided with radio/tv/internet information by 50 percent (n=30), 10 percent (n=6) are provided with newspaper/books/journals information and 20 percent (n=12) with family members/relative members/friends and health staff/health journals information. Evaluating awareness in pre-test results of behavioural modification used with pulmonary recovery by caregivers. The average COPD value is 4.13 in general with the average percentage of 68.83 and a default deviation of 0.873. The mean COPD score is 3,97 with a mean 56,71 and a standard deviation of 1,025, in the case of the COPD factors. The mean ranking is 7.63 with a mean percentage of 58.69 in the recovery component and a normal absence of 1.551. The mean score is 3.90, with average proportion of 55.71 and standard deviation of 1.349 in the final factor of the behavioural intervention. The total average score was 19.63 and the average was 59.48, and the standard deviation from the curriculum was 2.372.

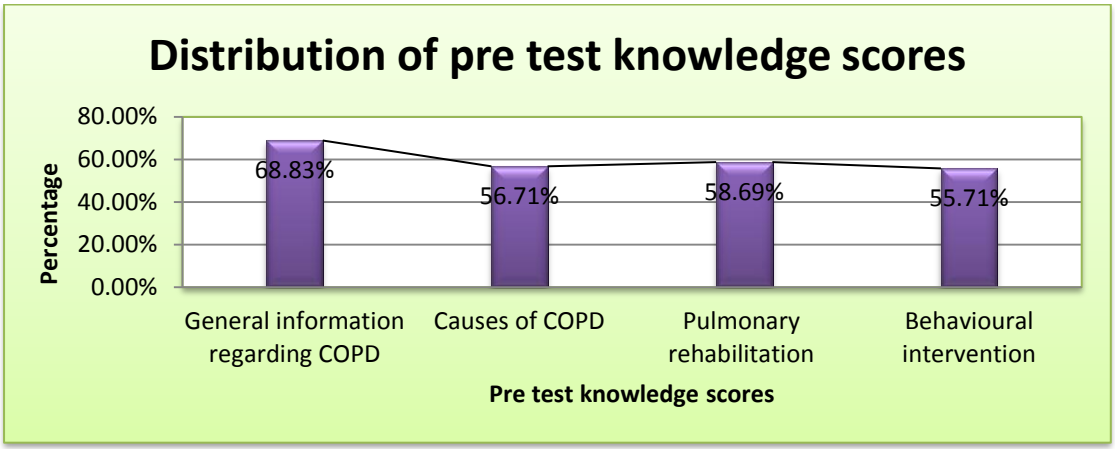


Fig 1: Bar diagram showing the mean percentage of pre test knowledge scores of care givers

Assessment of expertise in posttest results for behavioural intervention in pulmonary recovery by caregivers. The average COPD rating is 4.72, with a mean percentage of 78.66 and a standard deviation of 0.49 in the general knowledge. In the COPD case aspect, the average score is 5.60, with an average percentage of 80 and a default 1.045.With regard to regeneration of the pulmonary system, the average score is 9,9, and the average score is 76,15. The mean result for the final part of the behavioural modification is 5.63, which is 80.42 and 1.593. Average scoring after administration of a proposed teaching curriculum is 25.85 with an a mean percentage of 78.33 with a standard deviation of 1593.

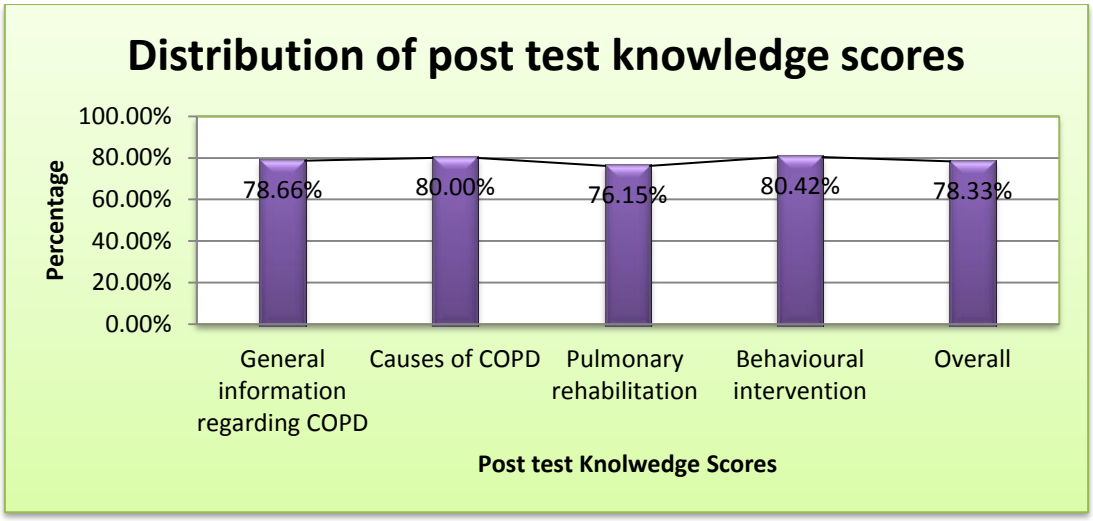


Fig 2: Bar diagram showing the mean percentage distribution of post test knowledge scores of care givers.

The overall percentage score for behavioural support used with lung therapy is comparable. The caregivers have enhanced their expertise in all respects. In the behavioural modification, the COPD Causes at 24.71% and 23.71% respectively are the greatest increase in information. In pulmonary rehabilitation, the minimum benefit is General COPD knowledge, which is respectively 9.83 and 17.46%.The average awareness benefit is 18.85%, showing the success of the curriculum of expected instruction. Overall experience on behavioural management before and during the proposed pulmonary therapy programme. The mean preliminary rating was 19.63 and the average after test was 30.82. For a standard deviation of 0,779, the mean difference is 14,238. Test value t=16,740 combined with the student and is important.

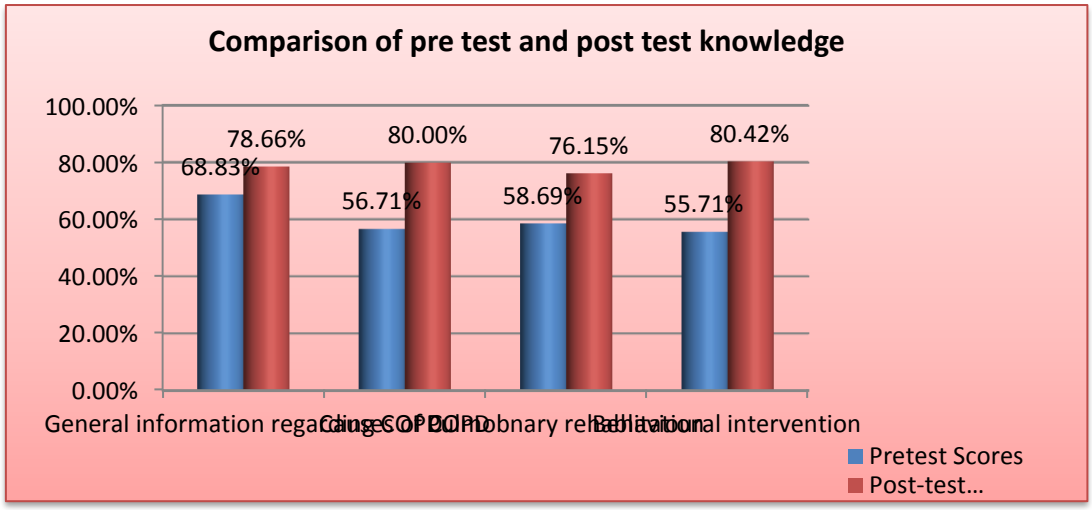


Fig 3: Cylindrical diagram showing the comparison of pre and post test knowledge scores of Antenatal mothers in each aspect

6. Discussion

The findings are discussed as follows

Most donors of treatment In subjects 18-25 years of age, 41.7 percent (n=25) of those 63.3 percent (n=38) are Hindu. With respect to school, the majority of subjects who passed matriculation are 41.7percent (n=25), and the majority of subjects 38.3percent (n=23) were housewives. The majority of subjects had income in respect of family income that was 46.7 percent (n=28) over Rs. 20001. Much of them take a combined diet of 60 percent (n=36).

Any of the subjects married 70 percent (n=42). 30 percent (n=18) of the participants were less than one year in comparison to their time of sickness.

The present study shows that the pre-test majority had a modest awareness of 85% (n=51) of the participants, of which 15% (n=9) were insufficient. The average score is 19.63 with an average rate of 59.48 before administration of a proposed teaching programme with a normal 2.372 variance. The average score for the programme is 25,85 and the average score is 77,33 with a standard deviation of 1,593.

Comparison of overall experience about the behavioural activity involved before and during the proposed pulmonary recovery programme. The mean preliminary rating was 19.63 and the average after test was 30.82. For a standard deviation of 0.779, the mean difference is 14,238. Test value t=16.740 combined with the student and is important. The value "t" is then considered to be meaningful. This suggests that the amount of experience of caregivers is reduced. This encourages the successful increase of the awareness level of caregivers in the proposed training curriculum on behavioural intervention in pulmonary rehabilitation.

7. NURSING IMPLICATIONS

Nursing Practice: As a nurse, chronic obstructive pulmonary therapy assisted a patient both in the hospital setup and in the easy to use environment. It helps to reduce dyspnea and balance in order to better deal with everyday work. Routine for chronically obstructive pulmonary disease patients is essential for pulmonary relationships.

Nursing Education:-As a nursing instructor, it helps students develop lung rehabilitation education for police. Modify the curriculum on wellbeing promotive practices including pulmonary rehabilitation programme. It allows the pupil to understand the various teaching techniques. Prepare students to use teaching materials to meet neighborhood needs.

Nursing administration :-The study will play an early diagnosis and enhance the pulmonary function of a chronic obstructive lung disease patient as a nursing administrator. Aids in the preparation of a lung therapy facility educational programme focused on respiratory fitness. Promote fruitful team work by members of the respiratory health team in the planning and execution of treatment.

Nursing research:-It contributes to groundbreaking studies in the area of research. The use of pulmonary treatment information discovery and distribution. This thesis will encourage researchers to carry out large-scale related studies.

8. Limitations:-The study in particular geographical areas was carried out imposes generalization restrictions

1] Only to the population which met the criterion in the analysis could the results be generalized.

2] The report was confined to an attitude appraisal

3] Only 60 have been sampled

4] Due to time limitations, long-term follow-up could not be done.

9. Recommendations:-The following proposals were made for the further research on the basis of the results of the present study.

1] On a big sample equivalent analysis to generalize the results may be repeated.

2] In a different context, a related analysis may be performed.

10. Reference

1] John F. Devine, DO, FACP Chronic Obstructive Pulmonary Disease: An Overview. American health & drug benefits. Volum. 1 NO. 7 September 2008

2] Murray CJ, Lopez AD. Alternative projection of mortality and disability by cause 1990-2020: Global Burden of Disease Study. Lancet. 1997;349:1498-1504.

3] National Heart, Lung, and Blood Institute. Data Fact Sheet: Chronic Obstructive Pulmonary Disease. National Institutes of Health Publication 03-5229. Bethesda, MD: US .

AN EMPHERICAL APPORACH ON STUDY AND ENHACEMENT GROUNDWATER QUALITY

Pinki Rani
Reg no.-27518007
Sub-Chemistry
Shri J.J.T.University

Abstract:-Water quality evaluation is a valuable method for sustainable development since it offers crucial knowledge for water conservation. When determining irrigation water supply, awareness of both quantity and quality is required; however, the quality requirement is often overlooked, especially in developing countries. Quality can be described as how well a water source meets the needs of the intended consumer, and it must be evaluated according to its suitability for the intended usage. Eighty-one groundwater samples were obtained and evaluated for various hydrochemical parameters such as EC, pH, Na, K, Ca, Mg, SO, Cl, HCO, CO, NO, and F. Irrigation indices such as Sodium Adsorption Ratio (SAR), Sodium Percentage (Na percent), Residual sodium Carbonate (RSC), Permeability Index (PI), Kelly's Ratio (KR), Magnesium Hazard (MH),

Key Words:- Groundwater, Kelly's ratio, Permeability index.

1.0 Introduction:-Water is a natural solvent, capable of dissolving a wide range of organic and inorganic compounds. It can be located both above and below the earth's atmosphere. Groundwater is the water that can be contained underground in gaps and gaps in clay, sand, and rock. The abundance and suitability of water supplies around the world have been classified into different categories depending on their availability and suitability for various purposes. The extraction and pollution of global surface water supplies with different chemical and biological sources is putting tremendous strain on freshwater resources (Singh et al., 2006). Groundwater is currently India's most significant source of irrigation, so it warrants special consideration in terms of quantitative and qualitative sustainability. For arid and semi-arid regions of the world in general, and developing countries like India in particular, determining the quality of groundwater for irrigation is critical. Water of high quality is needed to feed the world's rapidly growing population, to increase irrigated agriculture, and to support the mushroom development of industrial settings (Toumi et al., 2015). The suitability of any supply of water for irrigation is determined by its consistency, elemental composition, form of soil, plant salt tolerance characteristics, temperature, and drainage characteristics of the soil. In a similar vein, the suitability of groundwater for irrigation is determined by its consistency, which varies both spatially and temporally. The

spatial fluctuations are attributable to the normal hydrogeological environment, while the temporal variability in a specific region is often attributed to anthropogenic causes.

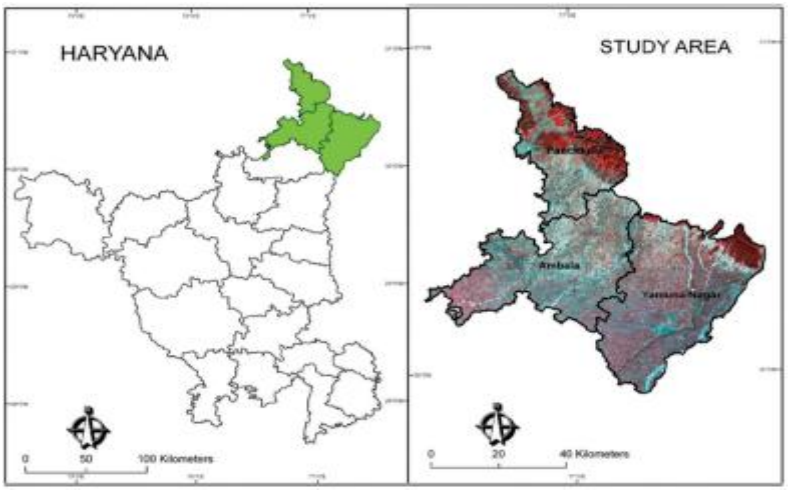


Figure 1 Location map of study area

2.0 Geology and groundwater pollution:-There are a host of causes that are specifically and indirectly responsible for groundwater pollution in India, including seepage and penetration of contaminants and oils into the soil into the groundwater reservoir under the Earth's crust. Despite the fact that a region's groundwater is contaminated by a variety of causes and in a variety of forms, metropolitan environments, manufacturing activities, and agricultural practices all play a significant role. Water supplies and public wellbeing are also severely harmed by industrial waste. Untreated effluents, heavy metals, acids, alkaline compounds, and gases released by manufacturing operations wreak havoc on the environment in general and on natural resources in particular. It seriously pollutes the river, the land under it, and the climate, as well as causing harm to the landscape, buildings, and facilities, as well as endangering human health and life. India's economy is dependent on agriculture, and it uses more than 80% of its water supply for irrigation. While this depletes freshwater supplies on the one side, it also transports fertilizers and chemicals to the groundwater repository on the other. Eutrophication and groundwater depletion result from the overuse of fertilizers and manures.When soils have a poor adsorptive potential, the issue becomes much worse. Since certain soils have a poorer propensity to attach pesticides, they cannot block the pesticides from drainage or leaching into groundwater. Pesticides and fertilizer-laden water, on the other side, can quickly percolate to the groundwater into extremely permeable soils. Heavy metal is a poisonous genre of music. Heavy metals are produced in industrial processes such as the production of chemicals, batteries, alloys, electroplated metal bits, cloth dyes, steel, and other similar products. Base metals, transition metals, certain metalloids, lanthanides, and actinides

are all examples of heavy metals. Heavy metals account for two-thirds of the 35 metals that are harmful to humans as a result of occupational or residential exposure. Despite the fact that only little to small levels of certain components are found in our atmosphere and are expected to be a part of a healthy diet, their existence outside of allowable limits is responsible for acute or chronic toxicity. Toxicity caused by heavy metals in the presence or ingestion may trigger issues with behavioral and central nervous system, as well as other significant health risks. The agricultural enterprises and their production in any given location are determined by the temporal, geographical, and vertical fluctuations in both quality and quantity of water over the course of a year. As a result, determining secondary salinization of soils necessitates an assessment of the chemical content and consistency of irrigation water. The severity of the degradation is determined by management methods, land condition, plant type, and the amount of salts in irrigation water, as well as the water table. Sewage and agricultural waste that flows through unlined drains eventually add to the groundwater table. Since the amount of such pollution is increasing, it is polluting and contaminating the groundwater. The geology of the atmosphere is underlying the examination of subsurface water in every area. In subsurface hydrology, geology is the most important constraining factor. The geology of the atmosphere controls the character and areas of the coral, aquifer complex yield and retention, and aqua chemistry.

3.0 Literature review:

Verma, D.K. *et.al.* (2018). Water quality that is suitable for consumption and agriculture is critical for the survival of life and the ecosystem's long-term sustainability. The aim of this analysis is to use geospatial and water quality index (WQI) techniques to assess groundwater quality for drinking and irrigation purposes in the central Gangetic plain region (Bhagalpur district, Bihar, India). Between 2015 and 2016, groundwater samples were taken at random from 45 locations during the pre-monsoon (April-May) and post-monsoon (October-November) seasons. Using normal techniques, the pH, Electrical Conductivity (EC), Total hardness, Calcium (Ca++), Magnesium (Mg++), Sodium (Na+), Potassium (K+), Chloride (Cl-), Carbonate (CO3- -), Bicarbonate (HCO3-), and Fluoride (F-) were all measured. The sodium adsorption ratio (SAR) and residual sodium carbonate (RSC) were calculated to determine if the soil was suitable for irrigation. To determine the degree of association between groundwater variables, Pearson's correlation coefficient was used. In Arc-GIS software, the spatial variance maps of these groundwater consistency parameters were generated using the Inverse distance weightage (IDW) interpolation technique. The pH value of 4.4 percent of the groundwater samples was found to be higher than the WHO (2011)/BIS

appropriate limit (2012). During the pre-monsoon season, Cl levels vary from 3.24 to 28.74 mg/l-1, whereas during the post-monsoon season, Cl levels range from 2.50 to 64.98 mg/l-1. In both the pre- and post-monsoon seasons, magnesium levels exceed WHO/BIS guidelines (50 mg/l-1). In both the pre-monsoon and post-monsoon seasons, the concentration of F- is higher. In the study region, the water quality index (WQI) shows that 4.44 percent of pre-monsoon samples are suitable for consumption, whereas the value rises to 31.11 percent during the post-monsoon. For both seasons, the higher RSC value was seen in the Naugachhia block and the eastern portion of the Goradih block. For both the pre-monsoon and post-monsoon seasons, the higher concentration of sodicity issue can be seen in the entire Goradih district, north-east of Gopalpur block, and south-west of Naugachhia block. These findings will help planners, decision-makers, local residents, and the government in taking the appropriate actions.

Arora, B. *et.al.* (2019). In both urban and rural areas of India, groundwater is the most common source of domestic water supply. This is mostly due to the scarcity of fresh water in certain areas, as well as the fact that groundwater is more pure and cleaner than surface water. A total of fifteen ground water samples were obtained from two blocks in Haryana's Kaithal district. The physicochemical properties of these water samples were investigated. pH, hardness, chloride, alkalinity, TDS, and other laboratory experiments were carried out on the samples. The parameters that were studied were contrasted to the normal desirable limits. The TDS and TH values of water were used to categorize it. Water tests from the Pundri block were found to be non-saline in 27% of the cases, but mildly saline in 73% of the cases. Rajaund block samples were found to be mildly saline in around 87 percent of cases. TDS levels were found to be higher than appropriate WHO norms in both samples from both blocks. Pundri block water samples were both found to be very hard, while Rajaund block water samples were found to be hard in 27 percent of cases and very hard in 73 percent of cases. It is essential to pay careful attention to the elimination of hardness. Five of the fifteen samples from the Rajaund block have fluoride levels that exceed the allowable maximum. Defluoridation methods must be used for these materials. The findings highlight the importance of raising water quality consciousness among consumers, protecting groundwater aquifers, and implementing proper management strategies to ensure the resource's long-term viability. To address the issue of worsening groundwater quality, a prudent management plan must also be implemented.

Zhang, Q. *et.al.* (2019). The aim of the analysis was to determine the quality of groundwater in the Guanzhong Basin of China, as well as the danger it poses to local residents. A total of

191 groundwater samples were obtained in order to examine various physico-chemical characteristics. Durov graphs, bivariate diagrams, and chloro-alkaline indices were used to examine physiochemical parameters, hydrochemical facies, and origins of main ions. The suitability of freshwater for consumption, the distribution of nitrates, and the human health danger (HHR) for various age groups were all investigated. The findings revealed that the relative abundance of cations in groundwater samples was K++Na+ > Ca2+ > Mg2+, whereas the relative abundance of anions was HCO3 > SO42 > Cl > NO3. HCO3-Na and HCO3-Ca were included in the majority of groundwater samples, which had collected mostly due to rock weathering and ion exchange. The Guanzhong Basin's groundwater was both decent to medium enough, and the groundwater south of the Wei River was better than that north of the Wei River. Because of a higher nitrate content, people in the 6–12 month age group were more vulnerable to health risks, according to the HHR evaluation data. The research would help with groundwater conservation and security in the field.

Sihi, D. *et.al.* (2020). In agriculturally intensive areas like the Indo-Gangetic Plain (IGP) in south-east Asia, water pollution is a common occurrence. During the rainy season (July to October) in 2011 and 2016, we investigated the effect of organic and traditional basmati rice farming on water quality in Kaithal, Haryana, India. The research area included seven ecological and seven traditional areas that have been organically farmed for more than two decades. For all measurements taken from agricultural and traditional fields over the long-term (15 and 20 years), water quality criteria used for drinking (nitrate, NO3; total dissolved solids (TDS); electrical conductivity (EC) pH) and irrigation (sodium adsorption ratio (SAR) and residual sodium carbonate (RSC)) purposes is below allowable limits. Importantly, the magnitude of water NO3 pollution in traditional fields was roughly double that in organic fields, which is concerning and needs potential consideration for agricultural activities in the IGP in Southeast Asia.

4.0 Consequences of Groundwater Contamination:-Contamination of groundwater has the potential to damage human health, the climate, and socioeconomic growth. Many tests have shown that elevated amounts of fluoride, nitrate, metals, and chronic chemical toxins pose a health danger to humans (Wu et al. 2020). This is particularly important for babies and children because they are more vulnerable to the consequences of these toxins than adults (He et al. 2020b; Wu and Sun 2016; Karunanidhi et al. 2020; Mthembu et al. 2020; Ji et al. 2020; Subba Rao et al. 2020; Zhou et al. 2020). Excessive nitrate amounts in the drinking water used to produce baby formulas, for example, may induce "blue baby syndrome," also known as child methemoglobinemia. Groundwater pollution may also have an impact on human

health by its impacts on the food processing system. Irrigation of heavy metal-contaminated groundwater and wastewater containing permanent toxins may cause toxic elements to accumulate in cereals and vegetables, posing a health risk to humans (Jenifer and Jha 2018; Yuan et al. 2019; Njuguna et al. 2019).Groundwater runoff may also have a detrimental impact on soil and forest health. Contaminated groundwater can contaminate the soil and degrade the nature of the surface. High groundwater salinity, for example, is one of the main factors affecting soil salinization in many agricultural areas in arid regions (Wu et al. 2014). Soluble salts and other toxins, such as radioactive metals, can build up in the root region, inhibiting plant development. Surface water-groundwater connections can also transport toxins, resulting in degradation of surface water quality (Teng et al. 2018).A compromise between the pace of natural resource renewal and human demand is needed for long-term economic growth (Li et al. 2017b). Freshwater is, without a doubt, the most important natural resource. Chronic groundwater pollution, on the other hand, could reduce the availability of freshwater, disrupting the supply-demand balance and resulting in socioeconomic crises and even wars. Contaminated water scarcity can become a factor in future tensions between residents (Schillinger et al. 2020), potentially halting a country's socioeconomic growth. Groundwater pollution is a societal as well as an environmental problem that necessitates cooperation between natural and social sciences.

4.1 The Way Ahead:-Groundwater pollution is now a global problem, and resolving it would necessitate strong cooperation between academics at universities and government departments, as well as industry and decision-makers at all levels of government. International cooperation is needed to address the issue of groundwater pollution. This is especially valid in developed countries with limited financial capital and access to advanced technology. The following areas of study and teaching should be given special attention.

4.2 Anthropogenic sources:-When mining and wild producing large volumes of copper, ores in open fires, minor quantities of heavy metals are released. Metals were extracted from natural sources and treated in factories, where heavy metals leaked into the environment, as a result of the industrial revolution. Similarly, residues of heavy metals are released into the atmosphere as a result of waste releases, including residential, industrial, and car drains. The table below shows the various human actions that result in heavy metals being released into the water and atmosphere. a) Metal ores are smelted or treated in any way. Mining is the second choice. c) The combustion of fossil fuels and refined products d) Disposal of hazardous waste e) Disposing of household waste. f) Auto exhausts are discarded. g) The use of pesticides with heavy metal salts

5.0 Discussion:-This research study reveals that the quantities of Zn, Ni, Cr, As, and Pb in all groundwater are elevated, but well above the WHO and USEPA allowable limits, posing a threat to human health. The heavy metal content of many groundwater, trees, herbs, dirt, and other places has been observed by toxicologists on a regular basis. The ingestion of untreated groundwater has a significant impact on human health. People should be aware of the dangers of using contaminated water. It is recommended that people's knowledge of the dangers of drinking tainted groundwater and eating unsafe foods be shared among them. Agriculturalists must also be trained about how to reduce runoff and advised to use chemicals in limited quantities to prevent waste water leaching. Field cultivation can be carried out far away from mining centers and pollution-prone areas. Cultivation, urbanization, E-waste, and industrialization are all leaving a trail of environmental pollution of heavy metals in developing nations, so technologies for field cultivation and commercialization are often proposed.

6.0 Summary and conclusions:-The aqua supply in North-Eastern Haryana is highly reliant on subsurface water supplies. Because of irrigation-intensive cultivation, industrialization, the flow of urbanization, and the growth of tourism, the use of subsurface water supplies has been especially intensive in the study region over the last few decades. In this article, a study of the current literature was conducted and the results are discussed. The geology and geochemistry of the environment, the impetus of urbanization, dumpsite/landfill leachates, heavy metals, biologic contaminants, and the effects of seasons have all been seen to pose pollution threats to the oppidan and rural subsurface water pre-eminence in North-Eastern Haryana. Additionally, improved physicochemical concentrations show that intensified fertilization has resulted in significant subsurface pre-eminence depletion. Septic tanks that leak in metropolitan areas are another cause of subsurface pollution. This presents a significant risk of consuming subsurface water without some sort of treatment.

1. Haryana, in general, and North-Eastern Haryana in particular, need both quality and quantity of groundwater.

References:

1. Madhav, S., Ahamad, A., Kumar, A., Kushwaha, J., Singh, P., and Mishra, P.K. Geochemical assessment of ground water quality for its suitability for drinking and irrigation purpose in rural areas of Sant Ravidas Nagar (Bhadohi), Uttar Pradesh. Geology, Ecology, and Landscapes. Vol 2, 127-136. (2018)
2. Meenakshi, Garg, V.K., Kavita, Renuka, and Malik, A. Groundwater quality in some villages of Haryana, India: focus on fluoride and fluorosis. Journal of Hazardous Materials. Vol 106B, 85–97. (2004)

3. Patil, P.N., Sawant, D.V., and, Deshmukh, R.N. Physico-chemical parameters for testing of water – A review. International Journal of Environmental Sciences. Vol 3, 1194-1207. (2012)
4. Rathi, P., Ramprakash, Kumar, S., Rathi, N., and Vikas. Mapping of variability in quality of groundwater in Rajaund block of Kaithal district (Haryana). Journal of Pharmacognosy and Phytochemistry. Vol 7, 1056-1059. (2018)
5. Ravish, S., Setia, B., and Deswal, S. Groundwater quality in urban and rural areas of north-eastern Haryana (India): a review. ISH Journal of Hydraulic Engineering. Vol 2018, 1-11. (2018)
6. Saana, S.B.B.M., Fosu, S.A., Sebiawu, G.E., Jackson, N., and Karikar, T. Assessment of the quality of groundwater for drinking purposes in the Upper West and Northern regions of Ghana. Springerplus. Vol 5, 2001. (2016)
7. Saleem, M., Hussain, A., and Mahmood, G. Analysis of groundwater quality using water quality index: A case study of greater Noida (Region), Uttar Pradesh (U.P), India. Cogent Engineering. Vol 3, 1, 1237927. (2016)
8. Singh, V.K., Bikundia, D.S., Sarswat, A., and Mohan, D. Groundwater quality assessment in the village of Lutfullapur Nawada, Loni, District Ghaziabad, Uttar Pradesh, India. Environmental Monitoring and Assessment. Vol 184, 4473–4488. (2012)
9. Tadesse, M., Tsegaye, D., and Girma, G. Assessment of the level of some physico-chemical parameters and heavy metals of Rebu River in oromia region, Ethiopia. MOJ Biology and Medicine. Vol 3, 99-118. (2018)
10. Zhang, Q., Xu, P., and Qian, H. Assessment of groundwater quality and Human Health Risk (HHR) evaluation of nitrate in the Central-Western Guanzhong Basin, China. International Journal of Environmental Research and Public Health. Vol 16, 1–16. (2019)
11. Sihi, D., Dari, B., Yan, Z., Sharma, D.K., Pathak, H., Sharma, O.P., and Nain, L. Assessment of Water Quality in Indo-Gangetic Plain of South-Eastern Asia under Organic vs. Conventional Rice Farming. Water. Vol 12, 1-9. (2020)

PRINTED CIRCUIT LAYOUT PERFORMANCE BY ADDING SILVER NANO COMPOSITE TO LED INKJET PRINTING

Minakshi
Registration number-24618141
Mail id - minakshiiredhu@gmail.com
Subject - physics

Abstract:-Printed circuit boards are commonly used in a variety of electronic applications, and inkjet printing on PCB is well recognized. The current research focuses on the mixing of silver NANO particles in various printed electronic products, such as led paper (GaInN). Physical and chemical synthesis methods were used to complete the project. The testing was completed by reviewing the written configuration using various PCB checking methods, such as the bare board examination. Electrical continuity, electrical conductivity, impedance, high potency, and resistance are also part of the evaluation. Set power supplies of 5v, 15v, and 24v were used to measure the board configuration. Silver NANO particles combined with Led were used to create the pattern. As contrasted to others, the test results lead with silver gave a strong result at 15v input to the board.

Key words: -Ink jet printing, PCB layout, Silver NANO, performance.

1.0 Introduction:-Inkjet printing is widely mostly used sporadically in the manufacture of mobile products, and is typically used to produce a single layer, most often an electrode. The ever-expanding library of jet table components, on the other hand, opens up the prospect of mixing ink jetted layers to create more complicated instruments. Naturally, the chemicals that may be inserted into inks are determined by the basic content specifications. Depending on the medium used, its compatibility with carrier solvents and other ink materials, and its ease of dissolution or dispersion, the ink formulation method can be very complicated. As a result, ink composition becomes an often neglected yet critical component of practical material deposition and product fabrication.Thanks to its advantages of low material wastage, additive patterning process, and digitization of deposition regulated quantity of materials, inkjet printing has become a popular method for fabricating flexible and wearable electronics [1, 2]. Inkjet printing's versatility with a variety of substrates is an additional benefit as compared to traditional techniques. When dealing with inkjet printing, the viability of deposition electrode materials on the plastic sub surface is also an essential task; the methods must be carried out for the physiochemical properties review, as standard inkjet electrodes have less conductivity. Inkjet printing needed deposition, bonding, and conduction, and these materials included gold, silver, grapheme, and other highly conductive materials [3,5]. The type of NANO material addition to printed inks is highly appreciable; traditional thermal sintering needed a high temperature in inkjet printing; however, adding NANO particles may provide better results than conventional materials [6,7]. For inkjet printing, there are two types of droplet jetting mechanisms: constant and drop-on-demand [8]. These two necessitate low viscosity inks, with binder-free conductive inks being needed by the majority of inkjet printers today [9]. Hu et al. [10] used IPA/2-butonal solvents to treat binder-free inks, with a solid black phosphorous formulation. Silver inks with a high binder content are often used in the electronics industry. The addition of a second step of filler materials for inkjet printing was recorded [11-13] to improve the electrical efficiency and mechanical reliability of printed electrodes. Adding cellulose NANO crystals to silver ink will increase electrical conductivity and mechanical strength of printed films, according to Hoeng et al. [14], offering a new way to create conductive patterns on porous substrates with low sheet resistance of 50 W/sq. The liquid reduction process is the most popular way to make Ag nanoparticles (AgNPs), and it has a number of benefits, including easy processing facilities, ease of use, and low raw material costs [16-20].

2.0 Materials and methods:-However, reaction parameters such as temperature, lowering agent concentration, and capping agent concentrations are all very complicated in the processing of silver powders. The value and use of silver nanoparticles have been restricted due to the difficulty of controlling the size and shape of silver powders. As a result, preparing standardized, small-sized, single-shaped Ag nanoparticles in a timely and regulated manner is a current science challenge around the world [21-24]. Nano-Ag, which is made up of Ag fibers, dispersants, surfactants, solvents, and other compounds, is the primary usable substance in silver conductive ink. Because of their high boiling point, it is usually impossible to dissolve the dispersant and other additives at lower sintering temperatures [24-26].The following was the formula used to create the modern Ag nano-ink: In glass bottles containing 59.5 wt percent de-ionized water, 3 wt percent OP-10, 20 wt percent ethylene glycol, 1.5 wt percent ethanol, and 1 wt. percent isopropyl alcohol were placed. The solvent mixture was mixed at a steady pace of 200 r/min. After 10 minutes, 200 mg of Ag NPs is applied to the mixed solution, which was then ultrasonically washed for 30 minutes before being stirred for 30 minutes to form a standardized system at room temperature. Finally, an Ag-NPs ink that was standardized was made.The first silver ink formulation (I1) contains 20 weight percent Ag nanoparticles, 32 weight percent ethanol, 32 weight percent ethylene glycol, 11.2 weight percent 2-isopropoxyethanol, and 4.8 weight percent glycerin. To exclude big objects, it was routed into a 0.2 m syringe filter. Due to the minimum momentum of particles at low temperatures, the preparation should be taken at an increasing temperature up to 2000c [27].

3.0 Mixed with led materials :-By using a chemical synthesis process, GaInN content, also known as white led material, was combined with Nano silver inkjet. Particle size of at least 450NM with white at 4V is sufficient for light emission. For the blending, the thermal input would be at a height of 600 degrees Celsius. Figure 3.1 shows a graph of light pollution period versus thermal difference for the LED content GaInN. (a). Since the particle liquidity condition was 80-900 degrees Celsius, the phenomenon of mixing NANO Ag particle mixtures with LED ink formed at 600 degrees Celsius. Fabricated ink was then added to the volume ratio of the layout template, with a layer thickness of 0.35 mm. In order to determine their surface characteristics, the surface consistency and smoothness of the chosen substrates are critical. Wetting the paint, on the other side, is critical for achieving high adhesion efficiency for inkjet-printed structures. The viscosity of the ink is also necessary to note when checking the droplets at the printed circuit layout design, as well as the scattering of NANO particles with the ink the sub-state of ink procured for a period of 45 days for improved consistency [28].

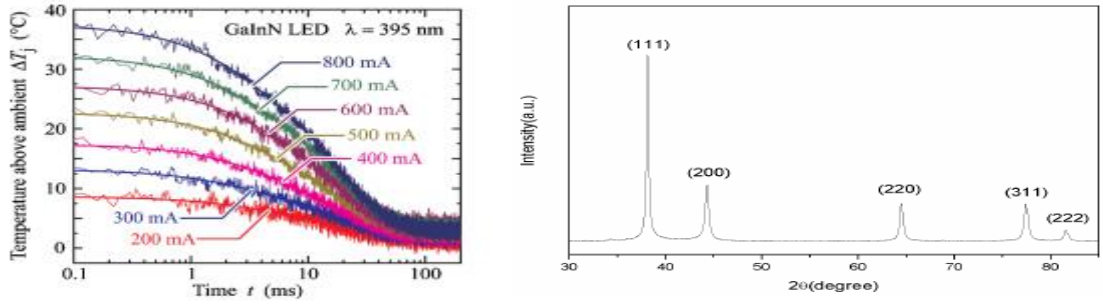
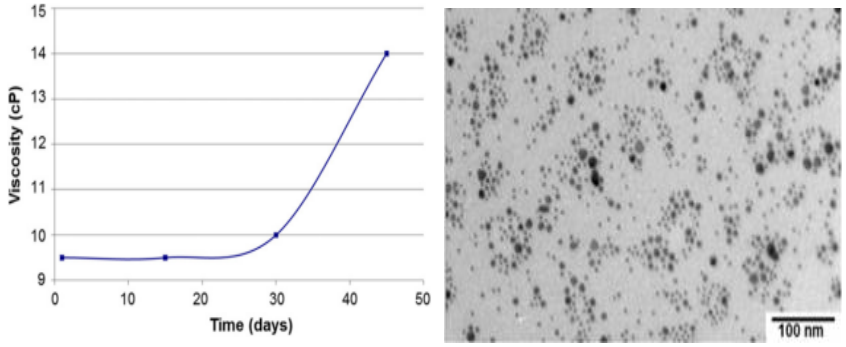


Figure 3.1(a) shows the LED light emission at different temperature and 3.1(b) shows the maximum silver NANO particle diameter.



Graph 3.1 shows the Viscosity change after procurement and characteristic of silver ink

To test the efficacy of the composite mixture of Ag NANO particles, the prepared ink may be printed on PET, silicon substrates, and glass for sample preparations. For the planning of the sample piece printed layout of bear board evaluation, an acrylic board with dimensions of 105mm x 75mm and a sheet diameter of 1mm grid circuit radius of 1R and 1.5R was used. Multiple application specifications were used to select the product layout. A POS billing program that uses thermal printing which is connected to a key board PCB. The printing was done on a PCB printing system called an Excellon CNC 6 driller cum router with inkjet printing.

Figure 3.2 shows the inkjet printing machine of PCB

4.0 Sample preparation and bare board test:-To test the efficacy of the composite mixture of Ag NANO particles, the prepared ink may be printed on PET, silicon substrates, and glass for sample preparations. For the planning of the sample piece printed layout of bear board evaluation, an acrylic board with dimensions of 105mm x 75mm and a sheet diameter of 1mm grid circuit radius of 1R and 1.5R was used. Multiple application specifications were used to select the product layout. A POS billing program that uses thermal printing which is connected to a key board PCB. The printing was done on a PCB printing system called an Excellon CNC 6 driller cum router with inkjet printing.

5.0 Results and discussions:-After depositing the substrate until the sample layer is exposed to microstructures, the bare board examination is performed without scratching the template pattern.

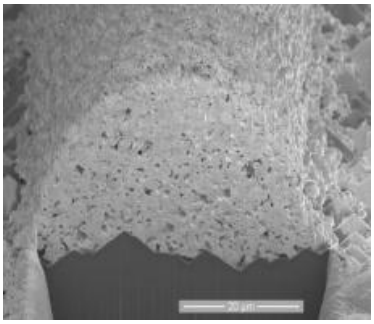


Figure 5.1 shows the nearest layout line without disturbing board at either side.

Electrical continuity: Verification that the resistance between test points is lower than the specified limit or maximum continuity resistance.

Table 5.1 shows the results of resistance and conductance of sample board at different voltages

Input voltage	No.of nodes for average value	Resistance Ω·m	Conductivity S/m
5v	10	$1.582x10^{-8}$	$6.32x10^{7}$
15v	10	$1.531x10^{-8}$	$6.53x10^{7}$
24v	10	$1.548x10^{-8}$	$6.46x10^{7}$

6.0 Conclusions

For NANO silver addition in inkjet printing of PCB boards, the printed board was measured with different voltage inputs to verify the conductance of electricity and the thermal atmosphere. The synthesis and development of ink were also explored in a referral way, and SEM tests were performed to search for layer consistency when printing. Normally, bare board checking entails conductance and resistance. But, since this is for high-temperature zone applications, the high-pot test is not considered. The study continues with various affricative inks mixed with copper particles to get the optimum affective of NANO silver particle inclusion in inkjet PCB optimization by varying input voltage to verify the impedance.

7.0 References

1. Secor, E. B., Prabhumirashi, P. L., Puntambekar, K., Geier, M. L. & Hersam, M. C. Inkjet Printing of High Conductivity, Flexible Graphene Patterns. J. Phys. Chem. Lett. 4, 1347-1351, doi:10.1021/jz400644c (2013).
2. Karim, M. N., Afroj, S., Rigout, M., Yeates, S. G. & Carr, C. Towards UV-Curable Inkjet Printing of Biodegradable Poly (Lactic Acid) Fabrics. J. Mater. Sci. 50, 4576-4585 (2015).
3. Zhang, Y.; Li, X.; Mou, X.; Li, N. Preparation and Performance of Edible Screen-Printing Ink with Chitosan. In Advanced Graphic Communications, Packaging Technology and Materials; Springer: Singapore, 2016; pp. 977–983.
4. Zhao, D.; Liu, T.; Park, J.G.; Zhang, M.; Chen, J.-M.; Wang, B. Conductivity enhancement of aerosol-jet printed electronics by using silver nanoparticles ink with carbon nanotubes. Microelectron. Eng. **2012**, 96, 71–75.
5. Singh, M.P. *et. al.* (2015) Preparation of Silver Nanoparticles and Their Industrial and Biomedical Applications: A Comprehensive Review. Adv. Mater. Sc.i Eng. Vol 2015. 165257.
6. Mustafa Muhammad *et. al.* (2016) Nanopatterning of PMMA on insulating surfaces with various anticharging schemes using 30 keV electron beam lithography. 06F304-1 J. Vac. Sci. Technol. B 29(6).
7. Sudheer, S. Porwal *et. al.* (2016) Diffraction efficiency of plasmonic gratings fabricated by electron beam lithography using a silver halide film. Journal of applied physics 120, 043101.
8. Sang Hun Lee & Bong-Hyun Jun (2019) Silver Nanoparticles: Synthesis and Application for Nanomedicine. Int. J. Mol. Sci. 2019, 20, 865.

TRANSDERMAL DRUG DELIVERY BASED ON DISRUPTION OF THE BARRIER PROPERTIES OF THE STRATUM CORNEUM

Nitin Singh, Rakesh Kumar Jat* & G.S. Tripathi**
Research Scholar, J.J.T.University Jhunjhunu, Rajasthan.
Head of Department, J.J.T.University Jhunjhunu, Rajasthan.
Principal, Raj Rejeshwari Mahila P.G. College, Jaunpur.

Abstract:-The conventional oral dosage forms has significant drawbacks of poor bioavailability due to hepatic first pass metabolism and tendency to produce rapid blood level spikes (Both high and low), leading to a need for high and/or frequent dosing, which can be both cost prohibitive and inconvenient. The skin offers an accessible and convenient site for the administration of medications. To this end, the field of transdermal drug delivery, aimed at developing safe and efficacious means of delivering medications across the skin, has in the past and continues to garner much time and investment with the continuous advancement of new and innovative approaches. This article details the progress and current status of the transdermal drug delivery field and describes numerous pharmaceutical developments which have been employed to overcome limitations associated with skin delivery systems. Advantages and disadvantages of the various approaches are detailed, commercially marketed products are highlighted and particular attention is paid to the emerging field of microneedle technologies.

Keywords:- Transdermal; drug delivery; velocity based device; ultrasound; thermal ablation; microneedle.

Introduction:-Transdermal drug delivery systems (TDDS), also known as "patches," are dosage forms designed to deliver a therapeutically effective amount of drug across a patient's skin[1]. Conventional systems of medication which require multi dose therapy have numerous problems and complications. The design of conventional dosage form, whether a tablet, an injection or a patch, to deliver the right amount of medicine at the right target site becomes complicated if each medication were to be delivered in an optimal and preferred manner to the individual patient[2]. The impetus for the development of novel drug delivery systems, apart from therapeutic efficacy is cost. Redesigning the modules and means to transport medicine into the body is less demanding and more lucrative task. To address these problems, controlled release drug delivery system, a novel drug delivery approach evolves, which facilitates the drug release into systemic circulation at a pre-determined rates. Controlled drug release can be achieved by transdermal drug delivery systems (TDDS) which can deliver medicines via the skin portal to systemic circulation at a predetermined rate over a prolonged period of time[3].For transdermal products the goal of dosage design is to maximize the flux through the skin into the systemic circulation and simultaneously minimize the retention and metabolism of the drug in the skin. Transdermal drug delivery systems (TDDS) are defined as self-contained, discrete dosage forms which, when applied to intact skin, deliver the drug(s), through the skin, at a controlled rate to systemic circulation. The transdermal route of administration is recognized as one of the potential route for the local and systemic delivery of drugs[4].The most common routes of drug delivery are the oral and parenteral routes with the majority of small molecule drugs conventionally delivered orally[5]. The oral route has the advantage of pre-determined doses, portability and patient self-administration. For these reasons, the oral route remains the most convenient means of delivering medications[6]. However, most therapeutic peptides or proteins are not delivered by the oral route, due to rapid degradation in the stomach and size-limited transport across the epithelium[7]. The primary mode of administering macromolecules is therefore via injection which is not without limitations, such as the invasive nature of injections eliciting pain and lower

acceptance/compliance by patients, in addition to the requirement for administration by a trained administrator[8]. Rationally, the conventional routes of medication delivery have many inherent limitations which could potentially be overcome by advanced drug delivery methodologies such as transdermal drug delivery (TDD).

Transdermal Drug Delivery (TDD)

TDD is a painless method of delivering drugs systemically by applying a drug formulation onto intact and healthy skin. The drug initially penetrates through the stratum corneum and then passes through the deeper epidermis and dermis without drug accumulation in the dermal layer. When drug reaches the dermal layer, it becomes available for systemic absorption via the dermal microcirculation[9]. TDD has many advantages over other conventional routes of drug delivery[10,11]. It can provide a non-invasive alternative to parenteral routes, thus circumventing issues such as needle phobia. A large surface area of skin and ease of access allows many placement options on the skin for transdermal absorption. TDD avoids pre-systemic metabolism, thus improving bioavailability. With reference to the use of the skin as a novel site for vaccination strategies, this organ is known to be replete with dendritic cells in both the epidermal and dermal layers which play a central role in immune responses making TDD an attractive vaccination route for therapeutic proteins and peptides[6]. The requirement for an inexpensive and non-invasive means of vaccination, especially in the developing world[12], has given rise to substantial research focused on the development of simple, needle-free systems such as TDD for vaccination purposes.

Drug Penetration Routes

There are two possible routes of drug penetration across the intact skin, namely the transepidermal and transappendegeal pathways, which have been diagrammatically presented in Figure-1. The transepidermal pathway involves the passage of molecules through the stratum corneum, an architecturally diverse, multi-layered and multi-cellular barrier. Transepidermal penetration can be termed intra- or inter-cellular[13]. The intra-cellular route through corneocytes, terminally differentiated keratinocytes, allows the transport of hydrophilic or polar solutes. Transport via inter-cellular spaces allows diffusion of lipophilic or non-polar solutes through the continuous lipid matrix. The transappendegeal route involves the passage of molecules through sweat glands and across the hair follicles[14].

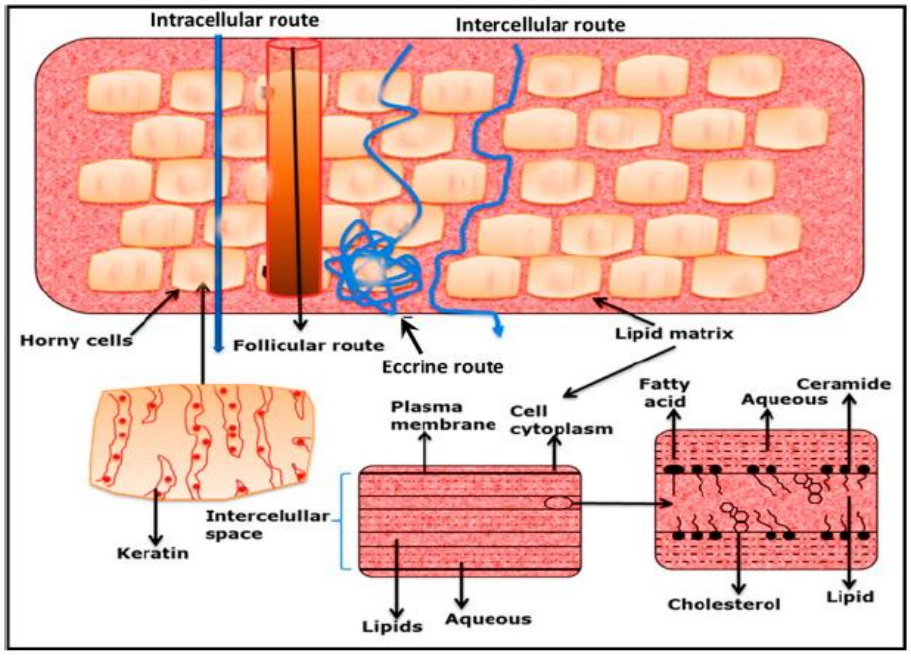


Figure-1: Possible drug penetration routes across human skin

Techniques for Enhancement of Skin Permeabilisation

Technologies used to modify the barrier properties of the stratum corneum can be divided into passive/chemical or active/physical methodologies. Passive methods include the influencing of drug and vehicle interactions and optimization of formulation, in order to modify the stratum corneum structure[13]. Passive methods are relatively easy to incorporate into transdermal patches such as chemical enhancers and emulsions[15]. However, the main drawback of passive methods may be a lag time in drug release incurred with obvious negative influence on rapid onset drugs, such as insulin.One of the most widely used passive approaches is the use of chemical penetration enhancers which facilitate drug permeation across the skin by increasing drug partitioning into the barrier domain of the stratum corneum, without long-term damage to the skin[10]. Several types of penetration enhancers are known and they can be divided into several groups based on their chemical structure, rather than their mechanism of action[16]. Most of these have mixed modes of action so it is difficult to classify them according to this characteristic. Examples of commonly investigated penetration enhancers are alcohols, sulphoxides, azone, pyrrolidones, essential oil, terpenes and terpenoids, fatty acids, water and urea[16]. However, the major limitation for penetration enhancers is that their efficacy is often closely correlated with the occurrence of skin irritation[17]. Gels have been used in TDD and recent developments in the technology have introduced new variations of semisolid vehicles such as proniosomes and microemulsion gels into the field of penetration enhancers[15]. Proniosomes are non-ionic based surfactant vesicles, they are known as ‘‘dry niosomes’’ because they may require hydration before drug release and permeation through the skin. Upon hydration proniosomesare converted into niosomes which are capable of diffusing across the stratum corneum and then adhere to the cell surface which causes a high thermodynamic activity gradient of the drug at the vesicle/stratum corneum surface, thus acting as the driving force for the penetration of lipophilic drugs across the skin. Some of the limitations associated with penetration enhancers are poor efficacy and safety. They do not achieve the desired skin disruption and their ability to increase transport across the skin is low and variable[18].The active methods for skin permeabilisation include ultrasound, electrically assisted methods (electroporation and iontophoresis), velocity based devices (powder injection, jet injectors), thermal approaches (lasers and radio-frequency heating) and mechanical methodologies such as microneedles (MN) and tape stripping[19]. These approaches allow a broader class of drugs to be delivered into the skin. Active methods involve the use of external energy to act as a driving force for drug transport across the skin or by physically disrupting the stratum corneum. In addition, active methods also offer more reproducible control over the delivery profiles of the medications, thus overcoming lag times between the application and the drug reaching the systemic circulation when compared to passive methods[10]. Some of these active methodologies will be described in detail below.

Ultrasound Devices

Ultrasound is an oscillating sound pressure wave that has long been used for many research areas including physics, chemistry, biology, engineering and others in a wide range of frequencies. Ultrasound, sonophoresis, or phonophoresis can be defined as the transport of drugs across the skin by application of ultrasound perturbation at frequencies of 20 kHz–16 MHz which has a sufficient intensity to reduce the resistance of skin[7]. The proposed mechanisms by which ultrasound effects tissues and cells include thermal effects and cavitation effects caused by collapse and acoustic streaming which can be explained as oscillation of cavitation bubbles in the ultrasound field[7]. Ultrasound can increase the temperature of the insonated medium (the skin) by the absorption of the sound waves with a frequency greater than the upper limit of the human hearing range. Obviously, the higher the medium’s absorption coefficient, the higher the increase in temperature and thus the greater

the thermal effect[20]. All recent studies point out that cavitation is believed to be the predominant mechanism in the enhancement of TDD via ultrasound treatment[20].

Electrical Techniques

Electroporation

The two major means of electrically-facilitated TDD are iontophoresis and electroporation[5]. In electroporation, cells are temporarily exposed to high intensities of electric pulses that lead to the formation of aqueous pores in the lipid bilayers of the stratum corneum, thus allowing the diffusion of drugs across skin[7]. Usage of high voltage pulses (50–500 V) for short times of only one second have been shown to increase transport across the skin for different molecular weight drugs ranging from small e.g., fentanyl, timolol[21], orcalcein[22], to high molecular weight drugs such as LHRH, calcitonin, heparin or FITC–dextran with molecular weights up to 40 kDa. However, the main drawbacks are the lack of quantitative delivery, cell death with high fields and potential damage to labile drugs, e.g., those of protein origin.

Iontophoresis

Iontophoresis involves the application of physiologically acceptable electrical currents (0.1–1.0 mA/cm^2) to drive charged permeants into the skin through electrostatic effects and make ionic drugs pass through the skin into the body by its potential gradient[7]. Unlike other transdermal enhancement methodologies, it acts mainly by involving a second driving force, the electrical potential gradient as companion to the concentration gradient across the skin since uncharged species can also be delivered through electroosmosis.

Several factors affect iontophoretic TDD, including pH of the donor solution, electrode type, buffer concentration, current strength and the type of current employed[23]. A plethora of studies correlating flux as a function of molecular weight have been conducted and it was found that the transport of compounds decreased with increase in molecular weight (chloride > amino acid > nucleotide > tripeptide > insulin)[23]. There is a linear relationship between the current and drug flux across the skin but the current is limited to 1 mA in order to facilitate patient comfort and consider safety concerns as with increasing current, the risk of nonspecific vascular reactions (vasodilatation) also increases[23]. The use of continuous direct current (DC) can decrease the drugs flux due to its polarization effect on the skin. The most common electrodes that are used in iontophoresis are aluminum foil, platinum and silver/silver chloride electrodes. However, the preferred one is Ag/AgCl since it resists the changes in pH. In addition, the electrode materials used for iontophoretic delivery should be harmless to the body and flexible so as to be applied closely to the body surface[24]. However, it was found that a small protein, cytochrome c (12.4 kDa) was delivered non-invasively across intact skin[25]. Afterwards, ribonuclease A, with isoelectric point of 8.64 (13.6 kDa), was successfully delivered across porcine and human skin. More recently, it was shown that transdermal iontophoresis was also able to deliver biologically active human basic fibroblast growth factor (hbFGF; 17.4 kDa) in therapeutically relevant amounts corresponding to those used in clinical trials and animal studies[26].

Velocity Based Devices

Velocity based devices, either powder or liquid jet injections, employ a high-velocity jet with velocities ranging from 100 to 200 m/s to puncture the skin and deliver drugs using a power source (compressed gas or a spring)[27]. Since then, interest in this method of drug delivery has expanded significantly and two types of liquid jet injectors have been developed; single-dose jet injectors and multi-use-nozzle jet injectors (MUNJIs)[27]. Jet injections have been used for more than 50 years for parenteral delivery of vaccines, as well as small molecules, such as anesthetics and antibiotics. A jet injector is a needle free device capable of delivering electronically controlled doses of medication which result in improved consistency of delivery and reduced pain for the patient.

Thermal Approaches (Lasers and Radio-Frequency Heating):-Thermal ablation is a method used to deliver drugs systemically through the skin by heating the surface of the skin, which depletes the stratum corneum selectively at that site of heating only, without damaging deeper tissues[28]. Many methods could be used to cause thermal ablation such as laser, radiofrequency, in addition to electrical heating elements. In order to generate the high temperatures needed to ablate the stratum corneum without damaging the underlined epidermis, the thermal exposure should be short, so the temperature gradient across the stratum corneum can be high enough to keep the skin surface extremely hot but the temperature of the viable epidermis does not experience a significant temperature rise[28].

Mechanical Approaches to Mediate Skin Permeation

The use of hypodermic needles, often associated with phobia, pain and the risk of needle-stick injuries have been used to overcome some of the delivery limitations often experienced when delivering macromolecular compounds[29]. Some innovative methodologies have been explored to overcome these issues and include the use of MN and tape stripping.

Conclusion:-In conclusion, the TDD sector continues to grow and develop with rapid expansion in fundamental knowledge feeding industrial development. In time, it is hoped that technological advancements in TDD will lead to enhanced disease prevention, diagnosis and control, with concomitant improvement in health-related quality of life for patients worldwide. To this end, this article has charted the development of numerous novel TDD methodologies. Due to the exponential growth in investment and interest in MN technologies and the numerous associated advantages of this approach, particular attention was paid to this TDD system.

References

1. J.A. Kumar, N. Pullakandam, S.L. Prabu, V. Gopal, Transdermal drug delivery system: An overview. International Journal of Pharmaceutical Sciences Review and Research 3(2): 49-53 (2010).
2. L. Prisant, B. Bottini, J. Dipiro, A. Carr, Novel drug delivery system for hypertension. Am. J. Med. 93(2): 45-55 (2004).
3. A. Shivaraj, R.P. Selvam, T.T. Mani, T. Sivakumar, Design and evaluation of transdermal drug delivery of ketotifen fumarate. Int. J. Pharm. Biomed. Res. 1(2): 42-7 (2010).
4. R.P. Selvam, A.K. Singh, T. Sivakumar, Transdermal drug delivery systems for antihypertensive drugs - A review. Int. J. Pharm. Biomed. Res. 1(1): 1-8 (2010).
5. A.C. Anselmo, S. Mitragotri, An Overview of Clinical and Commercial Impact of Drug Delivery Systems. J. Control. Release 190, 15–28 (2014).
6. D. Brambilla, P. Luciani, J. Leroux, Breakthrough Discoveries in Drug Delivery Technologies: The Next 30 years. J. Control. Release, 190, 9–14 (2014).
7. C.M. Schoellhammer, D. Blankschtein, R. Langer, R. Skin, Permeabilization for Transdermal Drug Delivery: Recent Advances and Future Prospects. Expert Opin. Drug Deliv. 11, 393–407 (2014).
8. M. Kermode, Unsafe Injections in Low-Income Country Health Settings: Need for Injection Safety Promotion to Prevent the Spread of Blood-Borne Viruses. Health. Promot. Int., 19, 95–103 (2004).
9. K. Kretsos, G.B. Kasting, A Geometrical Model of Dermal Capillary Clearance. Math. Biosci., 208, 430–453 (2007).
10. A. Arora, M.R. Prausnitz, S. Mitragotri, Micro-Scale Devices for Transdermal Drug Delivery. Int. J. Pharm., 364, 227–236 (2008).
11. M.R. Prausnitz, R. Langer, Transdermal Drug Delivery. Nat. Biotechnol. 26, 1261–1268 (2008).

12. S.K. Peasah, E. Azziz-Baumgartner, J. Breese, M.I. Meltzer, M. Widdowson, Influenza Cost and Cost-Effectiveness Studies globally—A Review. Vaccine, 31, 5339–5348 (2013).
13. Y.B. Schuetz, A. Naik, R.H. Guy, Y.N. Kalia, Emerging Strategies for the Transdermal Delivery of Peptide and Protein Drugs. Expert Opin. Drug Deliv., 2, 533–548 (2005).
14. Y. Shahzad, R. Louw, M. Gerber, J. du Plessis, Breaching the Skin Barrier through Temperature Modulations. J. Control. Release 2015, 202, 1–13 (2015).
15. K. Rehman, M.H. Zulfakar, Recent Advances in Gel Technologies for Topical and Transdermal Drug Delivery. Drug Dev. Ind. Pharm., 40, 433–440 (2013).
16. B. Zorec, V. Preat, D. Miklavcic, N. Pavselj, Active Enhancement Methods for Intra-and Transdermal Drug Delivery: A Review. Zdravniški Vestnik, 82, 339–356 (2013).
17. K.S. Paudel, M. Milewski, C.L. Swadley, N.K. Brogden, P. Ghosh, A.L. Stinchcomb, Challenges and Opportunities in dermal/transdermal Delivery. Ther. Deliv., 1, 109–131 (2010).
18. C. Marianecci, L. Di Marzio, F. Rinaldi, C. Celia, D. Paolino, F. Alhaique, S. Esposito, M. Carafa, Niosomes from 80s to Present: The State of the Art. Adv. Colloid Interface Sci., 205, 187–206 (2014).
19. D. Zhang, C.D. Rielly, D.B. Das, Microneedle-Assisted Microparticle Delivery by Gene Guns: Experiments and Modeling on the Effects of Particle Characteristics. Drug Deliv., 22, 1–16 (2014).
20. A. Azagury, L. Khoury, G. Enden, J. Kost, Ultrasound Mediated Transdermal Drug Delivery. Adv. Drug Deliv. Rev., 72, 127–143 (2014).
21. V. Preat, R. Vanbever, Skin Electroporation for Transdermal and Topical Drug Delivery. Transdermal Drug Deliv., 123, 227–254 (2002).
22. M.R. Prausnitz, V.G. Bose, R. Langer, J.C. Weaver, Electroporation of Mammalian Skin: A Mechanism to Enhance Transdermal Drug Delivery. Proc. Natl. Acad. Sci. USA, 90, 10504–10508 (1993).
23. N. Dixit, V. Bali, S. Baboota, A. Ahuja, J. Ali, Iontophoresis—An Approach for Controlled Drug Delivery: A Review. Curr. Drug Deliv. 2007, 4, 1–10 (2007).
24. A. Khan, M. Yasir, M. Asif, I. Chauhan, A.P. Singh, R. Sharma, P. Singh, S. Rai, Iontophoretic Drug Delivery: History and Applications. J. Appl. Pharm. Sci., 1, 11–24 (2011).
25. T. Gratieri, Y.N. Kalia, Targeted Local Simultaneous Iontophoresis of Chemotherapeutics for Topical Therapy of Head and Neck Cancers. Int. J. Pharm., 460, 24–27 (2014).
26. S. Dubey, R. Perozzo, L. Scapozza, Y. Kalia, Non-Invasive Electrically-Assisted Transdermal Delivery of Human Basic Fibroblast Growth Factor. Mol. Pharm., 8, 1322–1331 (2011).
27. S. Mitragotri, Current Status and Future Prospects of Needle-Free Liquid Jet Injectors. Nat. Rev. Drug Discov., 5, 543–548 (2006).
28. A. Hussain, G.M.K.A.Wahab, M.A.S. ur Rahman, H. Altaf, N. Akhtar, M.I. Qayyum, Potential Enhancers for Transdermal Drug Delivery: A Review. Inter. J. Basic Med. Sci. Pharm., 4, 19–22 (2014).
29. X. Hong, Z. Wu, L. Chen, F. Wu, L. Wei, W. Yuan, Hydrogel Microneedle Arrays for Transdermal Drug Delivery. Nano-Micro Lett., 6, 191–199 (2014).

Synthesis, characterization and Microbiological activities of metal chelate of Fe (II) and Cu(II) with ligand 2-amino-1,4-naphthoquinone (ANQ)

Bhimraj Gadekar[1]Suryakant B Dhawale[2]Balasaheb S Jadhav[2], Dr. Rakesh Kumar[2]and Dr. Satish Ingale*

[1]Department of Chemistry,SHRI JAGDISHPRASAD JHABARMAL TIBREWALA UNIVERSITY,

Email: bkgadekar73@gmail.com/ mob. 9960631842.

VIDYANAGARI, JHUNJHUNU, RAJASTHAN – 333001, India

[2]Department of Chemistry,SHRI JAGDISHPRASAD JHABARMAL TIBREWALA UNIVERSITY,

VIDYANAGARI, JHUNJHUNU, RAJASTHAN – 333001, India

*Pratibha College ofCommerce &Computer Studies, Pune 411019,India.

Abstract:-Copper (II) and Iron (II) metal chelates were synthesised using 2-amino-1,4-naphthoquinone (ANQ). These metal complexes, Cu(ANQ)2 and Fe (ANQ)2, have been characterised using current analytical techniques such as elemental analysis, FTIR, electronic spectra, mass spectroscopy, thermogravimetry, NMR, and X-ray diffraction, as well as metal content determination using ICPMS. These chelates are thermally stable up to 7000°C and are naturally coloured. The metal salts and metal chelates were screened for antimicrobial activity against Gram positive and Gram negative bacteria and fungi using the Agar Well Diffusion Method, and the findings were compared to those obtained with Cisplatin as the normal.

Keywords:-2-amino-1,4-naphthoquinone, X-ray diffraction, IR, Antimicrobial activity, Electronicspectra, ICP-MS.

I. INTRODUCTION

2-amino-1,4-naphthoquinones, for example, contain an active amino group in the 2-position and have a wide range of biological uses, including antimalarial, antibacterial, antitubercular, antitumor, larvicides, herbicides, and fungicides (1-2). As a result, research has consistently concentrated on these compounds, derivatives, and metal complexes. Fe (Symbol: Fe; Atomic mass: 55.845 u; Atomic number: 26; Electron configuration: [Ar]) is a chemical element with the symbol Fe (3d6 4s2). Iron is a chemical element with the atomic number 26 and the symbol Fe. It is a transition metal that is found in group 8 of the periodic table. It is the most abundant substance on Earth, second only to oxygen, accounting for a large portion of the planet's outer and inner cores. Fe is a d-block function that contributes to the completion of the Octet law. Due to the ease at which fe can contribute two electrons in the outermost valence shell, it can easily donate two electrons and form a stable complex; on the other hand, the ligand 2-amino-1,4-naphthoquinone can accept an electron and form a stable complex; hence, the synthesis and characterization of these molecules is chosen for study. Copper metal complex, like Fe metal complex, has been studied. Copper is denoted by the symbol Cu; its atomic mass is 63.546 u; its electron structure is [Ar] (3d10 4s1); and its atomic number is 29. Copper is a chemical element with the atomic number 29 and the symbol Cu (from Latin: cuprum). It is a malleable, ductile, and soft metal with an extremely high thermal and electrical conductivity. Numerous methods for the synthesis of the ligand 2-amino-1,4-naphthoquinone have been published (3,4,5). This article summarises the synthesis and characterization of Fe (II) and Cu (II) metal chelates with ligands using current analytical methods. Additionally, the microbiological activities of 2-amino-1,4-naphthoquinone are investigated and published.

II. MATERIALS USED FOR SYNTHESIS AND SYNTHESIS PROCESS:-The ligand 2-amino-1,4-naphthoquinone was synthesized from 1, 4 naphthoquinone.1,4 naphthoquinone which was supplied by Fluca chemicals

2.1. Synthesis:

2.1.1 Synthesis of 2-amino-1,4-naphthoquinone from 1,4-naphthoquione: Approximately 8.0 g of 1,4-naphthoquinone was dissolved in 200 mL of a 40:10 mixture of Tetrahydrofuran and water. 10.0 gm Sodium Azide (Saturated) was added to this solution. To acidify the reaction mixture, 40 mL glacial acetic acid was added. At room temperature, this reaction mixture was stirred for 6 hours. The solution can be evaporated to achieve the reddish-brown solid. Recrystallization was carried out using Methylene chloride as a solvent.

2.2.3 Iron chelate with 2-amino-1,4-naphthoquinone : 0.346 g of 2-amino-1,4-naphthoquinone (2 x 10-3 mole) was dissolved in 20 mL of methanol and shaken well to create a smooth solution (Ligand solution); the solution was further refluxed for 15-20 minutes. In 10 mL water, dissolve 0.278 gm ferrous sulphate heptahydrate (1 x 10-3 mole) and stir well to obtain a clean solution. Drop by drop, this solution was applied to the ligand solution under reflux conditions to preserve the solution's temperature about 600C. Then, under reflex conditions, this solution was heated for a half hour. The pH of the solution was determined and modified to 6.5 using a dilute Ammonia solution. Continue refluxing the solution and checking the pH of the solution; if necessary, the pH of the solution was changed to 6.5. Continued the reflux for another two hours. After the second hour, cooled the solution and filtered it to remove the solids. On a hot plate, the solid was dried.

2.2.4 Copper chelate with 2-amino-1,4-naphthoquinone : 0.346 g of 2-amino-1,4-naphthoquinone (2 x 10-3 mole) was dissolved in 20 mL of methanol and shaken well to create a smooth solution (Ligand solution); the solution was further refluxed for 15-20 minutes. 0.25 g copper sulphate pentahydrate (1 x 10-3 mole) dissolved in 10 mL water and stirred well to obtain a clean solution. Drop by drop, this solution was applied to the ligand solution under reflux conditions to preserve the solution's temperature about 600C. Then, under reflex conditions, this solution was heated for a half hour. The pH of the solution was determined and modified to 6.5 using a dilute Ammonia solution. Continue refluxing the solution and checking the pH of the solution; if necessary, the pH of the solution was changed to 6.5. Continued the reflux for another two hours. After the second hour, cooled the solution and filtered it to remove the solids. On a hot plate, the solid was dried.

III .INTERPRETATION OF ANALYTICAL DATA

3.1 Instrumental analysis :

The structure of the synthesized compound was determined using elemental analysis, FTIR, electronic spectra, mass spectroscopy, thermogravimetry, and X-ray diffraction, as well as the metal content using ICP-MS.

3.1.1 Fourier-transform infrared spectroscopicstudy:

The FTIR analysis was performed to determine the functional groups and to validate the structure. FTIR spectra in the range 4000-400cm-1 were recorded on a Perkin Elmer instrument using a KBr matrix. Table-1 summarises typical functional group identifications of ligands and metal complexes using infrared spectroscopy.

Table-1: Typical functional groups by IR spectroscopy of ligand and metal complex,

Functional group→ Compound ↓	**C-H**	**C=C**	**C=O**	**C=N**	**N-H**	**N-O**	**C-Cl**	**M-O**	**M-N**
Typical IR frequencies→ (cm^{-1})	700-880 B 1365-1465 B	790-995 B 1610-1678 S	1650-1685 S	1640-1690 S	2800-3500 S	1500-1550 S	550-850 S	500-700	500-700

L3	Obs.	Obs.	Obs.	--	Obs.	--	--	--	--
Fe $(ANQ)_2$	Obs.	Obs.	Obs.	Obs.	Obs.	Obs.	--	Obs.	Obs.
Cu $(ANQ)_2$	Obs.	Obs.	Obs.	Obs.	Obs.	Obs.	--	Obs.	Obs.

Gaussian 09 programme was used to conduct the IR frequency assessment analysis. The IR frequencies mentioned above correspond to published values. The IR spectra of metal complexes are shown in Figures 1 to 2.

Fig-1: IR spectra for Cu $(ANQ)_2$

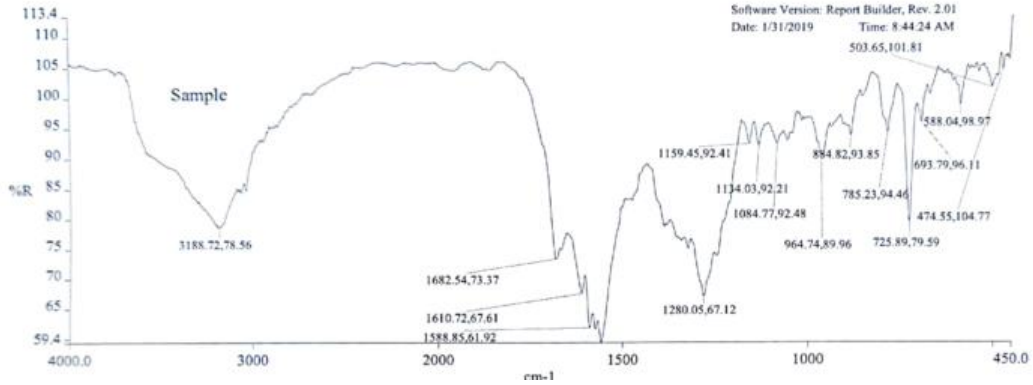
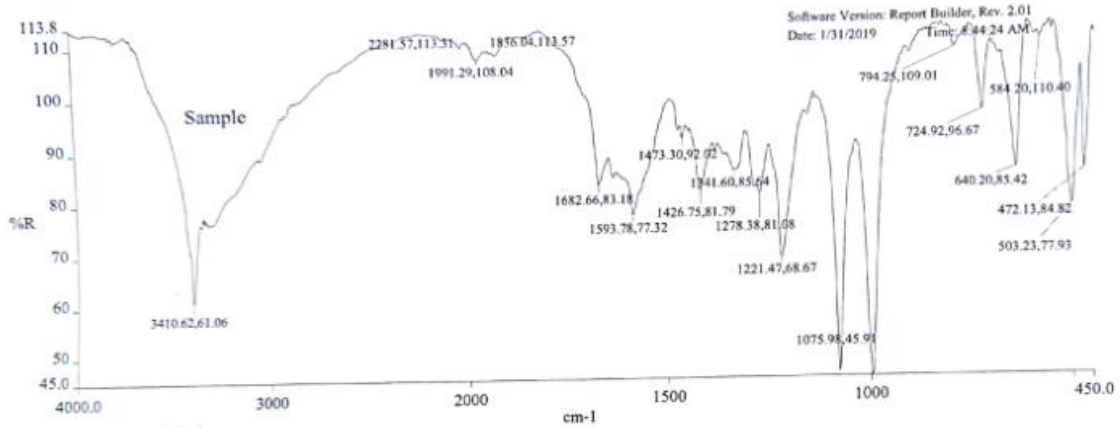


Fig-2 : IR spectra for Fe $(ANQ)_2$



3.1.2 UVspectrophotometric study (Electronic spectroscopy):

Electronic spectroscopy was used to determine the ultraviolet spectrum of metal chelate and its correlation with the ligand. UV spectra of metal chelates were recorded on a Shimadzu instrument in DMSO solvent, while UV scans of ligands were recorded in methanol solvents. UV spectroscopy involves passing a beam of UV-Visible light into a sample solution; a molecule absorbs the UV or visible radiations and decays. The electron transitions from an inhabited to an unoccupied molecular orbital. As a result, this kind of spectroscopy is also known as electronic spectroscopy.

Energy transitions are observed as $\eta \rightarrow \pi^*$, $\eta \rightarrow \sigma^*$, $\pi \rightarrow \pi^*$, $\sigma \rightarrow \pi^*$, $\sigma \rightarrow \sigma^*$.

Table 2 : Experimental λ_{max} observed

$\lambda \rightarrow$ Compound $\downarrow$	**λ_{max1}**
Fe $(ANQ)_2$	253 nm, 354 nm
Cu $(ANQ)_2$	272 nm, 350 nm

Observed λ_{max} are due to energy transitions of metal complex.

3.1.3 Mass spectroscopic study:-Mass spectrometry is often used to determine the mass to charge ratio of ions. This method is used in the pharmaceutical industry to determine the mass of molecules.Mass spectroscopy was used to determine the mass to charge ratio of the ligand and metal complex, i.e. m/z. This procedure converts the sample to the vapour phase and then bombards it with high energy electrons to knock out an electron. Thus, a positively charged ion is formed, referred to as a molecular ion, abbreviated M+. Additionally, M+1, M+2 ions are formed as a result of ionisation.The produced ions are measured and registered under an electric and magnetic field to produce a mass spectrum. The molecular weights of the ligand and metal chelate were determined using a shimadzu quadrupole mass spectrometer; the findings are shown in Table 3.

Table 3: Molecular weights of ligand and metal complex

Mass spectroscopic data → Compound ↓	**Theoretical molecular weight**	**Experimental data**	
		m/z	**Major fragments**
ANQ	173.17	174	175
Fe $(ANQ)_2$	402.18	400	390, 382, 360, 350, 328, 344, 244, 187, 174
Cu $(ANQ)_2$	409.88	410	402, 400, 382, 345, 340,328, 244, 187, 175, 174

Above data is depicted that the experimental data correlates to Theoretical molecular weights.

3.1.4 Elemental analysis

The CHN research was performed to determine the amounts of Carbon, Hydrogen, and Nitrogen. In CHN analysis, the sample is subjected to flash combustion and then oxidised to produce simple compounds that can be detected using a thermal conductivity detector or infrared spectroscopy. The Perkin Elmer instrument was used to analyse the ligand and metal complexes, and the results are summarised in Table 4. Additionally, the effects were equivalent to theoretical values.

Table 4: Result of Elemental analysis (CHN)

CHN analysis → Compound ↓	**Carbon (%)**		**Hydrogen (%)**		**Nitrogen (%)**	
	Theoretical	**Experimental**	**Theoretical**	**Experimental**	**Theoretical**	**Experimental**
ACQ	69.4	68.7	4.1	4.1	8.1	7.7
Fe $(ANQ)_2$	59.73	54.42	3.51	2.87	6.97	5.96
Cu $(ANQ)_2$	58.61	59.40	3.44	3.36	6.83	6.30

The elemental analysis revealed that the experimental values of ligand and metal complexes are in close harmony with their theoretical values.

3.1.5 Metal analysis by ICP MS: Inductively coupled plasma mass spectrometry (ICP-MS)

The percentage of metal contents was measured and compared to theoretical values using the inductive pair of MS (IPS) and summarised Table 5 results. Table 5 data.

Table 5: Result of Metal content by ICP MS

Metal content → Compound ↓	**% Metal content**	
	Theoretical	**Experimental**
Fe $(ANQ)_2$	13.89	13.33
Cu $(ANQ)_2$	15.50	12.82

Experimental results of metal contents are matches with the theoretical contents.

3.1.6 TGA and DSC study:

Samples subjected to temperatures in thermogravimetric analysis (TGA) calculate properties such as phase transitions, adsorption, absorptions or desorption.

The TGA has been studied in all metal complexes (Thermo gravimetric analysis). Weight loss against temperature was analysed for the metal complexes. The research has also been expanded for temperature heat transfer, i.e. DSC.

Fig-3 and 4 indicates the TGA for Fe $(ANQ)_2$ and Cu $(ANQ)_2$.

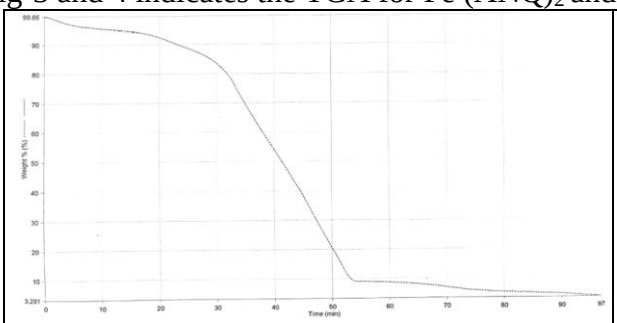


Fig-3: TGA for fe $(ANQ)_2$

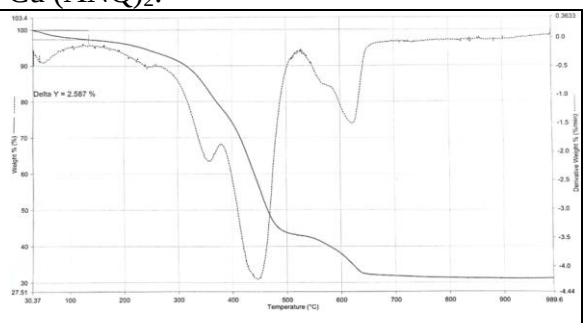


Fig-4: TGA for Cu $(ANQ)_2$

The findings of TGA showed that weight loss is caused by thermal decomposition. Cu (ANQ)2 exhibits weight loss at about 6500 C and Fe (ANQ)2 is decomposed at 530 C and continually shows weight loss.

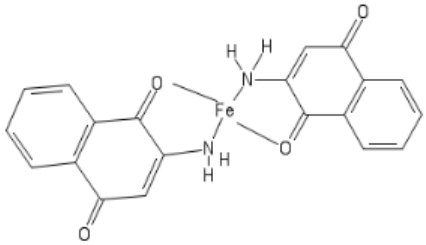
3.1.7 X-ray diffraction study:

The science of X-ray diffraction is used extensively for the identification of compounds' cryptic / amorphous character. It is often used to determine various types with substances with crystalline shape. This technique has extensive applications in the pharmaceutical and research sectors.

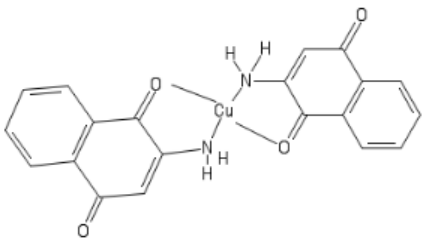
The X-ray diffraction metal complexes have been studied and both ligands and metal complexes have been identified as "Crystalline in nature."

Fig 5 show the structure of metal complexes.

Fig 5: Molecular structure for Metal complexes [Fe $(ANQ)_2$, Cu $(ANQ)_2$**]**



Fe $(ANQ)_2$



Cu $(ANQ)_2$

3.1.8 Microbiological study

The ligand and metal chelates' microbiological activities were assessed and summarised with Cisplantin medicine and records. Agar Well Diffusion Method for antimicrobial action in test substance. Media: Bacterial Nutrient Agar and Fungal Chloramphenicol Yeast Glucose Agar. Cultivations screened for activity: Bacterial crops: NCIM 2063, Staphylococcus aureus NCIM 2079, Escherichia coli NCIM 2061, Proteus vulgaris NCIM 2813. Bacterial crops: NCIM 2063 Cultural Fungal: Candida albicans NCIM 3471 Aspergillus niger NCIM 501. Temperature incubation: 37°C, time of incubation: 24 hrs.

Procedure: The Agar Well diffusion method was used to conduct antibacterial operation of the test material. A separate 24-hour old crop of several species was packed. The sterile chloramphenicol yeast glucose Agar have been prepared for bacterial colonies as well as for fungal crops. A cultivation of 0.2 mL was distributed to separate plates for each kind of

microorganism with sterile swab. In the agar with 8.0 mm cork borer on one platform four or five wells were prepared. Dimethyl sulfoxide (DMSO) has been developed as a stock solution for a 10 mg/ml suspension of the test sample. Each well was fitted with a 50 µl inventory solution. Added the inventory approach. Normal use of cisplatin was 0.5 mg/ml (Std). The plates have been incubated 24 hours at 37°C. The inhibition area was measured in millimetres after incubation (mm). Table 6 presents antibacterial action in the mm inhibition zone against defined species.

Table 6: Antibacterial activity of metal complexes:

Antibacterial activity → Compound ↓	**Name of bacteria (Results :Zone of inhibition in mm)**					
	Bacillus subtilis	Staphylococcus aureus	Escherichia coli	Proteus vulgaris	Aspergillus niger	Candida albicans
Fe $(ANQ)_2$	29	20	0	28	15	0
Cu $(ANQ)_2$	24	18	0	0	14	0
Standard	0	0	15	0	0	0

The table above reveals that the complex of cobalt metal has good antibacterial activities relative to normal cisplatin.

IV. CONCLUSIONS:

A synthesis was made of 2-amino-1,4-naphthoquinone and its Cu & Fe complexes. The elementary research, the FTIR, the electronic spectra, mass spectroscopy, thermogravimetry as well as the radiation diffraction and metal content by ICPMS characterised certain ligands and metal complexes. Crystalline in nature, the metal chelates were discovered. Microbiological activities have been identified as well as normal cisplatin. Both structural effects are well in line with the theoretical values. Thermal study showed that the high temperature metal chelates are decomposed.

V. ACKNOWLEDGEMENT:

We special thank Dr. RAKESH KUMAR, JJT/2K9/SC/2364, JJTU JhunJhunu, Rajastan for his valuable support and permission to publish this work.

VI.REFERENCES

(1) Prescott B., Potential antimalarial agents. Derivatives of 2-chloro-1,4-naphthoquinone, J. Med. Chem.1969,12, 181-182

(2) E.M. Hodnett, C. Wongwiechintana, W.J. Dunn 3rd, P. Marrs, Substituted 1,4-naphthoquinones vs. theascitic sarcoma 180 of mice, J. Med. Chem. 1983, 26, 570 -574.

(3) Camara, C.A.; Silva, T.M.S.; Silva, T.G.; Martins, R.M.; Barbosa, T.P.; Pinto, A.C.; Vargas,
M.D.Molluscicidal activity of 2-hydroxy- [1,4]naphthoquinone and derivatives. An. Acad. Bras.
Cienc. 2008, 80, 329–334.

(4) Sharma U., Katoch Deepali, SoodSwati, Neeral Kumar, Bikram Singh, Thakur Archana and GulatiAravind, Synthesis and antifungal activity of 2-Amino -1,4- naphthoquinone using silica supportedperchloric acid(HClO4-SiO2) as a mild, recyclable and highly efficient heterogeneous catalyst, IndianJ. Chem., 2013, 52B, 1431-1440.

(5) A.D. Mandke, N.R. Gonewar, R.G. Sarawadekar and A.B. Pawar, International Journal of ChemTech Research, Vol.10 No.9, pp 291-298, 2017.

A STUDY TO ASSSESS THE EFFECTIVNESS OF PLANNED TEACHING PROGRAMME ON KNOWLEDGE REGARDING DISTRACTION THERAPY FOR REDUCING PAIN IN INFANT DURING IMMUNIZATION AMONG STAFF NURSES IN SELECTED HOSPITALS OF INDORE [M.P.]

MRS. BHAWANA KANOJIYA, Ph.D. SCHOLAR (bhawanakanojiya@yahoo.com)
JJTU UNIVERSITY JHUNJHUNU (RAJASTHAN)

Abstract:-Role of nurse in immunization of infant Involved and prepared in all aspects of immunization- education, managing vaccination, vaccine administration and prescription, and advisory roles very likely to promote and support immunization. successful in overcoming key barriers to full engagement in immunization activities such as requirement for prescription and other individual, system and organizational barriers Vaccination are safe and effective can go a long way towards assuring parents that they are doing the best thing for their children, a pediatric nurse practitioner who represents. In this was noted at post-test arrange that the normal (Mean ± Standard Deviation) information scoring (13.09±2.76 focuses) of staff nurses observed to be altogether more prominent and improved after organization of organized showing program when contrasted with normal pre-existed learning scoring (6.59±2.63 focuses) at gauge (pre-test) organize.

Key words – Effectiveness, Planned teaching programme, Knowledge, Distraction Therapy, Immunization.

Introduction:-*Pain*is an uncomfortable sensation, or feeling. It can be constant (always there) or intermittent (coming and going). Pain can be dull and aching, sharp, or throbbing. It can be both physical and mental, and every infant experience it differently. Infant feel pain when their brains send out special signals to their bodies. Usually, they are sick or injured when their brains send these signals. Feeling pain is a signal that *something is wrong.* There are many causes of pain in babies. There are the typical ones, like colic, circumcision, teething, and vaccine (immunization) shots. Some babies may have health problems and may experience pain as part of their disease process or painful treatments.

Review of literature

Ibitoye mas pro.bukolaet al (2017) effectiveness of distraction as procedural pain management technique in pediatric oncology patients: a meta-analysis and systematic review – Nigeria the study aims for investigation and procedural exertion for pediatric oncology painful experience to the children ongoing any sought of medical treatment methodology used was , Medline, psych info, Cochrane library, amid, cinahl, web of science, and embassy electronic databases were used studies comparing distraction methods for infant t. by a randomized controlled trials methodology was used in the study thaws e research conducted. in 299 studies were identified, and 7 randomized control trials identified as inclusion and exclusive criteria. exertion was assessed interview method self-report, observer-report, and body changes.

Research Objectives

1. To assess pre test and post test knowledge score regarding Distraction therapy for reducing pain during immunization among staff nurses in selected hospital of Indore.

2. To assess the effectiveness of planned teaching programme on knowledge regarding Distraction therapy for reducing pain during immunization among staff nurses in selected hospital of Indore.

3. To find out the association between both pretest and posttest knowledge score regarding Distraction therapy for reducing pain in infant during immunization among staff nurses with their selected demographic variables.

Research hypothesis

H_{01} -There will be no significant difference between pre-test score and post-test score on knowledge regarding distraction therapy among staff nurses.

H_{A1}- There will be significant difference between pre-test score and post-test score on knowledge regarding distraction therapy among staff nurses.

H_{02} – There will be no significant effectiveness of planned teaching programme on knowledge regarding Distraction therapy for reducing pain during immunization among staff nurses.

H_{A2} – There will be significant effectiveness of planned teaching programme on knowledge regarding Distraction therapy for reducing pain during immunization among staff nurses.

H_{03} – There will be no significant association between the pre-test and post-test knowledge score regarding distraction therapy among staff nurses with selected demographic variable.

H_{A3} – There will be no significant association between the pre-test and post-test knowledge score regarding distraction therapy among staff nurses with selected demographic variable.

Methodology:- An evaluative approach was used for the study. Pre-experimental design was selected for the study. The samples were recruited by non–probability convenient sampling technique. The total number of subjects was 80 with 20 subjects each. Main study was conducted in the selected hospital of Indore, according to inclusive and exclusive criteria. Informed consent from the staff nurses was obtained prior to data collection process and collect the data in the form of pre-test and post-test. Then going for analysis and interpretation of data with inferential statistics like chi-square, mean, median, standard deviation etc.

Results

Section I - Frequency and percentage distribution of selected sample characteristics

Frequency and percentage distribution	Frequency (N)	Percent (%)
Age in Years		
20-30 year	44	55.0
30-40 year	14	17.5
40-50 year	20	25.0
≥ 50 year	2	2.5
Gender of Staff Nurses		
Male	33	41.3
Female	47	58.8
Professional Qualification of Staff Nurses		
General Nursing Midwifery	34	42.5
B. Sc. (Nursing)	30	37.5
Post Basic B. Sc. (Nursing)	16	20.0
Clinical Experiences of Staff Nurses		
0-18 months	23	28.8
18-36 months	30	37.5
36-54 months	14	17.5
≥ 54 months	13	16.3

Previous Knowledge of Staff Nurses		
Yes	47	58.8
No	33	41.3
Source of Previous knowledge of Staff Nurses		
None	33	41.3
Book	13	16.3
Journal	8	10.0
In-service educational programme	12	15.0
Conference	2	2.5
Mass Media	12	15.0
Total Sample Size	**80**	**100.0**

❖ **Age-** Results showed that the greater part (44, 55.0%) of the staff nurses was all the more habitually had a place with lower age gathering of 20-30.

❖ **Gender-**Result demonstrated that real section (47, 58.8%) of populace of staff nurses was most ordinarily female included Rest, thirty-three (41.3%) staff nurses were laboring in pediatric ward and labor room observed to be male included watching the learning of distraction therapy for decreasing pain in infant child during vaccination.

❖ **Professional qualification-**This was distinguished that the degree of expert capability of significant section (34, 42.5%) of populace of staff nurses observed to be all the more every now and again broad nursing maternity care.

❖ **Duration of experience-**Comparison in clinical encounters of laboring in medical clinic setting of staff nurses demonstrated that the experience of most (37.5%) of the staff nurses were all the more oftentimes somewhere in the range of 18 and three years.

❖ **Previous knowledge of staff nurses-**The investigation about past information about distraction therapy for diminishing pain during vaccination demonstrated that real section (47, 58.8%) of populace of staff nurses had past learning about distraction therapy for decreasing pain in infant children during immunization.

❖ **Source of knowledge of staff nurses** This was noticed that the wellsprings of past learning of 13 (16.3%) staff nurses' staff nurture about distraction therapy for diminishing pain in infant children during immunization observed to be books when contrasted with 12 (15.0%) staff nurses who gained information during In-administration instructive program.

Section II - The assessment of the knowledge of planned teaching programme on distraction therapy to reduce pain in infant during immunization

Parameter	Sampling Stage	Scatterings of knowledge scoring Mean ± SD	Z-Statistic	p-value (LOS)
Knowledge about Distraction Therapy	**Pre-test**	6.59±2.63	26.51	**p<0.001** #
	Post-test	13.09±2.76		
	Mean Difference	**6.50 points**		

This was noted at post-test arrange that the normal (Mean ± Standard Deviation) information scoring (13.09±2.76 focuses) of staff nurses observed to be altogether more prominent and improved after organization of organized showing program when contrasted with normal pre-existed learning scoring (6.59±2.63 focuses) at gauge (pre-test) organize. Be that as it may,

the distinction of 6.50 focuses among when organization of organized encouraging system in normal information scoring of staff nurses observed to be measurably unequivocally ($p<0.001$) critical.

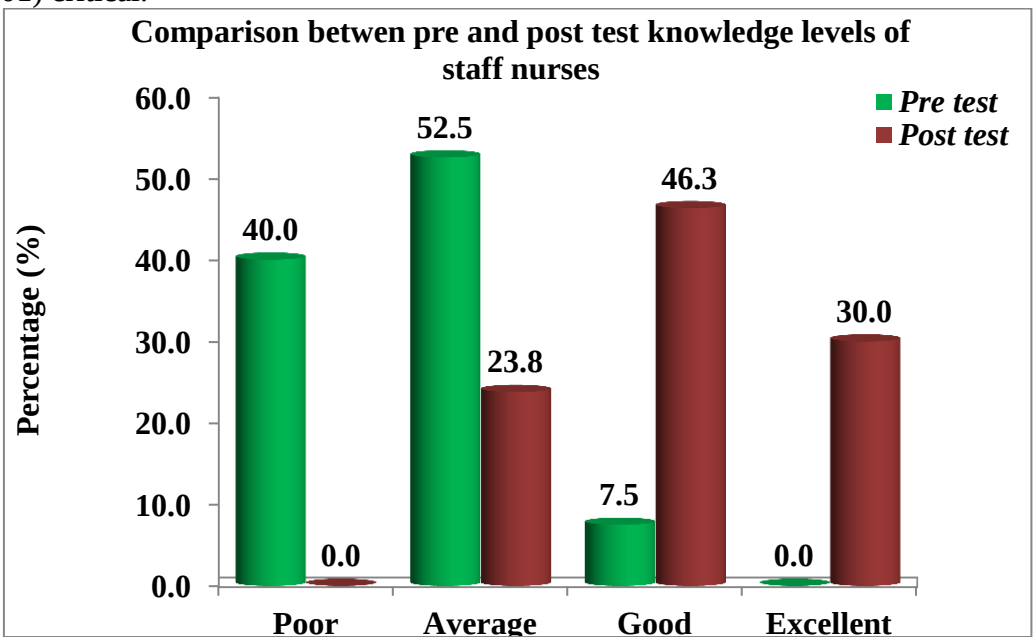


Fig – 1 Multiple Bar diagram is presenting the comparison in proportion of pre-test and post-test knowledge levels of staff nurses of selected hospitals.

Conclusion:-Above all inferences concreted that the planned teaching programme on knowledge among staff nurses of selected hospitals regarding distraction therapy for reducing pain in infant during immunization is effective which can also be confirmed from observing Interpretations made above demonstrate that there was a significant difference between pretest and posttest knowledge scoring of staff nurses and also there was a difference between pretest and posttest levels of knowledge of staff nurses regarding distraction therapy for reducing pain in infant during immunization. Henceforth, this finding concluded the effectiveness of planned teaching programme on knowledge of distraction therapy for reducing pain in infant during immunization among staff nurses of selected hospitals which confirms and partially fulfills the objective of the present study.

Limitations

1] The study is limited to the selected hospital of Indore.
2] Sample size is limited to 80 Staff nurses.

References

1] OP, Gupta P & Paul VKGhai. Essential Pediatrics. 6th ed.New Delhi: CBS Publishers, 2008.p.181.

2] Hockenberry Marilyn j winkelstein Wilson Essential of Paediatrics nursing 7th edition pg no 670, 715 Elsevier

3] Hockenberry Marilyn. j Wrongs Nursing Care of Infant And Children 8th Edition page no 221 ,1090

4] Broome, M. E.,& Endsley,R. (1989). Book of Maternal presence, childrearing practices, and children's response to an injection. *Researching Nursing and Health, 12*, 229–235.

5] Varni, J. W., Blount, R. L., Waldron, S. A., & Smith, A. J. (1995).Management of pain and distress. In M. C. Roberts (Ed.), *Handbook of pediatric psychology* (2nd ed., pp. 105

6] Ball JW & Bindler RC. Clinical handbook for paediatric nursing.2nd ed. St. Louis: Mosby Publication; 1998.

7] Agras S, Sylvester D & Oliveau D. The epidemiology of common fear and phobias. Comprehensive Psychiatry;1969:1511-56.

8] American Academy of Paediatrics Committee on Infectious Diseases. Recommended childhood and adolescent immunization schedule-United States, 2003.Pediatrics 2003;111:212-16.

9] Anand KJS, Thrivikraman KV, Engelmann M, Su Y &Plotsky PM. Adult rat behaviour and stress responses following pain in the neonatal period. Paediatric Res 1995; 37:57A.

10] Fassler D. The fear of needles in children. Am J Orthopsychiatry1985; 55:371–77Hamilton JG. Needle phobia: a neglected diagnosis. JFamPract 1995; 41:169-75.

11] Fernandez E. A classification system of cognitive copingstrategies for pain; 1986; 26,141,151.

12] McCarthy MA &Kliebre C. A conceptual model of factors influencingchildren's response to a painful procedure whenparents are coaches. Journal of Paediatric Nursing 2006;

13] MacLaren JE & Cohen LL. A comparison of distraction strategies for venipuncture distress in children. JPediatrPsychol2005; 30:387–96.

14] French MG, Painter CE & Larry LD. Blowing away shotpain: a technique for pain management during immunisation.Paediatrics 1994 Jun; 6:210-7.

15] Bellieni CV, Cordelli DM, Raffaelli M, Ricci B, Morgese G&Buonocore G. Analgesic effect of watching TV during venipuncture.Arch Dis child. 2006 December; 91(12):1015-1017.

16] Nikita Suryawanshi, Effectiveness of Play Therapy in Reducing Stress among Hospitalized Children (6-12 years) Undergoing Surgery in Selected Hospitals, Indian Journal of Research, 2016.

17] Sanjeev Deshpande, Martin P Ward Platt, Albert Aynsley-Green, Patterns of the metabolic and endocrine stress response to surgery and medical illness in infancy and childhood, 1993.

A Review of Literature: Wireless Sensor Network (WSN) Technology

Miss. Rupanawar Priya Dadasaheb[1], Dr. J.D. Deshpande[2]

II. [1]RESEARCH SCHOLAR, DEPARTMENT OF ELECTRONICS, SHRI JAGDISHPRASAD JHABARMAL TIBREWALA UNIVERSITY, JHUNJHUNU, RAJASTHAN, INDIA.

III. [2]ASSISTANT PROFESSOR, DEPARTMENT OF ELECTRONIC SCIENCE, T.C. COLLEGE OF ARTS, SCIENCE AND COMMERCE, BARAMATI (AUTONOMOUS), BARAMATI, MAHARASHTRA, INDIA.

rupnawarpd@gmail.com, deshpandejd@gmail.com

Abstract:-Today, there has been global importance for Wireless Sensor Networks (WSNs). The technological growths of sensors like Micro Electro Mechanical Systems (MEMS), embedded systems, Wireless Communication and Wireless Sensor Applications have massive interest in Wireless Sensor Networks in industries as well as in our daily life. WSNs are one of the independent sensing devices having thousands of applications. Environment Monitoring, tracking and controlling, Healthcare and surveillance fields are the common and specially, habitat monitoring, object tracking, nuclear reactor controlling, fire detection, traffic monitoring etc. are applications of WSN. WSNs are nothing but the networks of crowded small sized sensors with the ability of wireless communication. It consists of structural distribution of autonomous devices using sensors to simultaneously monitor the data wirelessly. Wireless sensor network is deployed separately in a region where it has to collect data over the sensor nodes. WSN acquires self-configured and infrastructure less wireless network. But, applications are limited to sensors used and analysis of data collected. Indeed, Wireless Sensor Networks have secured outstanding acceptance because of their adjustability, problems solution for various application domains and as independent devices, they can provide overall distributed and collaborative network. Considering radio communication networks, we have to co-ordinate WSN, Gateway, end nodes and router nodes. For this reason, the structure of WSN comprises various topologies such as Star, Mesh, Ring, Cluster or Tree topology.

Keywords:-WSN, OSI Architecture, Network Topologies, Zigbee.

I: Introduction:-A Wireless Sensor Network is assembling of nodes organized into a co-operative network. Wireless Sensor Networks are becoming very leading technology. As technology approaches, the purpose and acceptance of Wireless Sensor Networks (WSN) have been expanding. Wireless Sensor Networks (WSNs) is an emerging technology with a wide range of potential applications such as patient monitoring systems, earthquake detection, environment monitoring, military applications (such as navigation, surveillance, security and target tracking management)[18]. Original motivation for the sensor networks research is Military applications. More than that, it is very important to understand architecture for WSNs before its set up for any application. This paper yields WSN architecture on the basis of OSI model with some of the protocols in order to attain good background on the WSN. After the Bluetooth, Zigbee is the new standard in Wireless Personal Area Network (WPAN). Systems having Zigbee have low cost, low power dissipation, low data rate. These are suitable for remote monitoring systems. This paper reflects basics of WSN, Architecture of WSN, Zigbee and Network topologies required for communication with WSN.

II: Architecture for WSN:

In Wireless Sensor Network (WSN), **Sensor Network Architecture** is used. It can be helpful in different regions such as the schools, nursing homes, construction sites, pathways, etc. for diverse applications like flood management, security management, emergency management, etc. Two types of WSN architecture are as: Layered Network Architecture, and Clustered Architecture.

1. Clustered Network Architecture:

In Clustered Network Architecture, Sensor Nodes adjusts into groups called clusters, independently. It is based on the Leach Protocol (Low Energy Adaptive Clustering Hierarchy). This makes use of clusters.

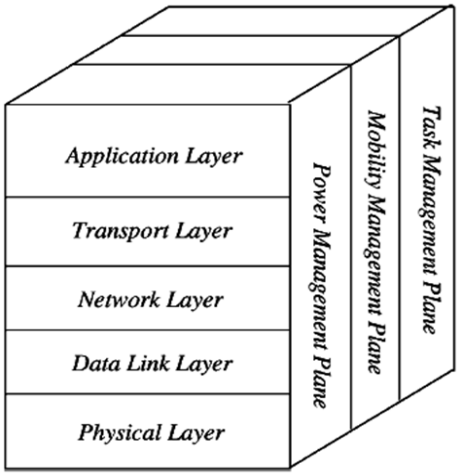
2.FiveLayer OSI Architecture:

There are three cross layers planes added to those above five layers of OSI model i.e. power management plane, connection management plane, task management plane. These layers are used to maintain the network connectivity and let the nodes to work together so that there is an increase in the overall efficiency of the network.

1)Physical Layer:-Physical layer is responsible for an interface to transmit a stream of bits to the physical medium and generating carrier frequencies, frequency selection, signal detection, signals modulation and data encryption.[17]. IEEE 802.15.4 suggested as standard for low rate personal area and WSN with low cost, complexity, power consumption, communication range to capitalize on battery life. Use CSMA/CA, support star and peer to peer topology. Many versions of IEEE 802.15.4 are available.

Most common architecture for WSN proceeds from the OSI Model. Essentially in sensor network five layers are used as: application layer, transport layer, network layer, data link layer and physical layer. The three cross layers planes are present in these 5 layer architecture and they are added as shown in Fig. 1[3].

Figure 1: WSN Architecture



2) Data Link Layer:-The data link layer is responsible to manage the error correction and error detection mechanisms. It is also liable for the multiplexing of data frame detection, data streams, error control and medium access.

3) Network Layer:-The foremost function of the network layer is routing. This layer has a lot of challenges depending on the application but apparently, the major challenges are in the power saving, limited memory and buffers, and sensor does not have a global ID and have to be self-organized. This is unlike computer networks with IP address and central device for controlling [3, 4]. The key idea of the routing protocol is to define a reliable path and redundant paths according to a certain scale called metric, and it differs from protocol to protocol. There are number of routing protocols available for network layer, they can be categorized as; flat routing (for example, direct diffusion) and hierarchal routing (for example, LEACH) or can be divided into time driven, query driven and event driven. For continuous time driven protocol, the data is ordered periodically and time driven for applications that need a periodic monitoring. In event driven and query driven protocols, the sensor replies according to action or user query.

4) Transport Layer:-The duty of this layer is to grant congestion avoidance and reliability and there are a lot of protocols designed to provide this function are either applied on downstream

and upstream. This layer is exceptionally essential when a system is formed to access other network. The basic function of this layer is to get data from above layers and separate it up into smaller units then pass them to the network layer and ensure the delivery of all pieces at the other end. It contains a collection of various protocols like TCP, UDP, SCTP, DCCP, and SPX.

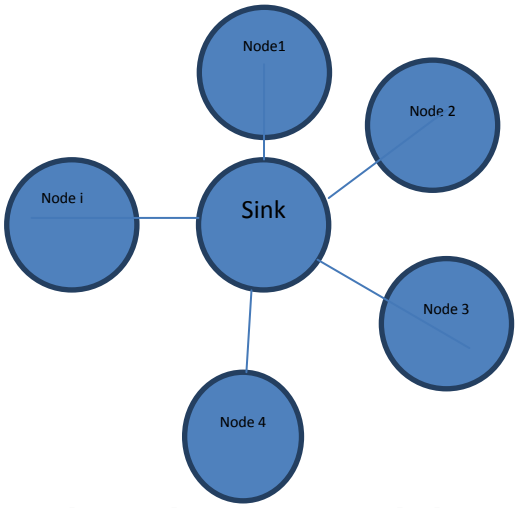
5)Application Layer:-This layer subjects to traffic management and provides software for distinct applications that converts the data in an understandable form or sends queries to obtain information. Sensor networks deployed in different applications in various fields, for example; medical, military, environment, and agriculture fields [3]. It contains a variety of protocols like NNTP, SIP, SSI, DNS, FTP, GOPHER, NFS, SMTP, SMPP, ANMP and TELNET.

III. Topologies:-In Wireless Sensor Networks, the topology is crucial element which plays an important role in minimizing various constraints like limited energy, latency, computational resource crisis

And quality of communication [9].The evolution and installment of WSNs have taken conventional network topologies in new recommendations. Different Wireless sensor network topologies are Bus, Tree, Star, Ring, Mesh, Circular and Grid.

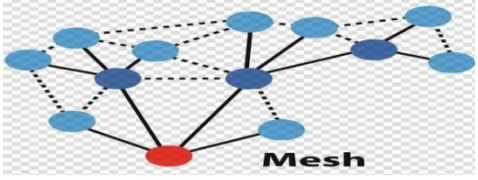
1)Star Topology:-The unified communication must be routed through the centralized hub. Each node acts as "client" and the central hub is the "server or sink" as shown in Fig. 2.1. But there is the disadvantage of single path communication. The advantages are lowest power consumption and the topology is easy to enlarge the network; in other words we can say that this topology is scalable.

Fig 2: Star Topology



2) Mesh Topology:-It is a multi-hoping system where about each node communicates directly. The pictorial presentation of this topology is given below:

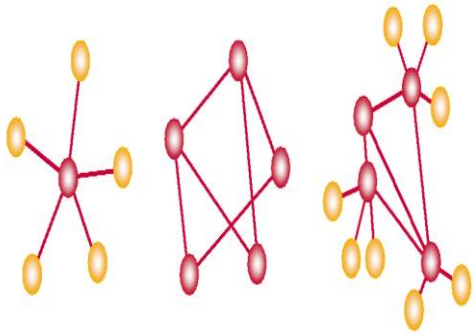
1. **Figure 3: Mesh Topology**[10]



No failure in the system, more scalable network, chances of data loss are very less due to alternative paths present in this topology are some advantages of mesh topology. But, higher power dissipation, too many extra paths, increased latency are some disadvantages too in this topology.

3)Hybrid Topology:- It is a mixture of different topologies due to which it can get all advantages of included topologies. For example, the topology in which sensors are deployed in a star topology along with routers arranged in mesh topology. The benefits of such network topologies are reliable communication, less power consumption than mesh topology and many alternative routes are available etc. But, there are disadvantages too such as scalability and two different types of topologies interfacing.

Figure 4: Hybrid Topology[11]

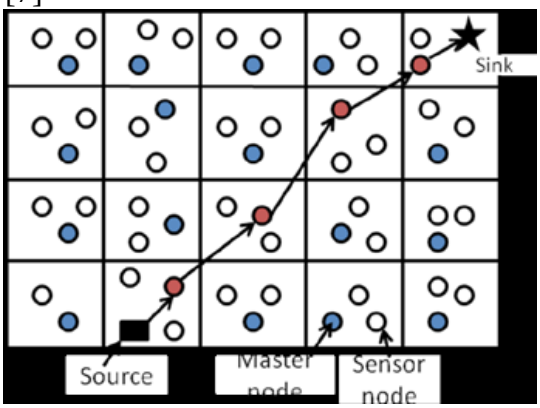


4) Grid Topology:

In this topology, sensor network area is being divided into similar size square grids. In each grid, only one node should be in working state and they should be worked in the rotations to increase network lifetime. Active node is known as grid-head and its function is to forward routing data and transmit it. The routing is held in grid by grid pattern.

4) Grid Topology:

Figure 5: Grid Topology[7]



Wei et al.[21] establish the nodes within the grid by clustering way. The clustering head is dynamic selection in keeping with energy consumption of the cluster nodes, and then via a relaying node it communicates with BS. This algorithm helps to reduce node energy dissipation and prolonged life of the system also enhanced the load balance of the network.

IV: Zigbee:-ZigBee is new wireless open standard communication technology with short distance, low complexity, low energy consumption, slow data rate and low cost based on IEEE 802.15.4 Standard with the capacity of coordinating mutual communication among thousands of tiny sensors [6], meeting on standardizing along with enabling interoperability of products having home control, building automation and industrial control and monitoring. One of the most important applications is embedded system. The WSN based wireless communications used is dependent on the application provisions, considering the needs like transmission space, bandwidth of sensory data, energy source and power dissipation. Common communications include standard protocols such as 2.4 GHz radio based on either IEEE802.15.4 (ZigBee).ZigBee comes with power and cost-efficient solution as compared to Bluetooth and IEEE 802.11b. All the frequency bands in 2.4 GHz radio

communication range are based on Direct Sequence Spread Spectrum (DSSS) Wei et al.[21] establish the nodes within the grid by clustering way. The clustering head is dynamic selection in keeping with energy consumption of the cluster nodes, and then via a relaying node it communicates with BS. This algorithm helps to reduce node energy dissipation and prolonged life of the system also enhanced the load balance of the network.

IV: Zigbee:-ZigBee is new wireless open standard communication technology with short distance, low complexity, low energy consumption, slow data rate and low cost based on IEEE 802.15.4 Standard with the capacity of coordinating mutual communication among thousands of tiny sensors [6], meeting on standardizing along with enabling interoperability of products having home control, building automation and industrial control and monitoring. One of the most important applications is embedded system. The WSN based wireless communications used is dependent on the application provisions, considering the needs like transmission space, bandwidth of sensory data, energy source and power dissipation. Common communications include standard protocols such as 2.4 GHz radio based on either IEEE802.15.4 (ZigBee). ZigBee comes with power and cost-efficient solution as compared to Bluetooth and IEEE 802.11b. All the frequency bands in 2.4 GHz radio communication range are based on Direct Sequence Spread Spectrum (DSSS) In Star topology, all messages travel through a central hub or node. Tree topology has one uppermost node and other nodes are connected to it like its branches and information travels up the tree and then down the tree as far as its destination is obtained. The mesh network consist one top node and its branches are connected to each other and data travels across tree whenever a convenient route is available. [19].

Conclusion:-Wireless Sensor Network became most prevailing technology nowadays due to its low power requirement, low cost and high efficiency in numerous application areas. In this paper, we have discussed about WSN Architecture, topologies and Standard protocol Zigbee. Focusing Wireless Sensor Network in various applications along with different topologies requires the well knowledge about its architecture. The different topologies depend on the energy consumption reduction so that network's lifetime performance is increased. Mesh and hybrid topologies collect more data but the grid topology establishes more energy efficient network. The future work will be more circumstantiated analysis of topologies of WSN with Zigbee protocol.

Reference

1.AamirShaikh and SirajPathan (2012), Research on Wireless Sensor Network Topology, *International Journal of Information and Education Technology*, Volume 2, Number 5, 476-479.

2.Ahmad Abed Alhameed Alkhatib et al. (2012), Wireless Sensor Network Architecture, *International Conference on Computer Networks and communication Systems (CNCD – 2012)*,12.

3.Akyildiz, I.F. et al. (2002), Wireless sensor networks: a survey,*ComputerNetworks*, volume 38, number 4, 393-422.

4.Akyildiz, et al. (2007) A survey on wireless multimedia sensor networks. *ComputerNetworks*,volume 51, number 4, 921-960.

5.C.P. Gupta and Arun Kumar (2013), Wireless Sensor Networks : A Review, *International Journal of Sensors, Wireless Communication and Control*, 3, 25 -36

6.D. Cox, et al. (2005), "Time synchronization for ZigBee networks," *Proceeding of the Thirty-Seventh Southeastern Symposium, System Theory*, pp. 135-138.

7.Divya Sharma et al. (2013), Network Topologies in Wireless Sensor Networks: A Review, *International Journal of Electronics and Communication Technology*, volume4, Number 3, 93 – 97.

8.Fan Yang, et al. (2010),"Two Simplified Coding Schemes for Wireless Sensor Networks with Star Topologies", *International Conference on Software, Telecommunications and Computer Networks (SoftCOM)*, pp. 185 – 189.
9.Handbook of Sensor Networks: Algorithms and Architectures, Edited by I. Stojmenovic´ ISBN 0-471- 68472-4 Copyright # 2005 John Wiley & Sons, Inc.
10.https://www.geeksforgeeks.org/sensor-network-architecture/
11.https://p2.hiclipart.com/preview/605/490/332/blue-star-mesh-networking-computer-network-wireless-mesh-network-wireless-network-wireless-sensor-network-star-network-wifi-png-clipart.jpg
12.https://www.elprocus.com/architecture-of-wireless-sensor-network-and-applications/
13.https://www.researchgate.net/figure/Zigbee-Based-Network-Topologies_fig1_269517670
14.https://www.researchgate.net/profile/Gerd-Scholl 2/publication/228476897/figure/fig6/AS:341379252277249@1458402564049/Network-topologies-typically-used-in-wireless-sensor-networks-From-left-to-right-start.png
15.Imad S. AlShawi, Lianshan Yan (2012),"Lifetime Enhancement in Wireless Sensor Networks Using Fuzzy Approach and A-Star Algorithm", *IEEE Sensors Journal*, Volume 12, Number 10, 3010 – 3018.
16.Kamaldeep Kaur et al.[2014], Wireless Sensor Network: Architecture, Design, Issues and Applications, *International Journal of Scientific Engineering and Research (IJSER)*, Volume 2, Issue 11, 2347-3878.
17.Koubaa, et al. (2005), Lower Protocol Layers for Wireless Sensor Networks: A Survey. *IPPHURRAY Technical Report*, HURRAY-TR-051101.
18.KazemSohraby et al. (2007),"WIRELESS SENSOR NETWORKS:Technology, Protocols, and Applications", published by John Wiley & Sons, Inc., Hoboken EW Jersey.
19.Nidhi Patel et al. (2013), Wireless Sensor Network Using Zigbee, International Journal of Research in Engineering and Technology, Volume 2, Issue 6, 1038-1042.
20.Thoraya Obaid et al. (2014), Zigbee Technology and its application in Wireless Home Automation System: A Survey, *International Journal of Computer Networks and Communications (IJCNC)*, volume 6, Number 4, 115 – 131.
21.Wei-dong Liu et al. (2010), "A Low Power Grid-based Cluster Routing Algorithm of Wireless Sensor Networks", *IEEE International Forum on Information Technology and Applications (IFITA)*, Volume 1, 227 - 229.

ANTI DIABETIC ACTIVITY EVALUATION OF SOYBEAN SEEDS IN ALBINO RATS.

Rucha. S. Jadhao,* K.R. Biyani

From,RuchaSubhash Jadhao*

ruche.jadhao@gmail.com

Mob. No: 9665274323, 9028533304.

ABSTRACT:-Diabetes is a gathering of metabolic sicknesses wherein there are high glucose levels over a drawn out timeframe. Diabetes is expected to either the pancreas doesn't create any insulin or insufficient insulin to assist glucose with entering our body's phones – or the insulin that is delivered doesn't work appropriately.

Rodents were made diabetic by a solitary intraperitoneal infusion of alloxan monohydrate (150 mg/kg). Alloxan was first gauged exclusively for every creature as per the body weight and afterward solubilized with 0.2 ml saline (154 mM NaCl) only before infusion. Two days after alloxan infusion, rodents with plasma glucose levels of 200 mg/dl were chosen for the investigation. Treatment with soybean seeds was begun after 48 hr. alloxan infusion.
Seven days treated pale skinned person Wister rodents with most noteworthy portion of splashed soybean (500ml/kg), sprouted soybean (500mg/kg), soybean seeds powder (500mg/kg) and ethanolic concentrate of soybean seeds (500mg/kg) fundamentally brought down raised blood glucose level when contrasted with diabetic control rodents.
This investigation shows that the soybean extricates have critical enemy of diabetic action against alloxan incited diabetes. This might be ascribed because of essence of phytoconstituents like saponin and isoflevonoids.
KEYWORDS:-Alloxan, Ethanolic, Insulin, Soybean, Diabetes

INTRODUCTION:-The word diabetes originates from Latin diabetes, which thusly originates from Antiquated Greek (diabenin) which actually signifies "a passer through; a siphon". Indian doctors recognized the
Ailment and arranged it as madhumeha or "nectar pee", taking note of the pee would draw in ants. The confusion is otherwise called 'Prameha', which means watering. In connection to human sickness it might have an importance of passing pee, qualified by prefix 'pra' which means overabundance in recurrence and amount and 'meha' which means urination.1, 2
Diabetes is a gathering of metabolic infections wherein there are high glucose levels over a drawn out timeframe. Diabetes is expected to either the pancreas doesn't create any insulin or insufficient insulin to assist glucose with entering our body's phones – or the insulin that is delivered doesn't work appropriately (known as insulin resistance).3, 4
Insulin is the hormone created by the pancreas that enables glucose to enter the body's cells, where it is utilized as fuel for vitality so we can work, play and by and large live our lives. It is fundamental forever. Glucose originates from processing starch and is likewise created by the liver.5, 6
Soybean protein organization decreased cholesterol; triglyceride, and Low thickness lipoprotein levels in solid people just as in diabetic patients, comparable impact was likewise seen in rodents. Soybean is a very rich wellspring of protein and fat, and a decent wellspring of vitality, nutrients and minerals and it has been demonstrated to be hypocholesterolemic in creatures.Soybean isn't just protein rich, yet in addition a decent wellspring of minerals like phosphorous, calcium, iron and dissolvable fiber. Soybean proteins supplement oat proteins to give wellspring of dietary protein of vegetable starting point for people.

Soybean diet is a decent choice in type 2 diabetes people because of its impact on hypertension, hypercholesterolemia, atherosclerosis and weight, which are normal sicknesses in diabetic patients. Besides, subbing creature protein for soybean or other vegetable protein may likewise diminish renal hyper filtration, proteinuria, and renal corrosive burden and in this manner decreases the danger of renal malady in type-2 diabetes.

MATERIALS AND STRATEGIES:

a)Collection and verification of the seeds:

The seed of the plant Glycine Max were gathered from the nearby market of Buldhana. They were verified by Head of Branch of herbal science Shri. Shivaji Science School Chikhli, Maharashtra.

b)Induction of diabetes in test creatures:

Rodents were made diabetic by a solitary intraperitoneal infusion of alloxan monohydrate (150 mg/kg). Alloxan was first gauged independently for every creature as indicated by the body weight and afterward solubilized with 0.2 ml saline (154 mM NaCl) only before infusion. Two days after alloxan infusion, rodents with plasma glucose levels of 200 mg/dl were chosen for the investigation. Treatment with soybean seeds was begun after 48 hr alloxan infusion.

1. Soaked soybean:

Soybean seeds were socked for 8 to 12 hours, socked seeds were ground to a fine glue, and milk was set up from this past by including water into it, at last this milk was warmed up till bubbling. This bubbled milk in the wake of getting cooled was separated. This separated milk was the last type of medication utilized. All creatures were partitioned in five gatherings each gathering contained six creatures. First gathering was treated with vehicle and gathering second was treated with diabetic control, bunch third was treated with 100 ml/kg of soybean milk, bunch forward was treated with 200 ml/kg and gathering fifth was treated with 500 ml/kg of milk.

2. Germinated soybean:

Soybean seed were splashed for 8 to 12 hours, left for 24 hours for germination at room temperature, sprouted soybean seeds were dried. These dried seed were ground into a powder and was utilized as medication. The arrangement was set up with typical saline arrangement [0.9 gm. NaCl in 100ml water]. All creatures were partitioned in five gatherings each gathering contained six creatures. First gathering was treated with vehicle and gathering second was dealt with diabetic control, bunch third was treated with 100 mg/kg of sprouted soybean, bunch forward was treated with 200 mg/kg and gathering fifth was treated with 500 mg/kg of developed soybean.

3. Soybean powder:

Dried soybean seed were gathered from showcase these dried seed were ground into a powder and was utilized as medication. The arrangement was set up with typical saline arrangement [0.9 gm. NaCl in 100 ml water] . All creatures were partitioned in five gatherings each gathering contain six creatures. First gathering was treated with vehicle and gathering second was diabetic control, bunch third was treated with 100 mg/kg of soybean seed, bunch forward was treated with 200 mg/kg and gathering fifth was treated with 500 mg/kg of soybean seed.

4. Soybean extricate:

The dried seed powder of Glycine Max was separated at room temperature with the supreme ethanol medium-term for the planning of the concentrates for this examination. The acquired concentrate was then aggregated at 500 C until a yellow dark colored hued strong mass was gotten further the in the wake of drying a yellow darker powder of medication is utilized for study. The arrangement was set up with typical saline arrangement [0.9 gm. NaCl in 100 ml water]. All creatures were separated in five gatherings each gathering contain six creatures. First gathering was treated with vehicle and gathering second was diabetic control, bunch third was treated with 100 mg/kg of soybean extricate, bunch forward was treated with 200 mg/kg and gathering fifth was treated with 500 mg/kg of soybean remove.

a) Collection of blood test and blood glucose assurance:

Blood tests were pulled back from tail tip of rodent. Blood glucose estimation a were done on day 1, 3, 5 and 7 of the investigation. Blood glucose estimation was finished by one touch electronic glucometer utilizing glucose test strips.

b) factual investigation:

Every one of the qualities fasting glucose, were communicated as mean ± standard deviation (SD) and investigated for ANOVA and post hoc Dunnet's - test. Contrasts between bunches were viewed as noteworthy at $P < 0.01$ levels.

RESULT

Phytochemical screening

The Phytochemical screening of Ethanolic extract of leaves of *Glycine Max* revealed the presence of flavonoids, proteins, peptides, linoleic acid, carbohydrates, oil and saponins. Tests for steroids, alkaloids, anthraquinones, glycosides, tannins, lactones, esters, and amino acids were found to be negative.

Assessment of Hostile to dibetic action of soybean seed in alloxan instigate diabetic rodent :

1. Impact of splashed soybean on blood glucose levels

7 days treatment of Splashed Soybean at the portion of 100ml/kg and 200ml/kg, demonstrated no critical abatement in blood glucose level on days 3, 5 and 7 when contrasted with diabetic benchmark group. 7 days treatment of Drenched Soybean at the portion of 500ml/kg indicated critical decline in blood glucose level on days 3, 5 and 7 when contrasted with diabetic benchmark group. The outcome was seen as time subordinate. The outcome got with Doused Soybean on blood glucose levels are given in table 5 and showed in Diagram 1.

Treatment Group	Day 1	Day 3	Day 5	Day 7
Normal	110±7.40	110±8.25	109±7.39	105±6.39
Diabetic Control	250±8.21	249±9.74	237±12.81	236±6.84
Soaked soybean	255±11.09	242±12.08	237±12.34	231±12.43

100ml/kg p.o				
Soaked soybean 200ml/kg p.o	256±11.86	253±12.94	249±13.05	246±14.63
Soaked soybean 500ml/kg p.o	254±13.32	210±12.92	201±13.43	185±13.74

Qualities are mean (n=6) ± SD table 5-impact of drenched soybean on blood glucose levels (mg/dl)

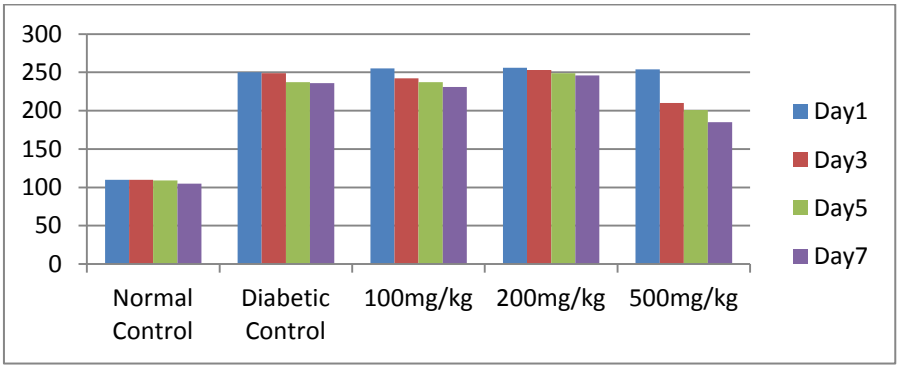


Diagram 1-impact of doused soybean on blood glucose levels (mg/dl)

2. Impact of sprouted soybean on blood glucose levels

7 days treatment of Sprouted Soybean at the portion of 100mg/kg and 200mg/kg indicated no critical abatement in blood glucose level on days 3, 5 and 7 when contrasted with diabetic benchmark group. 7 days treatment of Sprouted Soybean at the portion of 500mg/kg indicated critical abatement in blood glucose level on days 3, 5 and 7 when contrasted with diabetic benchmark group. The outcome was seen as time subordinate. The outcome acquired with Sprouted Soybean on blood glucose levels are given in table 6 and showed in Diagram 2

Treatment Group	Day 1	Day 3	Day 5	Day 7
Normal	110±7.40	110±8.25	109±7.39	105±6.39
Diabetic Control	250±8.21	249±9.74	237±12.81	236±6.84
Germinated soybean 100mg/kg p.o	265±11.37	252±12.05	248±12.34	235±13.14
Germinated soybean 200mg/kg p.o	253±11.55	242±12.76	232±11.54	228±12.87
Germinated soybean 500mg/kg p.o	264±12.45	201±11.56	192±11.49	188±11.87

Qualities are mean (n=6) ± SD table 6 - impact of developed soybean on blood glucose levels (mg/dl)

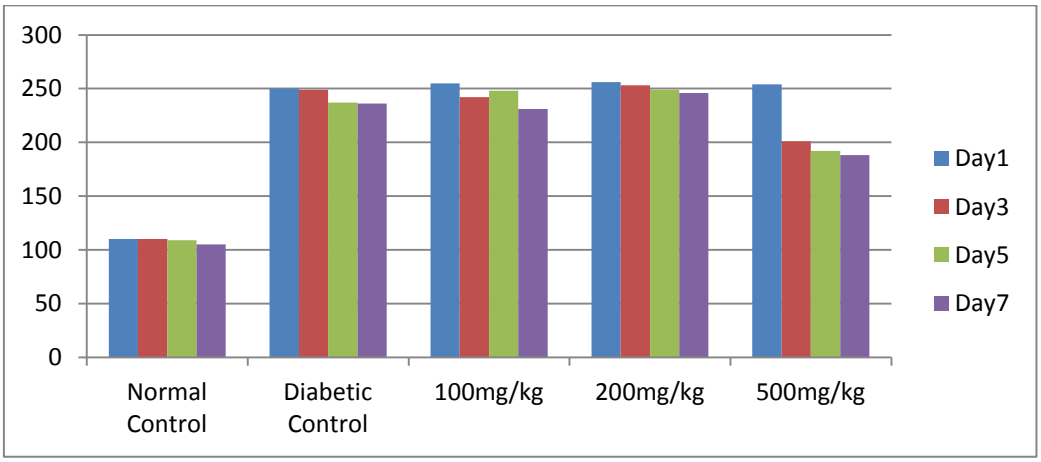


Chart 2 - impact of developed soybean on blood glucose levels (mg/dl)

3. Impact of powder soybean on blood glucose levels

7 days treatment of Powder Soybean at the portion of 100mg/kg and 200mg/kg indicated no critical diminishing in blood glucose level on days 3, 5 and 7 when contrasted with diabetic benchmark group. 7 days treatment of Powder Soybean at the portion of 500mg/kg demonstrated critical lessening in blood glucose level on days 3, 5 and 7 when contrasted with diabetic benchmark group .The outcome was seen as time subordinate. The outcome got with powder Soybean on blood glucose levels are given in table 7 and delineated in Diagram 3.

Treatment Group	Day 1	Day 3	Day 5	Day 7
Normal	110±7.40	110±8.25	109±7.39	105±6.39
Diabetic Control	250±8.21	249±9.74	237±12.81	236±6.84
Powder soybean 100mg/kg p.o	255+_2.39	242+_2.98	232+_3.34	227+_3.54
Powder soybean 200mg/kg p.o	253±2.59	243±2.94	239±3.12	225±4.83
Powder soybean 500mg/kg p.o	267±1.56	205±0.96	193±1.99	181±2.98

Qualities are mean (n=6) ± SD table 7-impact of powder soybean on blood glucose levels (mg/dl)

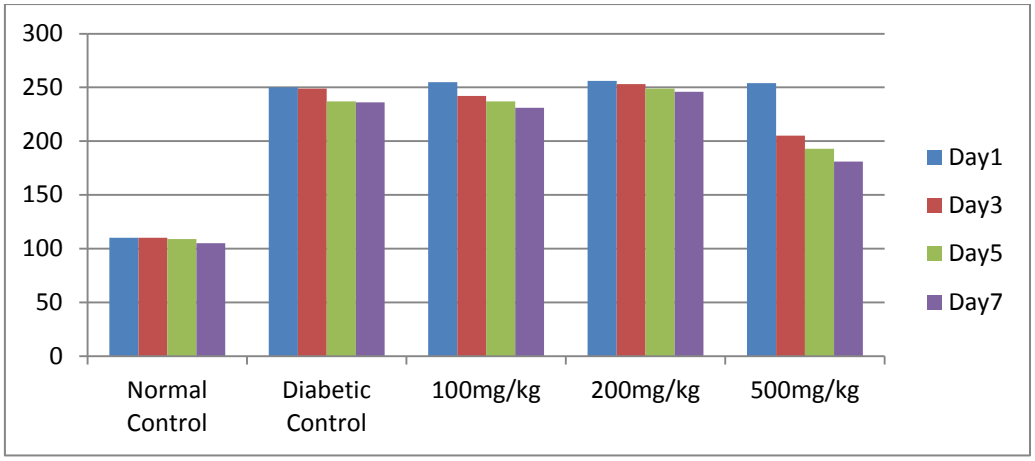


Table 3-impact of powder soybean on blood glucose levels (mg/dl)

4. Impact of soybean remove on blood glucose levels

7 days treatment of Soybean Concentrate at the portion of 100mg/kg and 200mg/kg indicated no noteworthy abatement in blood glucose level on days 3, 5 and 7 when contrasted with diabetic benchmark group. 7 days treatment of Soybean Concentrate at the portion of 500mg/kg demonstrated critical lessening in blood glucose level on days 3, 5 and 7 when contrasted with diabetic benchmark group. The outcome was seen as time subordinate. The outcome acquired with Soybean extricate on blood glucose levels are given in table 8 and showed in Diagram 4.

Treatment Group	Day 1	Day 3	Day 5	Day 7
Normal	110±7.40	110±8.25	109±7.39	105±6.39
Diabetic Control	250±8.21	249±9.74	237±12.81	236±6.84
soybean Extract 100mg/kg p.o	254±1.29	244±1.14	230±2.14	225±1.24
soybean Extract 200mg/kg p.o	267±0.34	255±3.04	241±1.10	229±2.83
soybean Extract 500mg/kg p.o	244±2.22	199±1.80	191±2.56	183±0.50

Qualities are mean (n=6) ± SD Table 8-Impact of Soybean Concentrate on Blood Glucose Levels

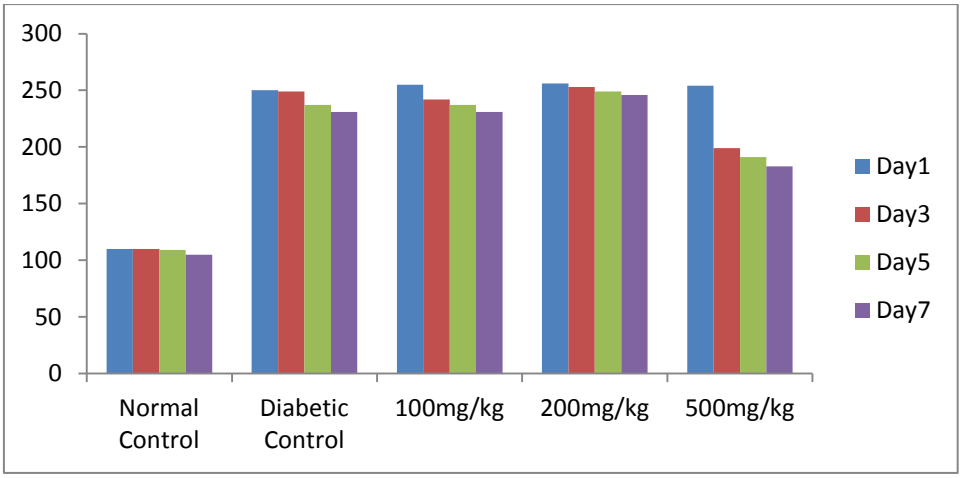


Chart 4-Impact of Soybean Concentrate on Blood Glucose Levels.

DISCUSSION:-Various analyses have indicated the helpful impacts of restorative plants in the administration of diabetes mellitus. Various components of activities have been proposed for these plant extricates. A few reports have connected their belongings to the movement of pancreatic cells (combination, discharge, cell recovery/revitalization)7,8 or the expansion in the inhibitory impact against insulinase and the expansion of the insulin affectability or the insulin-like action of the plant separates. Others have recommended that the systems may include improved glucose homeostasis, increment of fringe usage of glucose, increment of blend of hepatic glycogen as well as abatement of glycogenolysis following up on chemicals hindrance of intestinal glucose retention, decrease of glycaemic file of starches and decrease of the impact of glutathione. 9

Alloxan goes about as a cytotoxic for beta-cells of the islet of Langerhans, causes diabetes by prompting cell corruption The Receptive Oxygen Species intercedes the cytotoxic activity with the expansion in cytosolic calcium fixation, prompting quick beta-cells demolition. This outcomes into diminished insulin emission and raised blood glucose level.

In this investigation, alloxan at the portion of 120mg/kg was infused intraperitonially. After 48hrs infusion of alloxan, blood was pulled back from tip of tail for estimation of blood glucose level. Diabetic creatures having blood glucose level 200mg/dl were chosen for study.

This test study uncovers that alloxan-treated rodents got splashed soybean at the portion of 100ml/kg and 200ml/kg indicated no huge lower raised blood glucose level yet at the portion of 500ml/kg essentially brought down raised blood glucose level when contrasted with the diabetic benchmark group.

This test study uncovers that alloxan-treated rodents got sprouted soybean at the portion of 100mg/kg and 200mg/kg demonstrated no huge lower raised blood glucose level however at the portion of 500mg/kg fundamentally brought down raised blood glucose level when contrasted with the diabetic benchmark group.

This test study uncovers that alloxan-treated rodents got soybean seeds powder at the portion of 100mg/kg and 200mg/kg indicated no critical lower raised blood glucose level yet at the portion of 500mg/kg altogether brought down raised blood glucose level when contrasted with the diabetic benchmark group.

This trial study uncovers that alloxan-treated rodents got soybean seeds extricate at the portion of 100mg/kg and 200mg/kg demonstrated no critical lower raised blood glucose level

yet at the portion of 500mg/kg fundamentally brought down raised blood glucose level when contrasted with the diabetic benchmark group might be because of the likelihood that couple of beta cells are as yet enduring and animated by remove segment (s), discharging insulin.

Taking everything into account, this investigation demonstrates that the soybean extricates have noteworthy antidiabetic movement against alloxan prompted diabetes. This might be credited because of essence of phytoconstituents like saponin and isoflevonoids.

CONCLUSION:-Alloxan at the portion of 150 mg/kg could fundamentally hoist blood glucose level in all gatherings of creatures when contrasted with ordinary control creatures.

Seven days treated pale skinned person Wister rodents with most noteworthy portion of doused soybean (500ml/kg), developed soybean (500mg/kg), soybean seeds powder (500mg/kg) and ethanolic concentrate of soybean seeds (500mg/kg) altogether brought down raised blood glucose level when contrasted with diabetic control rodents.
It is presumed that all types of soybean seeds at most elevated portion (500mg/kg) have antidiabetic action. This might be because of essence of phytoconstituents saponin and isoflavones.

ACKNOWLEDGEMENT:

The creator is earnestly grateful to the Dr. K. R. Biyani for rendering his recommendations and aiding in every single step of finishing this examination paper effectively.

REFERENCES:

1. Andrew JK, 2005Clifford JB Oral Anti diabetic Agents Current Role in Type, Diabetes Mellitus. Drugs 65 (3): 385-411.
2. Beneficiary effect of dietary soy protein. Iraqi Journal of Sciences 2009 23(1) 17-23.
3. "About diabetes". World Health Organization. Retrieved 4 April 2014.
4. Cooke DW, Plotnick L. 2008 "Type 1 diabetes mellitus in pediatrics". *Pediatr Rev* 29 ,.(11): 374-84
5. Anithadevi B, Kamalakkannan N, Prince SM, 2003 Supplementation of Fenugreek leaves to diabetic rats. Effect on carbohydrate metabolic enzymes in diabetic liver and kidney, Phytother Res 17, .1231-1233.
6. Axelsen M, et.al.1999.postprandial hypertriglyceridemia and insulin resistance in normoglycemic first-degree relatives of patients with type 2 diabetes. *Ann Intern Med.* 131:27-31.
7. Bergman RN, Ader M, 2000Free fatty acids and pathogenesis of type 2 diabetes mellitus. *Trends EndocrMetab*. 11:351-356.
8. Campbell IT, Kay TWH, Oxbow L., Harrison TC., 1991 Essential role for Interferon Gama and interleukin 6 in autoimmune, insulin dependent diabetes in NOD/Wehi mice. Journal Clinical Investigation. 87, 739-742.
9. Dhanabal SP, et.al. 2004. The hypoglycaemic activity of Cocciniaindica and its influence on certain biochemical parameters. Indian Journal Pharmacology 36 (4), 249-250.

DIABETES AND HEALTHY EATING

Mrs. Shefali Charan
JJTU Research Scholar
Reg. No: 25318049

Introduction

Nutrition plays an important role of a healthy lifestyle in diabetes.

A diabetes diet simply means eating the healthiest foods in moderate amounts and sticking to regular mealtimes.

A diabetes diet is a healthy-eating plan that's naturally rich in nutrients and low in fat and calories. Key elements are fruits, vegetables and whole grains. In fact, a diabetes diet is the best eating plan for most everyone.

In diabetes or prediabetes, doctor will likely recommend that to see a dietitian to help in develop a healthy-eating plan. The plan helps you control your blood sugar (glucose), manage your weight and control heart disease risk factors, such as high blood pressure and high blood fats. Eating an extra calories and fat, body creates an undesirable rise in blood glucose. If blood glucose isn't kept in check, it can lead to serious problems, such as a high blood glucose level (hyperglycemia) that, if persistent, may lead to long-term complications, such as nerve, kidney and heart damage. by making healthy food choices and tracking our eating habits. it can help to keep blood glucose level in a safe range For most people with type 2 diabetes, weight loss also can make it easier to control blood glucose and offers a host of other health benefits. If their is need to lose weight, a diabetes diet provides a well-organized, nutritious way to reach goal safely.

Healthy eating and diabetes

healthy eating can help to:

- maintain general good health
- better manage your blood glucose levels
- achieve target blood lipid (fat) levels
- maintain a healthy blood pressure
- maintain a healthy body weight
- prevent or slow the development of diabetes complications.

Healthy eating for people with diabetes is no different than for everyone else. There is no need to prepare separate meals or buy special foods, so relax and enjoy healthy eating with the rest of your family.

What foods can eat in diabetes?

Mostly peoples are worry that having diabetes means going without foods enjoy. The good news is that, still eat favorite foods, but you might need to eat smaller portions or enjoy them less often. Health care team will help create a diabetes meal plan that meet needs and likes.

The key to eating with diabetes is to eat a variety of healthy foods from all food groups, in the amounts your meal plan outlines.

The food groups are

- **vegetables**
  - nonstarchy: includes broccoli, carrots, greens, peppers, and tomatoes
  - starchy: includes potatoes, corn, and green peas
- **fruits**—includes oranges, melon, berries, apples, bananas, and grapes
- **grains**—at least half of your grains for the day should be whole grains
  - includes wheat, rice, oats, cornmeal, barley, and quinoa
  - examples: bread, pasta, cereal, and tortillas
- **protein**
  - lean meat
  - chicken or turkey without the skin
  - fish
  - eggs
  - nuts and peanuts
  - dried beans and certain peas, such as chickpeas and split peas
  - meat substitutes, such as tofu
- **dairy—nonfat or low fat**
  - milk or lactose-free milk if you have lactose intolerance
  - yogurt
  - cheese

What foods and drinks should limit in diabetes?

Foods and drinks to limit include

- fried foods and other foods high in saturated fat and trans fat
- foods high in salt, also called sodium
- sweets, such as baked goods, candy, and ice cream
- beverages with added sugars, such as juice, regular soda, and regular sports or energy drinks

Drink water instead of sweetened beverages. Consider using a sugar substitute in your coffee or tea.

When should eat in diabetes?

Some people with diabetes need to eat at about the same time each day. Others can be more flexible with the timing of their meals. Depending on the diabetes medicines or type of insulin, there may need to eat the same amount of carbohydrates at the same time each day. If taking "mealtime" insulin, the eating schedule can be more flexible.

Carbohydrates and diabetes:-Carbohydrates are digested in the body to form glucose in the blood, and this is what the body uses for energy. It is the amount of carbohydrate in the meal that has the greatest effect on blood glucose levels. By eating regular meals and spreading the

serves of carbohydrate foods out evenly throughout the day, it can maintain energy levels without causing large rises in blood glucose levels.

Glycaemic index (GI) and diabetes:-Some carbohydrate foods release glucose into the bloodstream more quickly than others. Foods that produce a slower rise in blood glucose levels are described as having a low glycogenic index (GI) and can be helpful in blood glucose management.

Healthy carbohydrate foods that have a low GI include some high-fiber breads and cereals (especially grainy bread and oats), pasta, basmati or low GI rice, quinoa, barley, most fruit, legumes and low-fat dairy products.

Sugar intake and diabetes

People with diabetes who follow a healthy eating pattern can include a small amount of sugar in their diet. However, the sugar should be eaten as part of a nutritious meal.

Fat consumption and diabetes

All fats are high in energy. Eating too much fat can lead to weight gain, which may make it more difficult to manage your blood glucose levels and can increase blood fats (cholesterol and triglycerides). The type of fat you eat is also important. People with diabetes have a greater risk of developing heart disease, so try to eat less saturated fat and replace with healthier unsaturated fats.

Protein consumption and diabetes

The body uses protein for growth and repair. Most people only require 2 to 3 small serves of meat or other protein foods each day. Most protein foods do not directly affect the blood glucose levels. Protein foods include lean meat, skinless poultry, seafood, eggs, unsalted nuts, soy products such as tofu and legumes (dried beans and lentils, chickpeas, four-bean mix, kidney beans).

Talk to a dietitian

People with diabetes should discuss their food habits with a dietitian so that appropriate dietary recommendations can be designed for their needs.

Bibliography

1.American Diabetes Association. Foundations of care and comprehensive medical evaluation. Diabetes Care. 2016;39

2. Ahmed AM. History of diabetes mellitus. *Saudi Med J.* 2002;23:373–8. [PubMed] [Google Scholar]

3. Reece EA, Homko CJ. Diabetes mellitus in pregnancy. What are the best treatment options? *Drug Saf.* 1998;18:209–20. [PubMed]

4.International Diabetes Federation
. *IDF diabetes atlas.*8th ed. IDF, 2017. www.diabetesatlas.org

CODEPENDENCY AND DEPRESSION OF FAMILY MEMBERS OF AN ALCOHOL ADDICT

Mr. Abhishek Jacob
JJTU Research Scholar
Reg.No: 25318037

Introduction:- Health is a resource for life, not the object of living; It is a positive concept emphasizing social and personal resources, as well as physical capacities. All communities have highly variable, unique strengths and health needs and is a common theme in most cultures. A number of studies have shown that psychosocial factors particularly behavior can greatly contribute to enhancing or compromising health which may include unhealthy dietary habits, sedentary lifestyles, cigarette smoking, abuse of different substances including alcohol and non-adherence to effective medication regimens. The unemployment problem, modern family set up and the metamorphosis of the cultural values have led to frustrations among the youth. This had prompted individuals to fall prey to various unhealthy behavior pattern such as drugs, substance abuse especially alcohol which is easily available and give them temporary solace as elucidated by Park K (2021)[1].

Alcoholic codependency is when an alcoholic's addiction is reliant on the actions and behaviors of another person. A codependent relationship between the addict and their enabler allows for a comfortable situation where the addiction is allowed to thrive and grow. The term codependency became clinically prevalent due to alcoholism and substance use disorders.

It is characterized by an overdependence on one partner and our feelings are often determined by the others. If they feel good, you feel good and if they feel bad you feel bad. How can I make them feel better? Although it is not recognized as a disorder in the DSM manual, most experts and professionals believe it should be and question why it is not. Codependency traits can contribute to entering into a controlling relationship, having self-esteem issues, and the exacerbation (or even creation) of addictive behaviors as explained by Charlie, Addiction Hurts (2021).

While alcoholism has long been characterized as something that leads to codependency, it is becoming apparent that it is not necessarily in that order. There can be codependency issues in a relationship that trigger alcoholism and other addictive behaviors, or vice versa. It is not uncommon for people with codependency to seek out relationships with people who have substance use disorders. They tend to seek out people with other problems that may fulfill their need as being someone else's caretaker. Srinivasan P (2018)

A codependent relationship that prevents a family member from getting help for alcohol abuse is a difficult situation that should be discussed with a professional family interventionist. The first step for an alcoholic to accept help is to recognize there is a problem. A Codependent relationship – which is an impediment to recovery – could be one of the reasons they are not seeing the problem as clearly as they could or should.

Alcoholism is a chronic behavioral disorder as stated by Tiwari Ranjana (2005)[4]manifested by repeated drinking of alcohol beverages, in excess of the dietary social use of community and to an extent that interferes with drinker's health, familial or social and economic functions. The impact of alcohol on marriage is profound as indicated by high divorce rate in alcoholic families. Studies by Orford et al (1996)[5] showed a strong correlation between

various coping behaviors and alcoholic symptoms, hardship, job status, wife's age and neuroticism score. There are considerable number of anecdotes report and research findings by suggested that individuals who are married to alcoholics have poor overall physical and mental health. Studies of alcoholics clearly indicated that their spouses are often more anxious, involved in fewer social activities, involved in fewer social activities and report more stressful life events were associated with partners depression. It was also found that there was significant correlation between husbands alcoholism and wives depression. Although nearly all of research documenting an association between heavy drinking and partner's depression symptomatology wascross-sectional. It was usually presumed that heavy drinking as a causal factor in non-alcoholic partners depression.

When is it considered alcoholism?

Watching a family member, friend, or coworker with an alcohol use disorder can be difficult. You might wonder what you can do to change the situation, and whether or not the person even wants your help.

Alcoholism is a term used to describe someone with an alcohol use disorder. Someone with alcoholism has both a physical and psychological dependence on alcohol. They may have problems controlling their drinking habits or choose to keep drinking even though it causes problems. These problems may interfere with their professional and social relationships or even their own health.

An alcohol use disorder can range from mild to severe. Mild patterns may develop into more serious complications. Early treatment and intervention can help people with alcohol use disorder. While it's up to the person to willingly start their sobriety journey, you can also help. Read on for some steps you can take to help your friend, family member, or loved one.

A. Development of Codependency and Alcoholism

Codependent relationships are almost always unhealthy relationships. The term codependency became clinically prevalent due to alcoholism and substance use disorders. It is characterized by an overdependence on one partner and our feelings are often determined by the others. If they feel good, you feel good and if they feel bad you feel bad. How can I make them feel better? Although it is not recognized as a disorder in the DSM manual, most experts and professionals believe it should be and question why it is not. Codependency traits can contribute to entering into a controlling relationship, having self-esteem issues, and the exacerbation (or even creation) of addictive behaviors.

While alcoholism has long been characterized as something that leads to codependency, it is becoming apparent that it is not necessarily in that order. There can be codependency issues in a relationship that trigger alcoholism and other addictive behaviors, or vice versa. It is not uncommon for people with codependency to seek out relationships with people who have substance use disorders. They tend to seek out people with other problems that may fulfill their need as being someone else's caretaker.

A codependent relationship that prevents a family member from getting help for alcohol abuse is a difficult situation that should be discussed with a professional family interventionist. The first step for an alcoholic to accept help is to recognize there is a

problem. A Codependent relationship – which is an impediment to recovery – could be one of the reasons they are not seeing the problem as clearly as they could or should.

RECOGNIZE THE SIGNS OF CODEPENDENCY:-We have provided insight and hopefully brought some awareness to codependency and enabling. What does it really mean in terms of actions that are taken when there is a possibility of being codependent with an alcoholic? Here are some signs of codependency to help identify and make you aware of the possibility as to whether or not your relationship(s) might be suffering do to unhealthy behaviors:

- There is routine sacrifice by one partner for the other. This could be in terms of time, taking responsibility, or giving up activities to meet the needs of their partner.
- One partner feels responsible for the other partner, regardless of whether or not they are willing to take accountability. This often manifests in making excuses for addictive behavior, even as it reoccurs.
- If a person feels as though the relationship is all they have in life, it is a telling sign that there is an unhealthy attachment coupled with self-esteem and self-worth issues. While we should value our loved ones and the connection we have, this level of unbalanced control is unhealthy, especially while in a relationship with an alcoholic.
- There is significant denial about the behaviors from both parties in a relationship. This can be about the role of a codependent partner, or about the unhealthy behavior between both people as the problems persist within a relationship.
- There is depression, guilt, or shame with the actions surrounding a relationship and its behavioral cycle. This is not exclusive to alcoholism and codependency, but it is a very common symptom.

  These common signs of codependency and the enabling of an addiction within a relationship are very serious. If a loved one is exhibiting any of them, please consider that the situation could greatly benefit from an intervention to address the codependent relationship.

REFERENCES:-

1.The National Council on Child Abuse and Family Violence, 2021

2. Park K. Social and preventive medicine. Edition 18th. Jabalpur. Bhanot Publishers. 2021.

3.Srinivasan P. High risk behaviours following alcohol use in alcohol dependent man. Indian Journal of Medical Research. 129(4)2006:354-6.

4.Timothy J. Legg, Ph.D., CRNP,2019

5.Timmen L. Cermak. Medical Diagnostic criteria for co-dependency. Journal of psychoactive drugs. 2004: Jan-Mar:145(7):584-90.

6.Tiwari Ranjana. Presumptive stressful life events among spouse of alcoholics. Indian journal of social science researches. March 2005; 6(38) 41-46.

Awareness regarding cervical cancer among rural women in reproductive age: A descriptive analysis

Research Scholar: Mrs Swati Sharad Naik

Guide: Mrs Anupama Oka

Shri JJT University Jhunjhunu Rajasthan

Contact: 9930311517

Email: omkarvijaya2004@gmail.com/swatis1969@rediffmail.com

Abstract: Globally, cervical cancer is the second-most-common cancer among women. It is the leading cause of female cancer deaths in developing countries, where 80% of cervical cancer cases and deaths occur. Tragically, this disease strikes women at a relatively young age. From Mumbai to Mexico City, Kampala to Kathmandu, innovative programs have learned how to successfully deliver effective cervical cancer prevention programs to **the** women and girls who need them most.

A experimental study was carried out to see the impact of video assisted program early management and prevention of cervical cancer. The study was confined to the rural area of Thane district. The study was done on 4 different places i.e. Primary health centre, Arnala, Agashi, and Satpala.

The population of this study is consist of reproductive age group women living in rural community. Sample size consists of 30 women was selected by random sampling process.

Paired T-Test results indicate that the planned teaching conducted was effective in imparting knowledge *(t=25.182, p=0.05).* the participants have gained knowledge because of the teaching program conducted by the team Correlation is significant at the 0.01 level (2-tailed). This indicates a negative correlation between the level of knowledge before and after the planned teaching *(r= -0.578, p=.001).*

Key words: - Cervical cancer. Papsmear. Awareness.

Introduction:- Many victims of cervical cancer die in their early 40s, while they are still contributing to the workforce and raising children Over the past decade, dedicated scientists, researchers, clinicians, frontline health workers, community leaders and advocates have worked tirelessly to bring the scourge of cervical cancer to the world's attention and to develop and apply the necessary knowledge and technologies to reduce the number one cancer killer of women in most developing countries. In spite of various preventive methods, one study reported that lifetime screening prevalence for Indian women ages 15 to 49 was only 29.8% in India. In addition to the lack of a national screening campaign for cervical cancer, several studies have shown that knowledge of cervical cancer, prevention, and screening are limited among women across different settings in India

Currently, there is no available data regarding screening for women living in our urban and rural community. The aim of this study was two-fold: to determine the prevalence of cervical cancer screening among women aged 20–60 living in a low-income urban community, and within this subset of women, we assessed their baseline knowledge and awareness of cervical

cancer, screening, and the HPV vaccine. The findings from this study will help us better understand potential opportunities for education and screening.

Background: The low screening participation among Indian women may be due to limited awareness and knowledge about cervical cancer screening examinations. The universal application of Pap smears in western communities has led to drastic decline in the number of invasive cancers of the cervix and higher detection of pre-invasive lesions. Identification of factors determining participation, incorporating a comprehensive health education programme prior to screening, personal invitations, proximity of clinics to the target women all help in increasing the compliance.

The existence of cervical cancer has reached the awareness of majority of the women in our area. But specific knowledge about cervical cancer & its prevention is still lacking. The researcher recommends to educate women in reproductive age group to be aware of PAP smear for early detection of cervical cancer by and also to control and avoid risk factor

Objectives:

1. To assess the existing awareness regarding early prevention and management of cervical cancer among women 15-60 years from the community area

2.To associate the knowledge regarding early management and prevention of cervical cancer among women of 15-60 years with selected demographic variable.

Hypothesis of the study:

There will be significance association between posttest knowledge and score regarding early detection and prevention of cervical cancer with selected demographic variables at 0.05 level of significance.

Methodology:

A pre experimental one group pretest and posttest design approach was selected for research study. A pilot project was conducted to evaluate effectiveness of video assisted program. A total of 30 samples was selected by random sampling. A structured demographic assessment and pre and posttest knowledge questionnaire was prepared by the researcher. Selected 30 samples as per availability, and a video assisted teaching program was given after pretest. The posttest knowledge was assessed on 3^{rd} and 7^{th} day.

Part I: Demographic parameters; age, education, marital status, income group, profession

Part II: Analysis of Pre and posttest questionnaire score related to early detection and management of cervical cancer.

Part III: Statistical analysis for effectiveness of intervention

The study was conducted after taking ethical clearance from primary health center head. Voluntary participation is ensured and consent was taken from each participant prior the study.

Results:- Analysis and interpretation of data done using descriptive and inferential statistics. Coding was done for all items in the questionnaire and then transferred to master sheet. The finding of the study was analyzed using mean, standard deviation and paired t test.

Demographic variables- age in years, marital status, educational status, occupation, religion, family income.

Table 1:**Distribution of subjects according to their demographic details (control group) N = 30**

SR. NO.	DEMOGRAPHIC CHARACTERISTICS	FREQUENCY	PERCENTAGE
1.	Age		
	20-30 years	8	26.67
	31-40 years	5	16.67
	41-50 years	8	26.67
	51-60 years	9	30.00
	Grand Total	30	100.00
2.	Educational status		
	Primary	9	30.00
	Secondary	11	36.67
	UG	6	20.00
	PG	4	13.33
	Grand Total	30	100.00
3.	Marital status		
	Married	26	86.67
	Unmarried	1	3.33
	Widowed	3	10.00
	Grand Total	30	100.00
4.	Occupational status		
	Service	11	36.67
	Other	2	6.67
	Housewife	17	56.67
	Business	0	0
	Grand Total	30	100.00
5.	Religion		
	Hindu	26	86.67

	Christian	1	3.33
	Muslim	3	10.00
	Sikh	0	0
	Parsi	0	0
	Grand Total	30	100.00
6.	Income		
	Rs.5001-10000	14	46.67
	Rs.10001-20000	9	30.00
	Rs.20001-30000	5	16.67
	Above Rs.30000	2	6.67
	Grand Total	30	100.00

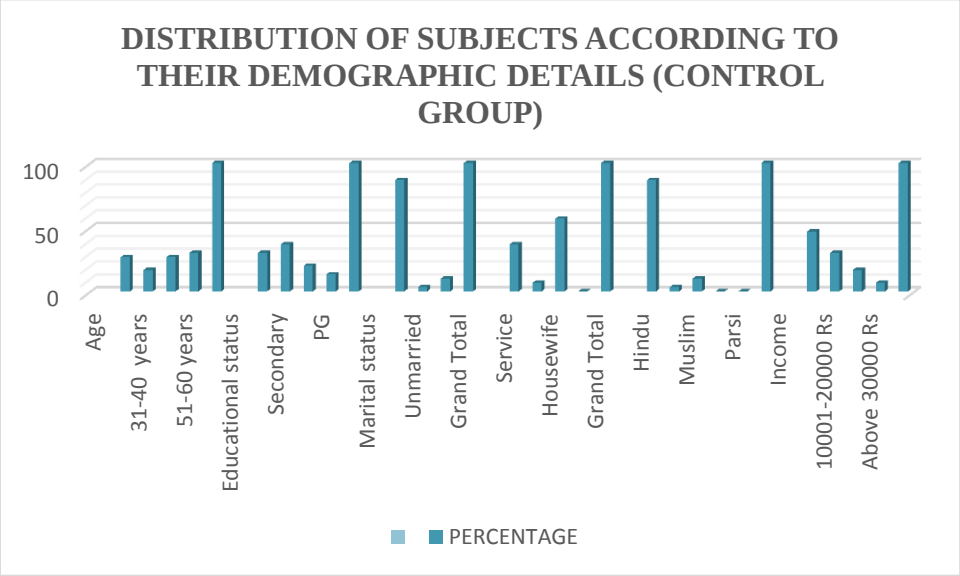


Figure.1 Distribution of subjects according to their demographic details (pre-test).

Table1 and Figure. 1: Reveals the data related to age of respondents. Maximum subjects 9 (30 %) to age group of 51-60 years. 8(26.67 %) subjects belong to age group of 20-30 and 8 (26.67 %) subjects belong to age group of 41-50 years. Thus, minimum subjects 5 (16.67 %) belongs to years 31-40 years.

The data related to educational status depicts that, maximum subjects 11 (36.67 %) had studied till secondary school. 9 (30 %) Of subjects had completed primary level of education. 6 (20 %) had completed their under graduation and very few 4(13.33%) subjects had completed their post-graduation.

The data related to marital status displays that, maximum subjects 26 (86.67%) were married. Subjects 3 (10.00%) were widowed. The minimum of 1 (3.33%) subject was unmarried.

The data related to occupational status throws light on, maximum 17 (56.67%) were housewife. 11(36.6%) subjects belong to service category. 2 (6.67%) subjects belong to others category and 0 (0%) subjects belong to business category.

The data related to religion depicts that, maximum 26 (86.67%) subjects were with Hindu religion. 3 (10.00%) subjects belonged to Muslim religion and 1 (3.33%) subjects belonged to Christian religion. 0 (0%) subject belonged to Sikh and Parsi religion.

The data related to family income illustrates that, maximum subjects 14(46.67%) belongs to Rs.5001-10,000/- income /month. 9 (30%) subject belongs to the Rs.10, 001 to .20, 000/- income /month. 5 (16.67%) subject belongs to Rs. 20,001 to 30,000/- income /month. Very few that is 2(6.67%) subject belongs to Rs.30, 001/- income /month and above category.

Part II:**Analysis of Pre and posttest questionnaire scores related to early detection and management of cervical cancer.**

Table 2:

Survey questions	Pretest (%)	Posttest (%)
Knowledge regarding cancer	70	86.70
Life expectancy after diagnosis of cervical cancer	13.33	86.37
HPV transmission	16.67	100
High risk group	73.33	100
Risk factors of cervical cancer	\30	100
Warning signs of cervical cancer	46.67	100
Signs and symptoms	13.33	100
Screening method of cervical cancer	86.67	100
Treatment of cervical cancer	13.33	100
Preventive measures	26.67	100

Part III: **Statistical analysis for effectiveness of intervention**

Table 3 - Assessment of knowledge level related to breast cancer in Experimental Group (pre-test and post-test)
N = 30

Sr. No.	Knowledge Level	Pre test		Post test	
		Frequency	Percentage	Frequency	Percentage
1.	Poor (<4)	2	6.67	0	0
2.	Average (5-6)	18	60.00	2	6.67
3.	Good (7-8)	10	33.33	28	93.93
4.	Excellent (> 9)	0	0	0	0

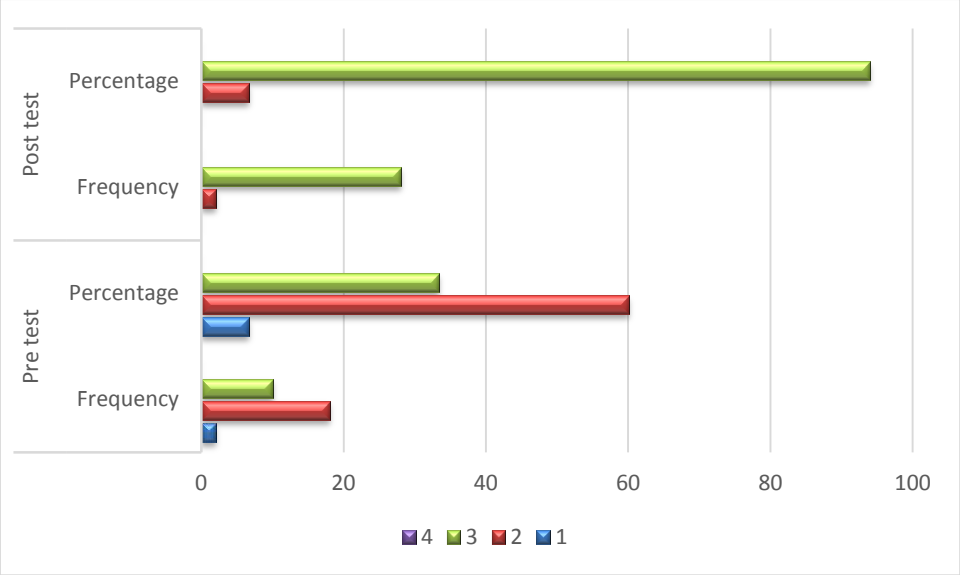


Figure. 2Assessment of knowledge level related to cervical cancer in pre-test and post-test of the Group.

Table 3 and Figure. 2depicts that, in pre-test maximum 18 (60%) subject had average knowledge. 10 (33.33%) subject had good knowledge followed by 2(6. 67%).In the post-test 93.93 % had good knowledge and only 6.67% had average knowledge which reveals that intervention was useful.

PAIRED T-TEST

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pre_Score - Post_Score	-11.000	2.393	.437	-11.893	-10.107	-25.182	29	.000

Paired T-Test results indicate that the planned teaching conducted was effective in imparting knowledge *(t=25.182, p=0.05).* the participants have gained knowledge because of the teaching program conducted by the team

CORRELATION

		Pre_Score	Post_Score
Pre_Score	Pearson Correlation	1	-.578**
	Sig. (2-tailed)		.001
	N	30	30
Post_Score	Pearson Correlation	-.578**	1
	Sig. (2-tailed)	.001	
	N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

This indicates a negative correlation between the level of knowledge before and after the planned teaching *(r= -0.578, p=.001).*

Discussion :- The current study conducted to create an awareness regarding early detection and management of cervical cancer and effect of video assisted teaching program on awareness regarding cervical cancer. The association of selected demographic variable age,education, profession, income status was done. A study in Punjab, the northern part of India (Kaur and Kaur, 2012) also reported inadequate awareness of cervical cancer in 62.3% of women. In this case the mean percentage was only 40.5, which is similar to the findings of our study. Poor awareness about various aspects of cancer cervix has been reported among women in different countries and demographic characteristics. Saha et al. (2010) found very low levels of knowledge in the college students on risk factors of cervical cancer. In another study done in Kerala, found that majority of the women (89.2%) did not know risk factors of cervical cancer (Aswathy et al., 2012). Yet, in another study among Chinese women, Xu et al.(2011) found that only 52.5% of the respondents knew that cervical cancer can be detected in an early stage, and only 26.9% reported that human HPV infections were risk factors for cervical cancer. The findings of all these studies are in consonance with the findings of our present study that showed that women had lacked adequate knowledge of cervical cancer, its causes, risk factors and prevention in the pre -test. Lack of awareness of cervical cancer has been identified as one of the factors that con-tribute to the high levels of this condition in developing countries. Several Information, Education and Communication (IEC) strategies have been designed to educate women on the prevention of cervical cancer. However, the success of any educational program to prevent and control cervical cancer will depend to a great extent on the awareness of the potential beneficiaries about the various aspects of cancer of the cervix after undergoing the program.

Recommendations and implications:- The similar study can be conducted on large scale including women in reproductive group as well comparative study can be conducted for women from rural and urban areas. The study finding can be included for cervical cancer awareness campaign. A high score post-test reveals that women is aware and has potential to share knowledge to other women to spread an awareness.

Conclusions:- The results of pre-test of the study reveal that there is low level of knowledge about cervical cancer. In post-test there is significant gain in knowledge is seen. The results support the effectiveness of video assisted teaching in the improvement of knowledge score among the women aging 15-45 years in selected rural primary health centres of Palghar districts. There is no association exists between knowledge score after administration of health information with selected demographic variable as, age in years, marital status, religion, educational status, occupation, family income.

References

1.Shekhar S et al. (2013) Cervical cancer screening: Knowledge, attitude and practices among nursing staff in a tertiary level teaching institution of rural India. Asian Pacific Journal of Cancer Prevention. 14:3641–5

2.Asthana S. &LabaniS. (2013). Factors Associated with Attitudes of Rural Women Toward Cervical Cancer Screening. Indian Journal of Community Medicine. 38:246–8

3.Aswathy S., et al. (2012) Cervical cancer screening: Current knowledge and practice among women in a rural population of Kerala, India. Indian Journal Medical Research. Aug; 136:205–10.

4.World Health Organization. (2012)Globocan Fact Sheets. International Cancer Research. Available from: http://www.globocan.iarc.fr/factsheet.asp#WOMEN .

5.Guidelines for cervical cancer screening. Government of India and WHO Collaborative Program.(2012).Availablefrom:http://www.whoindia.org/LinkFiles/Cancer_resource_ Guidelines_for_CCSP.

6.Saha A.et al (2010) Awareness of cervical cancer among female students of premier colleges in Kolkata, India. Asian Pacific Journal of Cancer Prevention.11:1085–90.

7.Gakidou E, Nordhagen S, & Obermeyer Z. (2008) Coverage of cervical cancer screening in 57 countries: Low average levels and large inequalities. Journal of Public Library of Science Medicine (PloS Med).5:132.

8.Roy B.& Tang TS. (2008) Cervical cancer screening in Kolkata, India: Beliefs and predictors of cervical cancer screening among women attending a women's health clinic in Kolkata, India. J Cancer Educ. 23:253–9.

9.Mutyaba T, MmiroFA. &WeiderpassE. (2006) Knowledge, attitudes and practices on cervical cancer screening among the medical workers of Mulago Hospital, Uganda. BioMed Central Medical Education. 6:13.

10.Harry TK, Felicia MS.&NgugenS. (2006) A needs assessment of barriers to cervical cancer screening in Vietnamese American health care providers. Californian Journal Health Promotion. .4:146–56

11.Swan J. et al. (2003). Progress in cancer screening practices in the United States. Results from the 2000 national health interview survey. Cancer. 97:1528.

A STUDY OF EXTRA- PULMONARY TUBERCULOSIS

ASARAF ALI
RESEARCH SCHOLAR, SHRI JJT UNIVERSITY, JHUNJHUNU, RAJASTHAN, INDIA
Dr. IKRAM QURESHI
GUIDE, SHRI JJT UNIVERSITY, JHUNJHUNU, RAJASTHAN, INDIA

ABSTRACT- Extra-pulmonary tuberculosis is described as TB of a region aside from the lungs, consisting of the pleura, lymph nodes, pores and skin, and joint areas. More-pulmonary TB contains 15-20% of all instances of TB amongst immune competent adults, and more than 50% of the cases in human immunodeficiency virus positive people. Reports from exceptional elements of the international indicate a growth in the proportion of extra pulmonary TB among all TB cases. This is a four year institutional based cross-sectional study led in directly observed treatment; short-course Center (DOTS) a tertiary consideration medical clinic, Bihar, India. Those patients who full filled at least two of the accompanying criteria were remembered for this study. The study convention was affirmed by the Institutional Human Ethical Committee and the work was begun from that point. A pre-tested semi-organized, open-finished poll structure was planned which was finished by eye to eye meet subsequent to getting composed assent from the member. The poll comprised of two areas: Section one, managing patient foundation (age, sex, conjugal status, instructive level, word related, family status, history of contact with TB patient and past history of anti-TB treatment).

Keywords: - study, Extra- pulmonary, Tuberculosis

INTRODUCTION:- Extra-pulmonary tuberculosis is described as TB of a region aside from the lungs, consisting of the pleura, lymph nodes, pores and skin, and joint areas. Reports from exceptional elements of the international indicate a growth in the proportion of extra pulmonary TB among all TB cases. The cancellous component of the mandibular condyle makes it prone to TB involvement**.** One of the world's most serious fitness problems is tuberculosis. In different developing countries, the prevalence of TB is high. India has the greatest burden of tuberculosis, accounting for 1.9 million of the world's 9,1 million cases. Tuberculosis might have various symptoms and can influence several web sites, which include lymphatic nodes, major apprehensive gadget, skeletal bone and gastrointestinal tractor, known as extra pulmonary tuberculosis (Extra pulmonary tuberculosis) (EPTB).

EPTB is a great health hassle in both growing and advanced countries and prevalence of disease in India debts for 8.3% to 13.1%. Reports have in large part focused on smear fined pulmonary TB that posed greater infectivity danger and accounted for a better morbidity and mortality than EPTB. Tuberculosis in India is a major public health issue that leads families and communities to great morbidity, death and misery Around 40% of the tubercle bacilli infected people in India, with the vast majority having latent tuberculosis in comparison to tuberculosis. One fourth of the global TB burden is in India. India. In 2015, 2,8 million cases were expected and 4,5 lakh people died of tuberculosis. Tuberculosis predispositions include corticosteroid therapies, immunosuppressive and cancer treatments and co-infection with HIV, diabetes mellitus, kidney transplantation, sufferers and not least among alcoholics. Bronchial allergies are one of the diseases that are diagnosed as a wonderful entity because they last so long, but only in the last 3-4 years they have entered the center as a public health issue. It is a big health issue in the world. People of all ages suffer from a continuous airway

condition, which if untreated, can put drastic limits on day-to-day life and sometimes is fatal at international locations. The history of signs of breathing and symptoms such as wheezing, shortness of breath, tightness of the chest and toxin that differ with years and severity, along with trouble with the ventilation of the expiratory system is used. Asthma change and expression can be affected by many factors, such as host factors such as atopy-predisposing genes such as allergens, illnesses, occupational sensitis, tobacco smoke, air pollution and weight loss programme. Exclusive allergens, using a fixed immune response superposed with the aid of neurologic steps, have the effect of releasing inflammatory cells and infections mediators that cause bronchial hyper reactive responsiveness and molecular hyperactivity. The very, very rare diseases seen in developed nations include tuberculosis and bronchial allergies (TB).Lifestyle remedies with steroids are frequently required for patients with bronchial allergies. It has been a common debate whether the use of asthmatic steroids has flared up tuberculosis lesions. Corticosteroids impaired and thus inflammatory and immunologically mediated methods were seen. Lymphocytes Corticosteroids inhibit the production of antibodies and mobile immunity, which primarily blunt the patient's response to contamination.

No. of association results were important between inhaled corticosteroids and tuberculosis threats from every part of the world. There are no reports. We therefore found it advisable to assess the prevalence of corticosteroids in our region and the potential role of tuberculosis in bronchial asthma sufferers who need MDI the raying.

Tuberculosis control efforts are complicated by way of susceptible programmes with negative get entry to laboratory diagnosis and effective remedy. Investment in laboratory capacity and body of workers and the creation of recent fast diagnostic assessments are vital. The WHO suggests that trendy drug susceptibility tests be carried out concurrently with the ending of the Xpert MTB/RIF trial to confirm rifampicin tolerance and M. Tuberculosis' susceptibility to the different tablets.

The micro-observatory drug susceptibility (MSI) test, nitrate reductase test and colorimetric reductase methods are other screening evaluations of drug resistance. M. Tuberculosis bacilli, based on string formation and isoniazides and rifampicins, are simultaneously detected in the MODS assay. Since most of these interventions are actually unlikely in countries with unexpectedly prevalent TB disease, 10% of MDR-TB cases are currently diagnosed globally and most basic cases are projected to be remedied. 15 The diagnosis and treatment of XDR-TB in nations with endemic disease is exceedingly difficult.

Extra-Pulmonary Tuberculosis

Lymph glands, abdomen, pores and skin, joints and bones, tuberculosis, tuberculosis of mind... organs other than the lung, along with pleura (TB-plurisy). Diagnose should be based entirely on a way of life-giving specimen from online more pulmonary or histological evidence or on robust clinical proof with more pulmonary TB, followed by the option of a medical officer to handling the full course of anti-TB therapy. Diagnosis should be based on A diagnosed patient must be identified as pulmonary TB for each pulmonary and other lung TB. "

WHO models characterize extra pulmonary tuberculosis as a tuberculosis disease, that affects tissues and organs outside of pneumonia. The hematogenous and lymph propagation of M. tuberculosis bacillis results in extra pulmonary TB (EPTB). Due to this expanded range of materials, including the arrangement of TNF alpha, IL12 and interferon gamma, an enhanced cell-interceded resistance instrument has produced a protective insusceptibility against the microbial, which is followed up by an exemplified granuloma that contains feasible bacilli. Despite the fact that this can occur any time after essential disease, it most ordinarily happens years or many years after the fact, due to the adjustment of dependable resistant reaction

systems, for example, outrageous ages (youngsters or older), simultaneous ailments or medicines involving a change of cell intervened insusceptibility.

The adjustment of the resistant systems engaged with the arrangement of granuloma inclines the reactivation of inactive TB and the advancement of dynamic TB contamination. While the general number of tuberculosis cases have decreased steadily over the last few years, it has not been as important to decrease the number of aspiratory tuberculosis cases. The purposes behind this were not fully assessed despite the fact that this may very well be due to certain factors, including reduced use of BCG and improvements, including impotence. However, planned studies are needed to evaluate the reasons behind this expansion. The mean time in patients with EPTB is higher than in patients with aspiratory TB. EPTB patients are often younger than individuals with lymphatic, osteoarticular, genitourinary and gastrointestinal forms that cause pleural or meningeal gestures.

LITERATURE REVIEW

SUJISHNU MUKHOPADHYAY ETAL (2020)

Lack of basic RNTCP therapy is a major setback for society. A report-based retrospective cohort study of 212 primary-treatment failures under Cat I or Cat III patients was carried out in Burdwan District of West Bengal to identify the ultimate remedy results and their possible influential variables following registration under Cat II. Therefore, these factors may be considered for more green TB management in our United States.

MADHUKAR PAI ETAL (2020)

there is extraordinary pleasure in the tuberculosis (TB) clinical network over the creation of recent tools into TB control sports. Although a big range of trials on TB diagnostics were posted, relatively, no systematic critiques have been published until these days. In the past few years, as a minimum 30 systematic reviews and meta-analyses had been posted on numerous TB assessments

SURENDRA K. SHARMA ETAL (2020)

School of medical universities that are academics seldom engage in national public health programs at once. Managing tuberculosis (TB) in the world for the first time more than a decade ago was concerned with Indian clinical faculties under the revised Government of India National TB Control Program (RNTCP) (GOI). When the programme's reach expands, future challenging situations include sustaining this commitment and promoting the popular access to high-quality TB care; more participation in operational studies relevant to the wishes of the programs; and improved coordination structures between districts, countries, regions and the Member States to inspire them.

ARUNABHA D. CHAUDHURI (2020)

The country-wide Indian Tuberculosis (NTP) program was initially launched in 1962 and planned for home care using the trendy medicine regimen of its own management. The government of India reviewed the situation of tuberculosis and NTP's overall performance in 1992, with the World Health Organization and the Swedish International Development Corporation (SIDA) that the NTP, though technically sound, suffered from managing weaknesses, poor investment, reliance on x-ray for analysis and frequent interrupted elem. in 1992.

MANI KANT KUMAR ETAL (2020)

In India, the precise diagnosis of formative years remains the prime objective, in spite of more than 2.3 million (26% of the worldwide burden) instances of tuberculosis (TB). TB children typically have a precautionary disease and make no contribution to community disease transmission. Recent progress has enhanced the capacity of children to detect latent infection and lively TB; but the testing of a latent or energetic HIV-inflamed infection remains a major challenge.

TANU ANAND ETAL (2020)

India owes money for the world's largest number of TB cases. Therefore, in order to impact international TB prevalence, there may be an urgent need to cope with TB activities in the country and to intensify them. Almost 1/2 tuberculosis patients are first in private areas seeking TB treatment. The paper also offers some additional policies and strategies for improving PP participation in the country's big TB tech management.

NIMALANARINAMINPATHY ETAL (2019)

The use of tuberculosis (TB), the most important burden on the arena in India, is the first patient to seek treatment in a fragmented, unregulated private health area. Current initiatives are showing successful strategies for engaging in this field and are an essential part of the current Indian National Strategic Planning: here we aim at addressing its possible impact in urban situations on TB transmission. In two important cities of India in which pilot interventions are currently under way, we established mathematical versions of the dynamics of TB transmission, calibrated to urban populations in Mumbai and Patna.

MATERIALS AND METHODS

In 2018, India's struggle to eradicate tuberculosis was another watershed moment due to the swift success of several places. We are nearest to the on-line notifying mechanism for all TB cases in the country (NIKSHAY). In order to provide universal access to free diagnosis and treatment services, all TB patients were provided with state-of-the-art diagnostic tests and quality assured drugs. New IT and adherence monitoring systems have been implemented and are being expanded nationwide. The commitment of the private sector has been upgraded to one of the top priorities of the programme and the participation model (PPSA - Patient Support Agency) has been extended to 48 national cities. Last year, the Nikshay-Pošhan Yoyana (Nutrition Support for TB Patients), with Rs, 240 cores paid, was one of the most rapid deployments in the country in direct profit transfer schemes. In addition to the above, many states have introduced special measures to advance TB removal activities.

Tuberculosis is projected to have 27 lakh in India. In 2018, RNTCP was able to receive a 21.5 lakh notification. This represents the biggest 16% gain from 2017. The private sector made about 25% of all notifications (5,4 lakh), up 40% from the previous year. In the public as well as in the private sectors, approximately 19.1 lakh cases were initiated (90%) of those notified. This means that private sector suppliers and patients seeking their treatments are more involved. The characteristics of the affected population have largely been constant with most people between the ages of 15 and 69 and 2/3 men. Around 50,000 TB patients were co-infected with HIV, with a TB co-infection prevalence of 3.4%.

RESULTS AND D DISCUSSION

This study was led at directly observed treatment, short-course Center (DOTS) a tertiary consideration hospital in the state of Bihar, India. This four year study embraced both molecular and conventional symptomatic methods to understand the drug resistance of Mycobacterium tuberculosis. Out of 500 extra pulmonary tuberculosis patients, who were enrolled in the DOTS places at the time of study, 488 patients were included in the study as sample. Rest 12 extra pulmonary tuberculosis patients selected to avoid this study, were excluded.

Table 1 Have you ever heard about Tuberculosis?

	Frequency	Percent	Valid Percent	Cumulative Percent
ValidYes	53	94.6	94.6	94.6
No	3	5.4	5.4	100.0

Source: primary data source 2019

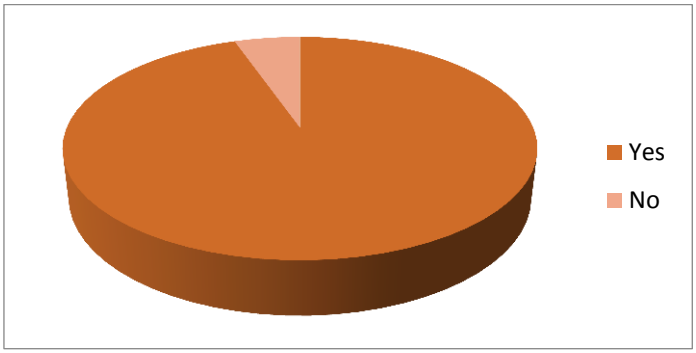


Figure 1: Have you ever heard about Tuberculosis?

The above table 1 Indicates that the most of respondents which are 94.6% are reacted they are heard the Tuberculosis, where only 5.4% of the respondents addressed No they have not heard anything about tuberculosis.

Table 2 What is your attitude towards tuberculosis?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very serious	19	33.9	33.9	33.9
	Somewhat serious	22	39.3	39.3	73.2
	Not very serious	8	14.3	14.3	87.5
	I have no idea	7	12.5	12.5	100.0

Source: primary data source

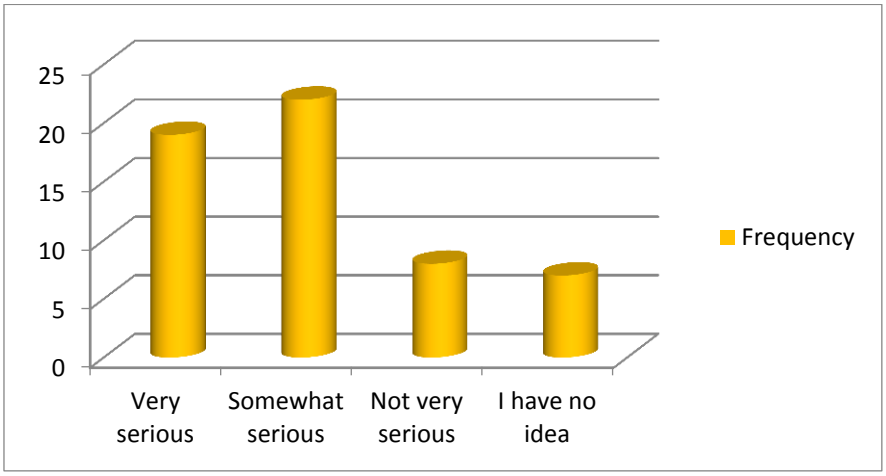


Figure 2: What is your attitude towards tuberculosis?

The above table 2 shows that 39.3% of respondents are addressed their disposition towards Tuberculosis is somewhat genuine were other 33.9% of respondents said their mentality is not kidding for Tuberculosis, while 14.35 are replied in not intense, and 12.5% have no any thought regarding Tuberculosis, therefore that result shows the most of respondents have genuine demeanor towards tuberculosis.

Table 3 Do you think a traditional medicine can cure TB

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	16	28.6	28.6	28.6
	No	29	51.8	51.8	80.4
	I don't know	8	14.3	14.3	94.6
	Strong agreed	3	5.4	5.4	100.0

The above table 3 shows that51.8% of respondents are addressed NO, were 28.6% of respondents said YES and others which are 14.3% have no any thought regarding curing Tuberculosis, while 5.4% strongly concur, therefore the most respondents believe or think that traditional medicine can't be relieved in Tuberculosis.

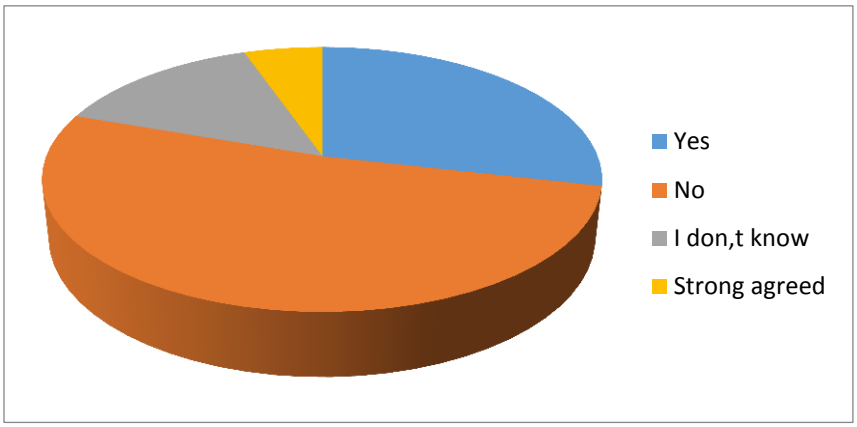


Figure 3: Do you think a traditional medicine can cure TB

Table 4 Have you ever taken the tuberculosis treatment?

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	0	0	0	0
	No	56	100.0	100	100.0

Source: primary data source

The above table 4 shows that the most of respondents are addressed NO, who are 100% of the total respondents, were there is no any respondents said YES, we have taken tuberculosis treatment.

Extra pulmonary tuberculosis has largely been neglected by global tuberculosis prevention efforts. Extra pulmonary tuberculosis is commonly regarded as non-infectionary and has little impact on the global epidemic. Nevertheless, the prevalence of active tuberculosis in household contacts with extra pulmonary tubers was high (440 per 100,000 contacts examined), indicating that the tuberculosis is significantly affected by extra pulmonary tuberculosis events. The slower annual decrease in extra pulmonary tuberculosis than

pulsmonetic tuberculosis could also be expected to delay progress to the World Health Organisation's END-TB goals.The pediatric population has up to 40 per cent of tuberculosis development following the primary infection, particularly those below 3 years of age. Tuberculosis has a non-specific clinical appearance with a number of photographic features depending on the organ in question and thus often imitates other conditions. In pediatric patients, the most common place is tuberculosis (about 80 percent). Rising risk for developing extra pulmonary tuberculosis is in place for immune compromised children, infants and teens. 72 per cent of patients experience an insidious onset of pediatric extra pulmonary tuberculosis with no constitutional signs and symptoms. As clinical signs of possible extra pulmonary tuberculosis the following may be considered:

Lymphadenopathic ascites and adverse bacterial cultures; (especially) chronic cervical lymphadenopathy (CSF); high proteins and low glucose CSF lymphocytic pleocytosis; Differential diagnosis and amebiasis of Crohn's illness; exudative pleural effusion with lymphocyte prevalence,Since ancient times, its most common position (neck) has been referred to as scrofula. The various infection routes rely on the lymph group affected. The cervical participation is caused by direct interaction between the bacilli and the Waldeyer Ring and by the spread and involvement of the adjacent ganglion chains. The disorder typically includes unilateral, multiple and matt neck swelling in young adults, as a consequence of diagnostics and clinical difficulties, since other pathological processes may be imitated. Parallel to the occurrence of mycobacterial lymphadenitis and HIV world-wide, it is crucial that the tuberculosis cervical lymphadenitis is differentiated from non-tuberculosis mycobacteria lymphadenitis because of its different treatment protocols.

The most common pathogenic process in the peripheral ganglionic type is the reactivation of a primary pulmonary infection, previously transmitted by the bleeding pathway. Mycobacterium bovis, which is secondary to raw cow's milk ingestion, is also known in underdeveloped countries as the abdominal lymph node tuberculosis.

As tuberculosis is generally considered chronic pulmonary disease, many tuberculosis studies are based on the lungs, while lymph nodes are almost always only represented as antigenic and immunological locations. Nevertheless, apart from the lungs, lymph node is among Mycobacterium tuberculosis' most commonly contaminated sites. The reduction in bacterial load in the lymph nodes was smaller in comparison with the pulmonary granulomas after a short period of antituberculous therapy.

CONCLUSION:- From general wellbeing viewpoint, treatment is as yet centered on smear positive instances of tuberculosis that is the repository of disease in the network. Finding of smear-negative tuberculosis is risky. This can be improved by creating indicative instruments, to be specific the robotized culture strategies suggested by WHO. The determination of EPTB presents genuine test and as often as possible deferred since the manifestations are vague relying upon the influenced destinations.

Postponement in analysis of EPTB prompts sequelae just as spread of disease to different organs. Besides, EPTB is regularly pauci-bacillary, and the locales of disease may not be effectively open for the assortment of examples appropriate for microscopy, histology, culture or atomic tests. According to WHO meaning of EPTB, analysis of EPTB should be made based on: positive culture, positive histology or solid clinical proof predictable with dynamic EPTB.

Despite the fact that the serum ADA estimation is basic and modest; it's anything but a helpful test to separate unmistakable EPTB from non-TB sicknesses, because of its low degree of centrality. Serum ADA alone could be utilized as introductory screening demonstrative instrument for EPTB however not a corroborative technique. Further examination with respect to ADA in unequivocal region is required, for example, how to improve explicitness, limit bogus positive and pick the reasonable cut-off worth. Polymerase

Chain Reaction focusing on IS6110 is the basic, quick and exceptionally touchy test utilized in the early finding of EPTB.

REFERENCES

1. SUJISHNU MUKHOPADHYAY ETAL (2020) A Study on Factors Influencing Treatment Outcome of Failure Patients Receiving DOTS in a District of West Bengal, Volume No.8,Issue No.4,PP No.1-3.
2. MADHUKAR PAI ETAL (2020) Evidence-Based Tuberculosis Diagnosis, Volume No.8,Issue No.2,PP No.1-146.
3. SURENDRA K. SHARMA ETAL (2020) Contribution of medical colleges to tuberculosis control in India under the Revised National Tuberculosis Control Programme (rntcp): Lessons learnt & challenges ahead, Volume ,9,Issue No.6,PP No.1-12.
4. ARUNABHA D. CHAUDHURI (2020) Recent Changes in Technical and Operational Guidelines for Tuberculosis Control Programme in India – 2016: A Paradigm Shift in Tuberculosis Control, Volume No.9,Issue No.6,PP No.1-9.
5. MANI KANT KUMAR ETAL (2020) Recent advances in the diagnosis and treatment of childhood tuberculosis, Volume No.9,Issue No.3,PP No.1-7.
6. TANU ANAND ETAL (2020) Enhancing the role of private practitioners in tuberculosis prevention and care activities in India, Volume No.9,Issue No.3,PP No.1-7.
7. NIMALANARINAMINPATHY ETAL (2019) Modelling the impact of efective private provider engagement on tuberculosis control in urban India, Volume no.8,issue no.4,pp no.1-9,.
8. RAJENDRA BABU MATHUR ETAL (2019) Role of cartridge-based nucleic acid amplification test to diagnose tuberculosis at tertiary care teaching hospital in Rajasthan, India, Volume No.7,Issue No.11,PP No.1-6, ISSN 2320-6012.
9. NIMALAN ARINAMINPATHY ETAL (2019) Tuberculosis treatment in the private healthcare sector in India: an analysis of recent trends and volumes using drug sales data, Volume No.19,Issue No.7,PP No.1-7.
10. ADA KWAN ETAL (2018) Variations in the quality of tuberculosis care in urban India: A cross-sectional, standardized patient study in two cities, Volume No.15,Issue No.9,PP No.1-22.

Academic Libraries: Resource Sharing

Research Scholar - **Sarika Bhagwanrao Rengunthwar**

(Email:- sbrengunthwar555@gmail.com)

Dr. Rajkumar Bhakar

Research Guide

J.J.T. University, Rajasthan

Dr. Rajkumar Ghule

Research Co-Guide

Dadasaheb Rajale Patil Mahavidyalya Pathardi

Abstract:-This information attempts to identify the needs, object and factors effecting networking and resource sharing .In the age of digital evolution and escalating prices of electronic information, resource sharing is critical for effective functioning of libraries. Increased availability of information in digital format and high costs of journal subscription compels the libraries to work together. This information discusses the need and importance of resource sharing, formation of library consortium, its importance and limitation.

Keywords:- Academic Library, Resource Sharing, E-resources.

Introduction:-Resources sharing extend the scope of library cooperation to include certain reciprocity and partnership in which each participant has something useful to contribute as well as to receive from others. There is willingness and also the capability to make it available when required. Efforts were made during the 1950's and 1960'ss to formalize the concept of resource sharing largely because of inadequate library budgets and the sudden spurt in the cost of books and subscription of periodicals.

This is applicable in sharing of documents, manpower, services, space and equipment. In another word "A term used to describe organized attempt by libraries and information Centers to share materials and services cooperatively so as to provide one another with resources that might otherwise not be available to expensive or just plain not owned resources beyond the bounds of a single institution."

History of Library Resource Sharing:-Resource sharing is not a new concept in the field of libraries.The concept that goes by the term "library co-operation "has been in use all along among those who had been working in libraries. The term however has been replaced by a new coinage-Resource sharing which sound more attractive and makes better sense in this age of hyper inflation and budgetary reduction. Thus resource sharing in libraries has become a necessity, and has gained worldwide acceptance.

According to Smith and Parker, as quoted by zhang (1990).

Networking is more structured type cooperation in which definite organizations is connected by electronic or other means to promote inter library loaning of materials, in-service training loaning of materials, in service training and other sharing or resources. It can be started that library cooperation and resource sharing have been replaced by the modern term networking with the same connotation except technological application for achieving the objectives of

resource sharing. Networking has become a very powerful link in the coordination and dissemination of library resources.

Objectives of Resource Sharing:-The basic activity of resource sharing is aimed at maximizing the availability of library materials and services at the minimal expense. The emphasis is on provision of access to information sources rather than possession and ownership of such resources, although ownership is, not completely excluded. The basic assumption is that no library can possess the entire world's literature and, hence, has to depend on other libraries for serving all the needs of its clientele

The objectives of resource sharing are very idealistic. They are aimed at providing convenient access to information to library. Users irrespective of the location of the resources. In other words libraries go beyond their own resources to satisfy the user requirements. This is achieved by sharing the resources of other libraries. The main reasons for this activity are-

- Reduction in all round cost:
- Avoidance of unnecessary duplication of information resources and their processing and maintenance costs:
- Provision of greater access to information resources to a wider category of users; and
- Development of specialized areas of collection building, each library concentrating on areas of its own concern.

Library Resource Sharing and Networking:- Library is an important organ of Academic Institution, public sector, research and development, special libraries, industries and etc. Library is the only source for getting the information both archived and current events. Earlier libraries used to acquire books, journals, demand of the users. Technical processing of acquisition was carried out for in a methodical manner. Students and teachers are used to visit a library and spend more time to search the material i..e. the users of the library were habit of reading and making notes.

Library cooperation/Resource Sharing/Networking/ Consortia all denote a mode of cooperation among a number of libraries where by the library collection, function or services are shared by a number of libraries. Library user in terms of access to more material or services and or on the library budget in terms of providing level service at less cost, increased service at level cost or much more service at less cost than if undertaken individually.

Areas for Resource Sharing:

1. Library Cooperation :

A material includes both documentary and non documentary forms. The function or services that constitute a library system. A material includes both documentary and non documentary forms. The function covers the activities concerning the acquisition, processing, storage , etc. Services include techniques, activities and procedures employed to establish contact between the document and its consumer I.e. lending, reference documentation, translation, etc. Library cooperation also can be looked upon as a broader term than resource sharing or networking or consortia

2. Types of Library cooperation :

. Based on the geographical area covered, library cooperation may be of

I)International Level: E.g. Universal Availability of Publication (UAP) programme introduced by IFLA , Universal Bibliographic Control (UBC)

II) National Level : E.G. National Social Science Documentation Centre (NASSDOC) .

III) Regional Level and

IV) Local Level.

Needs if Resource Sharing : Today documents are available in plenty and their cost is kept on increasing. The growth of literature is also increasing day by day in each and every field of knowledge. They are available in variety of formats so there is always scope of being duplicated. Resource sharing enables libraries to function effectively and efficiently by overcome this difficulty. They would share the documents by overcoming the problem of increased prices and space for storing them.. Libraries by sharing would have access to large number of documents. This way they can satisfy the increasing demand of users. By sharing libraries would provide its users to use documents in different formats. It would also allow them to share the expertise of staff, saving costs and the time of the staff. There is always increase in number of users and information seeker and for users, it is importance to obtain basic knowledge in their subject fields and in their specialized areas . Therefore, it is the responsibility of the library to acquire relevant documents like books, journals, reference tools, advanced treatises, reports etc., which would provide a comprehensive coverage of literature as per the concerned subject fields. Today's library has a dynamic and dual role to play and to provide information pin-pointed, exhaustive and ex-seditious to the research community. Many books and other documents usually go out of print within a short time of their publishing, so majority of the libraries are unable to purchase such titles, space for books as well as other library equipment is limited, increase in the number of books and readers necessitates more space for readers in reading hall as well as for library staff. It is impossible for any library to acquire this unlimited and endless knowledge. The need for library resource sharing can also be explained through the five laws of library science by **S.R. Ranganathan**: the demand of first law is to fulfill if particular book belongs to a particular library is not in demand by the users. The book must be allowed to send/gave on inter library loan. To satisfy the second and third law of library science is in the context satisfaction of library users assumes new importance. Every reader his/her book and every book its reader require special care and attention. The user must get his/her book and every book its reader requires special care and attention. The user must get his/her book and every book its reader requires special care and attention. The user must get his/her reading whether it is available with the library were he/she is registered or any other library.

This leads to a problem of storage of books. Thus the problem of shortage of space, with /the help of library cooperation/ resource sharing can be solved to some extent. Due to knowledge explosion users need of pinpointed, exhaustive and expeditious information sources and services. The increased access to information and services by various users at different places in limited cost at same time and access to the existing information and services timely at less cost is answer to libraries must have resource sharing.

Levels of Resource Sharing:

1. **Local :** When the libraries seek resource sharing in the nearly areas in town, city and metropolitan cities, it is called local cooperation. This activity can be monitored through telephone as well as by local manager.

2. **Regional** : In this situation resource sharing libraries do not fall within the single town but belong to a region may be north or west. The whole regional libraries will be benefited to a large extent.

3. **National :** National level resource sharing may be achieved among the libraries in country. If the resources of all the libraries of a nation are cooperatively used then, inter library loan services will be facility at national level. For example national bodies like INSDOC, ICSSR, UGC academic Libraries public libraries, social sciences, respectively.

4. **International :** The best example of international cooperation and resource sharing programmed is UNISIST. It has also established world science information system. International agencies like IFLA and FID are also extending their cooperation in this regard. The UNESCO vitiated deposit and exchange of reading material of their libraries is done among the member nation.

References :

1.Pranoti Mukundrao Rakhunde & Ravikant M. Deshpande library resource sharing.Contemporary issues in library and information science , Atharva publication Jalgaon 2014pg.No.385-392.

2.Amberkat. B.W.& Rehpade, S. Resource sahring among libraries. Changing dimensions of library management: Challenges and opportunity. Sausar 3 february 2013.pg.no.112-113.

3.Astunkar, Sudhir and Hanwante, Chandrashekhar Need for resource sharing and networking or rural college libraries Wardhanman Nagar, Retrieved 6th September, 2010, pg. No.60-62.

4.k.manjunatha and Shivalingaiah D. Eleectronic Resource Sharing in Academic Library retrievedJanuary2,2014fromhttp://nopr.niscair.res.in/bitstream/123456789/4070/1/ALISpdf.pg.no.27-30.

5.Bajpai, R.P. and Mal, Bidyut K. & Geetanjali Bajpai- Use of e-resources through Consortia : A boon to users of Indian university libraries, Retrieved January2,2014,from http://crl.du.ac.in/ical109/papers/index_files/ical 85_83-195_2_RV.PDF.

A STUDY TO ASSESS THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAM ON KNOWLEDGE REGARDING COVID -19 AMONG SCHOOL CHILDREN IN SELECTED SCHOOLS AT MYSURU

Mrs. Biji Kuriakose, PhD Scholar, Reg No – 24520003 Shri JJTU University, Jhunjhunu

Email: bijinisar@yahoo.co.in

Abstract:-School children are grown up and to become a good citizen of a country by tomorrow. To become a good citizen one of the important aspect is education. Now the entire world is undergoing a problematic epidemic called COVID-19. All school children get education towards control and prevention of COVID -19. A study was conducted to determine the effectiveness of structured teaching program on knowledge regarding COVID-19 among school children. One group pre-test and posttest design adopted among 50 school children. The study reveals that obtained posttest mean percentage was 80.32% is higher than the pretest mean percentage 50.88% among school children. Hence the study concluded that structured teaching program was effective among school children to increase their level of knowledge about COVID -19.

INTRODUCTION:-School age is an important stage in all human beings life. Whatever the children making foundation during this period is for their entire life. Health personals have very important role to teach the school children on origin, mode of transmission, signs and symptoms, control and preventive measures regarding COVID-19. Inadequate knowledge on COVID-19 may leave to develop misconception among school children. Health personal as a role model can influence the knowledge level of the children.

NEED FOR THE STUDY:-COVID-19 is an epidemic affected all over the world. It had shaken the world and disrupted the normal living of all people. COVID -19 does not have any difference whether rich or poor or which country. Every day the cases are increasing and people are in horrific situation. COVID-19 pandemic affected with all areas of hum life. It is very much important to teach about COVID -19 among the school children. So that school children can follow the instructions given by the health personal and learn about the prevention of its transmission.

OBJECTIVES

1. To assess the pretest level of knowledge regarding COVID-19 among school children in selected schools at Mysore

2. To compare the pre test level and posttest level of knowledge regarding COVID -19 among school children in selected schools at Mysore

3. To find out the association between the pre test level of knowledge and the selected demographic variables among school children in selected schools at Mysore.

HYPOTHESIS

H1: There will be a significant difference in mean pre-test and post-test level of knowledge regarding COVID-19 among school children.

H2: There will be a significant association between the gains in knowledge scores of COVID919 among school children with selected demographic variables.

METHODOLOGY

Research design:- one group pre-test and posttest design

VARIABLES OF THE STUDY

Independent variables: STP.

Dependent variables: knowledge regarding COVID-19

Demographic variables: Demographic variables include age, sex, education, type of family, socioeconomic status, religion, number of siblings, previous knowledge on COVID-19, previous history of respiratory infection

SETTING OF THE STUDY

The present study was conducted in selected Schools at Mysore

POPULATION :- In the present study, population comprised of all school children in selected schools at Mysore, aged between 10-15 years.

SAMPLE AND SAMPLING:-The sample of present study comprised school children in selected schools at Mysore, aged between 10-15 years. 50 school children were selected for present study

SAMPLING TECHNIQUE:-Convenient sampling technique was used to select 50 school children.

SAMPLING CRITERIA

Inclusion Criteria

1. School children who are at the age group of 10-15 yrs.

2. School children who are willing to participate.

3. School children who can understand and speak English.

Exclusion Criteria

1. School children who were not present at the time of data collection

2. School children who were suffering with serious health problem

DATA COLLECTION TECHNIQUE AND INSTRUMENTS

1. Data on background variables of school children

2. Data on Structured knowledge questionnaires to assess the knowledge regarding COVID-19 among school children.

Structured knowledge questionnaire prepared for the study includes 25 items to assess the knowledge of school children regarding COVID-19. Each question has given with 4 possible choices. Each correct answer given by the sample acquired 1 mark and wrong answer given with 0 marks. The score obtained by the participant varied from 0 to 25. This score again split in to different category base on the obtained score.

• 18-25: high knowledge

• 9-17: average knowledge

• 0-8: poor knowledge

DATA COLLECTION PROCEDURE:-Official permission was acquired from the Principals of selected schools at Mysore. The information gathered between 01/01/2021 to 15/01/2021. To develop a free and accurate answer, the participants were described about the motive and benefits of the study. Confidentiality was guaranteed to the participants. An informed consent was gathered from each sample specified their readiness to take part in the study. By using convenient sampling technique, 50 school children were chosen for the study. Knowledge concerning COVID-19 was evaluated by using structured knowledge questionnaire. Each participant took approximately 25-30 minutes to finish the questionnaire. Post test brought from participants by using the same structured knowledge questionnaire.

RESULTS

SECTION 1

Table: 1 Frequency and percentage distribution of school children on background variables

Sl no	Background variable		Frequency	Percentage
1	Age	10-12	20	40
		13-15	30	60
2	Sex	Male	27	54
		Female	23	46
3	Education	Middle school	20	40
		Secondary school	30	60
4	Type of family	Joint	24	48
		Nuclear	26	52
5	Socioeconomic status	Below 25000	26	52
		Above 25000	24	48
6	Religion	Hindu	30	60
		Christian	20	40
7	No of siblings	1	27	54
		2	23	46
8	Previous knowledge on COVID-19 from	Mass media	35	70
		Family	15	30
9	Previous history of respiratory infection	Yes	28	56
		No	22	44

SECTION 2

Table-2: Frequency and percentage distribution of pre-test and post-test level of knowledge of school children regarding COVID-19

N=50

Level of knowledge	**Pre -test level of knowledge**		**Post-test level of knowledge**	
	Frequency(f)	**Percentage(%)**	**Frequency(f)**	**Percentage(%)**
Poor	0	0	0	0
Average	50	100	03	6
High	0	0	47	94

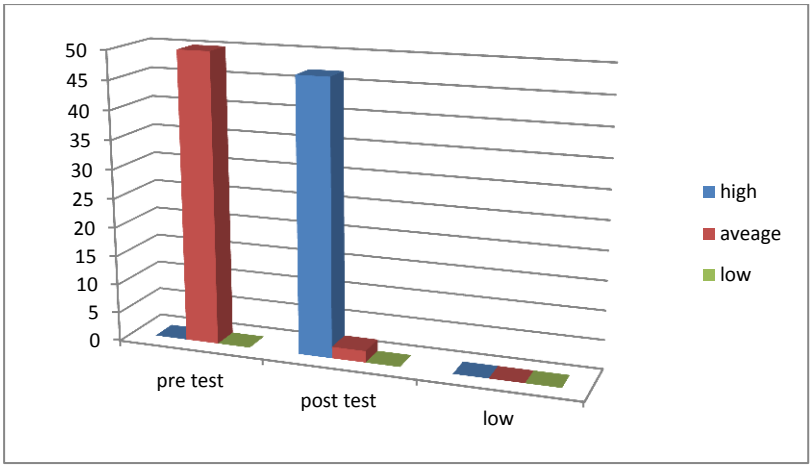


Fig 1 simple bar diagram represents pre test and post test level of knowledge of school children regarding COVID-19

Table-3: Overall mean, mean percentage, median and standard deviation of pre-test and post-test level of knowledge regarding COVID-19 among school children.

N=50

Knowledge scores	Max possible score	Min score obtained	Max score obtained	Mean	Mean %	Median	SD
Pre -test knowledge score	25	9	23	12.72	50.88	13	1.94
Post-test knowledge score	25	17	16	20.08	80.32	20	1.70

Section III: Data on effectiveness of structured teaching programme

H1: There will be a significant difference in mean pre-test and post-test level of knowledge regarding COVID-19 among school children.

Table-4: Overall mean, standard deviation (SD) and mean percentage, paired 't' value between pre-test and post-test level of knowledge of school children.

N=50

Aspects	school children			Significant difference in level of knowledge	paired t-test
	Mean	SD	Mean %		
Pre test	12.72	1.94	50.88	**29.44**	**t=28.14**
Post test	20.08	1.74	80.32		

Section IV: Association between pre-test levels of knowledge with selected demographic variables.

H2: There will be a significant association between the knowledge scores COVID-19 among school children with selected demographic variables.

Table-5 Association between knowledge score and demographic variable There is a significant association between pre test levels of knowledge with selected demographic variables such as education and previous information

There is no significant association identified between pretest level of knowledge with selected background variables such as age, sex, religion, number of siblings, type of family, socioeconomic conditions and previous history.

IMPLICATION

NURSING PRACTICE

The major role of community health nurse is to make the school children to aware about the COVID-19 and its control and preventive measures. So it is very necessary for the nurses to increase their knowledge about various aspects of COVID-19. It is considered as one of the major responsibilities of community health nurse is to educate the school children as they are considered as the tender population with high vulnerability towards various infectious diseases,

NURSING EDUCATION:-As a nurse educator a nurse have many roles towards society. After the development of COVID-19 infection nurses are considered as the warriors of COVID. During the care of patient with COVID_19 pandemic it is very important that the nurse has to plan, implement and evaluate different types of educational strategies towards the prevention of its transmission. One of the roles of the nurse educator is to fill the community with the light of knowledge that helps in preventing the transmission of such contracting diseases.

NURSING ADMINISTRATION:-Being a Nursing administrator she should inspire all her colleges and subordinates for planning, organizing and engaging in various awareness activities which helps to equip the school children with proper information. As a manager the nurse can involve in school health programs and play an important part in conducting school health assessment for early identification and treatment of various health issues.

NURSING RESEARCH:-Nurse can carry on with various research activities on educational intervention program related to COVID-19 outbreak. Even though many of them know about COVID 19 pandemic but fails to follow the preventive measures against it. Additional research program on COVID'19 has to be carried out among the different population living in different sectors of society. Research finding helps the school children to improve their knowledge and practices towards preventing such infectious problems.

LIMITATIONS

1. The study was limited only to school children.

2. The study was conducted only in one school.

3. Findings of the study cannot be widely generalized, a this study had less number of samples selected from Udbooru government school

RECOMMENTATIONS

1. Similar study can be performed by selecting a large number of samples.

2. Similar study can performed as a comparative study.

3. Similar study can performed as a true experimental

CONCLUSION:-The study had an aim to assess the effectiveness of structured teaching program on knowledge about COVID-19 among school children. Majority of the children knew about the condition as they had experienced different phases of lock down. Many

children were frustrated on the condition that happening in the world after COVID-19 outbreak. It is very important the government, health care authorities and mass media to create trustful educational program on prevention and control of COVID-19 pandemic

BIBLIOGRAPHY

1.Singh v, Sharma B B (2018). respiratory disease burden in india: Indian chest society SWORD survey,Vol.35(6), pp 459 – 460 available from http://www. lungindia.com/ text.asp?2018/35/6 /459 /244506. ISSN 0970-2113 DOI: 10.4103/ lungindia.lungindia_399_18

2.Sonam Maheshwari, Puneet Kumar Gupta, Richa Sinha, Pravesh Rawat.(2020). Knowledge, attitude, and practice towards coronavirus disease 2019 (COVID-19) among medical students: A cross-sectional study, Journal Of Acute Diseases , Vol. 9(3), pp 100-104, DOI: 10.4103/2221-6189.283886, ISSN=2221-6189

3.Thakur V, & Jain A (2020), COVID 2019-suicides a global psychological pandemic brain, behavior and immunity ,Advance online publication. https://doi.org/10.1016/j.bbi.2020.04.062

4.World Health Organization. (2019 march 10), Global surveillance, prevention and control of chronic respiratory diseases: a comprehensive approach. Retrieved from https://www. who.int/gard/publications/GARD_Manual/en/.

5. Xie M., Liu X et al (2020), Trends in prevalence and incidence of chronic respiratory diseases Respir Res, Vol. 21(1) doi: https://doi.org/ 10.1186 /s 12931-020-1291-8

6.Yong Hu, Jiazhong., Sun Zhe Dai., Haohua Deng., Xin LiQi., Huang Yuwen., WuLi Sun., Yancheng Xu. (2020). Prevalence and severity of corona virus disease 2019 (COVID-19) A systematic review and meta-analysis. Journal of Clinical Virology,Vol.127, 104371 DOI: 10. 1016/j.jcv.2020.104371, ISSN NO:- 1386-6532

7. Zeynep, Ceylan. (2020), Estimation of COVID-19 prevalence in Italy, Spain, and France, Science of The Total Environment, Vol 729, DOI: 10.1016/j.scitotenv.2020.138817, ISSN NO:- 0048-9697

8. Zhonghua, Liu, Xing. (2020). The Epidemiological Characteristics of an Outbreak of 2019 Novel Corona virus Diseases (COVID-19) in China,Chinese journal of epidemiology, Vol.41(2), pp 145-151, Doi:10. 3760 /cma .j .issn. 0254-6450, 2020.02.003.

An Evaluative Study of College Libraries in Ratnagiri District of Maharashtra

Mr. Sudhir Pandurang More
Ph.D. Scholar, Dept. of Library and Information Science
Shri Jagadishprasad Jhabarmal Tibrewala University, Rajasthan
E-mail: spmorecpn@gmail.com

Dr. Nandkishor R. Motewar,
Director, Knowledge Resource Centre,
Gondwana University, Gadchiroli (M.S.)

Dr. Rajkumar Bhakar,
Director, Knowledge Resource Centre,
Shri Jagadishprasad Jhabarmal TibrewalaUniversity,Rajasthan

Abstract:- According to Dr. S.R. Ranganathan, the efficiency of a library can be measured by whether or not it can provide the material requested by users at the time it is needed. His popular book, 'Five Laws of Library Science,' advocated that library collections and resources are for use, and that appropriate steps should be taken to link the user with the information sources and services available in the library, as well as to save the user's precious time by offering quality services. All of the laws are guiding principles for quality growth and enhancement on a regular basis in the library, with an emphasis on the customer. To evaluate services given by the college libraries in Ratnagiri district of Maharashtra, the researcher have chosen 29 college libraries for the study. The finding of the study shows that, 24(82.75%) colleges are situated in the Rural and hilly areas, where mostly transportation, electricity, mobile network problems persists. It is examined that, 14(48.27%) colleges have not yet got accredited by the NAAC or any other evaluating agencies. It is found from the study that no professional have adopted fully automation system in the library.

Keywords:- NAAC, Library automation, Automation, Satisfaction, User expectations.

1. Introduction:- Library is supposed to be accountable to its body, financer, and users. So there is a great need for evaluating the efficiency of libraries. In a world of growing economic pressure, structural change, and technological progress, the primary goal for libraries is to comply with the standards on which parent institutions and users judge the quality of the library. Users are the most critical factor to consider when determining the quality of library facilities, and this can be accessed by measuring the level of satisfaction attained by users from the library and information products and services provided. Rapid changes in library

facilities and operations, as well as demands for internal transparency and funding agency evaluations of standards, have pushed libraries to create and introduce new user survey methods. User satisfaction surveys can be produced and distributed in a variety of ways.

The service factor of the college library is mainly concern with the following subjects.

1. The place and locality of the college
2. The Library building and its services
3. The qualified staff in the library
4. The Automotive services of library
5. The basic and essential services provided by the library,

2. Statement of problem:-Library service factors are the most crucial issue due to increasing user awareness of users in the library. The place of library, timings, library staff, space of library, assess assessment of library by external sources, appointment of qualified staff in the library, their service protection and payments, library budgets and the most important factor is services provided by the library is the most important issue in the success of the library or the college. So, these service factors of the library was considered for the present study.

3. Objectives: To examine the locality and user approachable vicinity of the library.

- To know problems of library professionals towards the library services.
- To observe the approach of library professionals while rendering the services. .
- To get quaint about the facilities provided by the libraries in Ratnagiri district colleges.

4. Methodology:- Simple random sampling method was used for this study. The online survey questionnaire from Google survey has been used to collect the data. This online questionnaire link was send by E-mail, WhatsApp to the respondents. Total 29 college library professionals/authorities were approach for the study. All the respondents responded for this study.

5. Data analysis and interpretations:-Data analysis is the essential and important part of any research outcome. It represents the factual data and the findings by the researcher. For the present study 29 senior Arts, Science and Commerce colleges were selected from the Ratnagiri district of Maharashtra. To critically analyze the services provided by these libraries, a structured questionnaire in print as well as soft form (Google form) was circulated among all the library professionals in this study area. After getting their responses, following analysis and conclusions are drawn.

5.1: Faculty-wise Colleges:-To critically study the research area, the criteria was set. It was decided to study only academic college libraries, which are having Arts, Science and Commerce faculties. So, 29 colleges were chosen for the study. The table No. 3.1 show that, there are 17(58.65%) which are having the entire three faculty; and 7(24.15%) colleges are having both Arts and Commerce streams.

5.2: Vicinity of Colleges:-The place of the college is most important factor on the educational progress of the students and other learners of the society. Ultimately the vicinity of the college creates the impact on the library users. So, it was needed to study about the place of the colleges. The Table 3.2 shows that 24(82.75%) colleges are situated in the Rural and hilly areas, where mostly transportation, electricity, mobile network problems persists. Only 5(17.25%) colleges are situated in the urban or semi urban areas, where these problems are slightly tackled.

5.3: NAAC Accreditation status:-Accreditation of the educational institutional with any other government or semi-government agency is very essential to upgrade its services and facilities. Such kind of evaluations and gradations affects the status and quality of the institutions. Thus, before conducting a library survey, it was thought to analyze the NAAC accreditation of the colleges, Using table no. 3.3., it is shown that, only 15 colleges have accredited by NAAC; out of that 4(13.79%) colleges have achieved A grade of the NAAC. 11(37.94%) colleges have accredited with B grade and it is noteworthy that, 14(48.27%) colleges have not yet got accredited by the NAAC or any other evaluating agencies.

5.4: Library Building:- To render effective and qualitative services to its users or patrons, a Library needs three things; i.e. Space, Staff and Funds. Among three, the most important factor is space. Dr. Ranganthan in his book, also mentioned the efficacy of the space in the fifth law. Due to library is a growing organism, it must be provided an extra sufficient space for its future expansion and services. It is known and found that only 4(13.8%) libraries are having a separate building with Ground + floors. Among all the libraries, 20(68.96%) libraries are accommodated in a single hall, with insufficient space for reading room and other library services.

5.5.: Librarians' qualifications:-To render effective and qualitative services to the users, and make all the library collection usable for the users, an appointment of well qualified library professional staff is essential.Many educational institutions reluctant to appoint such qualified staff in the library. Such kind of misconduct mars the library services and

ultimately the quality of library and institution. From the present study, it is found that, there are only 12(41.38%) colleges out of 29 have appointed the highly qualified staff, having the degrees of essential qualifications with NET/SET/ M.Phil./Ph.D./PGDLIM or such other higher qualifications. 13(44.82%) colleges have appointed the semi-qualified staff in the library, which are having the essential qualifications such as master degree in Library science only. 04(13.8%) colleges out of 29, haven't appointed yet a qualified staff in the library. It is found that, all the functioning of the library is maintained by the non-professional staff or by the teacher amongst the teaching staff.

5.6: Status of Library Automation:-Information and communication technology is the boon for library and information centers. Not only in LIS field, but in every wall of life, ICT has become the integral part of the life. To disburse all the library services effectively to users, use of ICT is very important. So, application of LMS, and other related software have become mandatory. Library automaton is the basic factor in the ICT applications. So, it was felt necessary to know about the status of library automation in the district college libraries, and it is found from the study that, Not a single library among 29 colleges, are automated with full-fledged. They either partially or manually rendering the library services. 11(37.93%) libraries are partially automated and 18(62.07%) libraries are not yet accepted the automation process. They are giving their services by the traditional methods.

5.6: Library facilities and services provided by the College libraries:-It is universally accepted that water and all the sanitary lavatories are the basic things which should be provide in the library premises; but, it was found from the study that, only 9(31.03%) libraries are having such facilities in the library. Separate reading room for the users is available in the 12(14.38%) libraries, and Internet and Xerox facilities are available in only 8(27.59%) libraries, which are most essential services in today's ICT era.Book bank facility is the boon for poor and needy students, who cannot afford such costly books. So, this services most popular in the students. Nevertheless, it is found that only 18(62.07%) libraries among 29, provides such services. 9(31.03%) libraries are having the digital collection of CDs, E-Books and E-Journals. OPAC/Web OPAC is nowadays become very popular among the users. It is a digital tool for finding a document in the library or out-side the library. 12(41.38%) libraries have adopted and created their OPAC and Web OPAC for their users. Only 13(44.83%) libraries have adopted such software and having a INFLIBNET N-LIST or DELNET membership and providing the services. Anti-Plagiarism

detecting software is not a new concept for academic libraries. But, it is found that, the awareness about such software needs some extra efforts.

S. No.	Facilities Provided by the Library	Options				Grand Total(%)
		Yes	(%)	No	(%)	
1	Separate toilet & sanitation facilities	9	31.03	20	68.97	100.00
2	Separate Reading Hall	12	41.38	17	58.62	100.00
3	Computer lab. with internet, Xerox center	8	27.59	21	72.41	100.00
4	Book Bank facilities for needy students	18	62.07	11	37.93	100.00
5	New arrival displays	21	72.41	8	27.59	100.00
6	Digital collection (CDs/E-Books/E-Journals)	9	31.03	20	68.97	100.00
7	OPAC/Web OPAC	12	41.38	17	58.62	100.00
8	Library software & E-Resources	13	44.83	16	55.17	100.00
9	Readers Club activities	12	41.38	17	58.62	100.00
10	Occasional Book Exhibitions	20	68.97	9	31.03	100.00
11	Open access in stack room for users	8	27.59	21	72.41	100.00
12	Library committee	24	82.76	5	17.24	100.00
13	Extra facilities for regular users	10	34.48	19	65.52	100.00

6. Findings and suggestions:-From the above study following conclusions are drawn.

1. It is found that 24(82.75%) colleges are situated in the Rural and hilly areas, where mostly transportation, electricity, mobile network problems persists. So, library professionals may adopt more effective techniques to provide services to such rural students.
2. It is examined that, 14(48.27%) colleges have not yet got accredited by the NAAC or any other agencies. All academic institutions should get accredited by similar agencies.
3. During the survey, it is observed and found that only 4(13.8%) libraries are having a separate building with Ground + floors. Among all the libraries, 20(68.96%) libraries are accommodated in a hall, with insufficient space for reading room & other library services.

7. Conclusion:-The success and the future of any educational institution is depends on its patrons and incase of library, it is on its users. A user of library is the prime factor of importance. To satisfy the users, a library must adopt and follow the practice of user centric services. The collection and the services of the library will be called as best resources only

when the users of these libraries will be satisfied and visit again and again. So, library must upgrade their services and facilities according to the needs of the users.

REFERENCES

1. Crump, M. J., & Freund, L. S. (2012). Meeting the needs of Students Users in Academic Libraries. Cambridge: Woodhead Publishing Limited.
2. Goode, William J. & Hatt, Paul K. (2006). Methods in Social Research. New York: McGraw-Hill International Edition.
3. Hernon, P., & Calvert, P. (2006). Improving the Quality of Library Services for Students with Disabilities. (P. Hernon, Ed.) Usa: Greenwood Publishing.
4. Mohindra, R., & Kumar, A. K. A. (2015). User Satisfaction Regarding Quality of Library Services of A.C. Joshi Library, Panjab University, Chandigarh. DESIDOC Journal of Library & Information Technology, 35(1), 54–60.
5. Motiang, I. P., Wallis, M., & Karodia, A. M. (2014). An Evaluatin with User Satisfaction in Library Services at Univerity of Limpopo, Mendunsa Campus. Arabian Journal of Business & Management Review (Oman Chapter), 3(11), 41-58.

Changing Role of College Library Professionals in Disseminating Information of User Education

Tushar Ramsh Dilpak

Ph.D. Research Scholar, JJT University

Under the Guidance of

Dr. Rajkumar Bhakar

Research Guide, Librarian, J.J.T.University, Jhunjhunu, Rajasthan.

Dr. Nandkishore Motewar

Co-guide, Director, KRC, Gondwana University Gadchiroli

ABSTRACT:-This paper focuses on changing role of Library professional in Disseminating Information of user education. Library is integral part of academic library. It is power house it is a substation wherever information is collected, created, and assigned to satisfy the user's requirements. Traditionally libraries estimated themselves into words about their area, transaction, circulation but change though those steps do not include nature of service. The patrons are not always friendly among the information sources. So the important task of the college is to make sure that the library is used in the most profitable manner in this scenario user education play vital role in providing information sources according information needs. Advancements into the educational schemes become produced regarding variations toward the pedagogy systems which influence students Information seeking behavior. User study programs must be seated near the place meanwhile some educational libraries to support users obtain active usage of libraries.

Key words:- User Education, information resources and service, ICT

INTRODUCTION:-Change is always permanent and also nature of the law. So the library is not exceptions to this. Library is a big asset of any college. It has to grow not only in term of collection but also there is need to bring the versatile collection in the eyes of patrons of colleges. It is the responsibility of library professionals to bring into notice of teachers and students, how to make the use of it, various types of services offered. ICT play vital role in providing new skills for seeking information, retrieving, managing and processing for the patrons. Modernization and improvement of information and communication techniques and application has brought drastic change in the entire library management system, because of it the onus has shifted from traditional model to 2.0 models. With the help of this users are getting information in stipulated time. The demand and expectation of library patrons is also changed thus modifying and simplifying the work nature of Librarian professional. The thought of a traditional library is developing into words of the kinds of records, assistance, collection of sources, techniques of information retrieval of accessible resources. The global changes have great impact as functioning of libraries; because of it user's expectation from libraries has increased.

DEFINITION:-Conference was organized by American Library Association on use of Education in 1876 in this conference the term User Education was first coined by S.S.Green. In which the meaning and importance of users education was discussed and concluded to have proper plan programme for it.

The term such as Library Orientation, Library Instruction and Bibliographic instruction are being used by the professionals for user education. There are many definitions available in the literature on USER EDUCATION.Which as follows.

Nancy Fjalbrant and Ian Malley said that user education is "concerned with the whole information and communication process and one part of this involved the total Interaction of user with the library.

User education is also instruction which covers library patrons with skills to enable them to be independent and sophisticated users of libraries and their resources.

AIM OF USER EDUCATION

The aim of User education is to create awareness of the existing sources of information and to make them capable in locating, retrieving and use of information.

- To enhance the ability of students to think logically and do the things creatively.
- To make them aware in finding particular items with the help of catalogues, opac indexes, abstracts bibliographic etc.
- To make them aware about the tools and techniques of information technology to be used for information search.
- To provide users with the basic skills of literature searching.

NEED OF USER EDUCATION:

Some of the factors which necessitate the introduction of user education programs are as follows.

-Due to information explosion large amount of publication in variety of forms is generated with widely scattered manner.

Change in the examination pattern, stressing on assignments, self study.

Changes in teaching and learning method.

Application of ICT tools in library for information storage, retrieval and dissemination.

Increase in awareness about students requirements.

Contribution of Internet in enhancing the search effectively

The growth of information and students increasing information needs are of variety and diversity of level, frequency, volume and use.

PLANNING AND IMPLEMENTATION

Programme and Planning of user education programme is very important, particularly in academic college libraries. It requires proper planning and implementation of it. It includes;

- Orientation

-Bibliographic Instruction,

-Designing of right evaluation methods.

Preparation of instructional materials.

Testing Programme on small portion of user's population.

To generate sample of syllabus which includes information about Library Documents, Information Technology in Library, Classification, and Reference Sources etc.

LEVELS OF USER EDUCATION

Rathore (1992) summarized the different levels of user Education as follows,

1. at the beginning of every academic Year or every semester. It includes those students who have taken admission for the first time in college for various courses like B.A/B.Com/B.Sc…etc. They should be given basic introduction about the college library as well as information about various tools available in library like Library catalogue (OPAC), various reference sources, Periodicals available in the library, about collection of library etc.

2. Subject Oriented information when users are admitted to special branch or subject of their choice. This includes students enrolled at post-graduate level viz M.A, M.Com, M.Sc, M.B.A etc. In addition with general information about library they should be informed about classification scheme , various types of services, literature search, compilation of bibliographies for their projects, technical writing etc.

3. Literature searching training to be given at initial stage of research work. It includes information about technical writing, giving footnotes etc.

Therefore depending upon the level of User education Library Professionals should set their Aims and Objectives of disseminating information of user education.

CHALLENGES

Main challenge is to shift the onus from traditional users into ICT based user.

- Sometimes complexity in electronic resources discourages he students in using Information resources.
- Effective and Efficient way of services from library professionals
- To recognize the exact need and satisfy Information needs of the users.
- Research on complex and interdisciplinary topics.
- To identify and develop correct search strategy
- To cope up with advance information and disseminate in proper manner
- To develop library activities based on string services so as to satisfy their needs Information services should be developed keeping in mind the Users need in future.

LIBRARY ACTIVITIES TOWARDS USER EDUCATION

Development in the Educational System has brought about changes in the teaching and learning methods which impact on students Information Seeking Behavior. Thus User Education Programmes and Various types of Library Activities have been put in place in college libraries to assist users for making effective use of libraries.

According to Fleming (1990) User education includes various programmes of instruction, educational and exploration provided by the libraries for users to enable them to make more effective and efficient and independent use of information sources and services to which these libraries provide access".

Accordingly Libraries should arrange users education activities like Visit to Library, Book Talk, Book Exhibitions, Orientation Programme, Showing educational related film/Movies/organizing Quiz/Debates…etc.

ROLE OF LIBRARY PROFESSIONALS IN USER EDUCATION

Today's library is also described as Substation wherever information is collected, invented, and assigned to satisfy the user's wants. Library experts need to have an accurate understanding of the user's requirements. Externally understanding the information needs about its users that remain trying to implement useful assistance to them Traditionally Information sources are accessible into various ways viz, journals, research paper, book ,etc, But in today's Information Technology era maximum students try to find information through internet .So it is responsibility of Library professionals to make the user aware about E-Journals and E-Books .online catalogs and their search procedures…etc Web based Education not only provides platform of interaction but also gives more Information technology Flexibility to the users The new social media like Blogs, twitters, face books , library websites play vital role in disseminating web based user education . Library professionals should provide such Internet based education that helps the students in giving knowledge of how to use Library OPAC, How to find out books, Magazines, Biographical data and related documents, method of selecting relevant database and other electronic resources .Library professionals are responding to the challenges of new technologies by taking the opportunity to their traditional role to Information base role.

With the help of mobile phones, tablets, and other related medium convert extra common and affordable, wireless technology can dramatically enhance learning and bring digital content to learners.

SMS-based Reference/Text Services can be offered to the students for simple questions such as dictionary definitions, facts or services information from the library that can be answered with a brief response. Therefore a proper form including effective evaluation requires looking while pioneering social networks in the library. Users needed to conscious and adequate

preparation should survive given to staff to accomplish the task of organizing social software in the library.

BENEFITS OF USER EDUCATION

User education helps students in identify information needs; evaluate information in educational environment today.

Motivates Self-directed learning.

Appreciation for life –long learning

Multimedia content transfer and invention rights.

Constant and established getting help.

CONCLUSION:-Today's era of Information and technology has made users easy for direct access of Information, but at the same time there is need of information skill to collect and present that information.Thus making the job of Library professional more challenging. A quick change from traditional services to Information technology base service ha s made college libraries to show academic performance. Finally User education programmes should be made compulsory and it should be taken at the commencement of each semester. Class rooms of the college can be used for conducting lectures, but practical should be given in the library itself. This will not only increase the level of library bur it will also enhance the reputation of college and in turn promotes the use of library materials.

REFERENCES:

1) Ranganathan, S.R. 1963. The five Laws of Library Science: Bombay: Asia Publishing House, 2nd Ed (Ranganathan Series in Library Science; no 12)

2) International Journal of Information Technology and Library Science Research Vol.1, No.1, April 2013, PP: 01-06 (Available online at http://acascipub.com/journals.php)

3) Majid, Shaheen and Abdoulaye, kaba "use of internet of Reference Services in Malaysian Academic libraries: in "online information review" vol.24, no., and 2000

4) Morgan, Steve "Academic Libraries" in "Library Reviews "vol.49. no.9, 2000.p 448-454 Downward, K (1992) Users Education in academic Libraries, Library Management Vol.12

5) Fjulbrant, N (1977) Planning a Programme of Users education, Journal of Librarianship Vol.9

6) Raman Nair, R (199) Users Orientations Programme in College Libraries, Indian Journal, Information of Library and Society, Vol.8 N0 1-2.

7)Bates, Marcia, J ; Encyclopedia of Library and Information Sciences, 3rd ed, Vol.3, CRC Press, New York, 2009 pp-4

8) Kumar, P.S.G Library and Users: Theory and Practice, Delhi, B.R. Publishing House, 2006.

9)WWW.literacyonline.org

10)Jagtar Singh: Sense- making Information Technology for life-long learning and K.M. DESIDOC, Journal of Library and Information technology, 2008,28(2), Pp39-47.

11) Boyd, d.m, and Ellison, N.B. Social network sites: Defination history, and scholarship Journal of Computer- Mediated communication, 2007, 13 (1), 1

12) Habib, M.C. toward Academic Library 2.0: Development and Application of Library2.0 Methodology. North Carolina University, Chappe Hill, 2006

13) Abram, S web 2.0- huh? Library 2.0 librarian 2.0 Information Outlook 200, 9(12) 444-46.

14) B. Ravi Kumar and phi, user education in libraries, international Journal of Library and Information Science vol1 (1) pp.001-00, June, 2009

15) K. Nithyanandan, User Education Programmes and Academic Libraries, 4th International Convention CALIBER-2006, Gulbarga, 2-4 February, 2006.

16) Davinson, Donald, Reference service, London, 1990

17) Lubans, John. Educating the library user, New York: Bowker, 1974

A STUDY TO EVALUATE THE KNOWLEDGE REGARDING COVID - 19 PANDEMIC AND ITS HOME CARE AMONG NURSING STUDENTS

Anu Joykutty PhD Nursing Scholar

Shri Jagdishprasad Jhabarmal Tibrewala University, Vidyanagari, Jhunjhunu, Rajasthan.

Email id: anu_joykutty@rediffmail.com

ABSTRACT:

Introduction: During this Covid-19 pandemic it is important to assess the knowledge regarding Covid-19 pandemic and its home care as the condition is so pathetic that there is no bed to accommodate the patients. Hence through this study it will help the nursing students to provide the home care.

Objectives: This study aims at finding the knowledge regarding Covid-19 pandemic and its home care among nursing students and its association with the socio demographic variables.

Materials and Methods: With the help of descriptive online survey approach data was collected from both GNM and B.Sc. Nursing students in selected colleges Rajkot using a validated tool which contains socio demographic data and Knowledge questionnaire. The collected data was then statistically analyzed.

Result: The result revealed that females were majority with 55% from B. Sc. Nursing course. The knowledge score shows 62% had average knowledge. The highest 41.6 mean % score was recorded in the area of causes of covid-19. There was significant association of knowledge score with course of training.

Conclusion: The study depicts average level of knowledge scores among the nursing students. Hence it is important to focus and support them with the frequent health education modalities by which they can help the society recover from the pandemic.

Keywords: - COVID 19, Pandemic, Homecare, Nursing students

INTRODUCTION

COVID-19 is the current global burning problem which is caused by the deadly Coronavirus where 'CO' means Corona, 'VI' means Virus, 'D' means Disease and '19' represent the year 2019 December when it was first identified in China. As of till now this virus has made a drastic change in the human life not only physically but also mentally in a panic mode. It transmits through respiratory route causing mild to severe diseases even leading to the death beds. The signs and symptoms range from mild to moderate with fever, cough, headache, shortness of breath, fatigue, body pain, loss of smell, taste, sore throat, nasal congestion, nausea, vomiting, diarrhea. Some cases tested positive even shows no symptoms. The standard precautions to prevent the spread of the infection is by maintain hand hygiene, social isolation, wearing face mask, avoiding close contact with infected person and avoiding going to the crowded areas. The severity of the disease can be reduced by taking vaccination. There are various vaccines like Covaxin, Covishield available for Covid-19 which can be taken with 2 doses with a gap of minimum four weeks apart. The immune system will be boosted after 10-15 days of the second dose only. But even after the vaccination it is compulsory to follow the prevention protocols. The various ways by which it can be diagnosed by taking nasal swab and testing for Rapid antigen test where it detect the antigen which is less accurate compared to RTPCR where it detect the antibodies.

According to the WHO Coronavirus Dashboard as of 21st May 2021, 165,158,285 confirmed cases including mortality of 3,425,017 cases worldwide. When the focus is towards India it has around 26,031,991 confirmed cases and 2, 91,331 deaths reported. As per report of

Gujarat COVIDIndia.org (2020 November), the confirmed cases in Gujarat is 7,88,470 with 9576 deaths and that of Rajkot is 54,912 and death is 698. The situation is so pathetic that there is a lack of bed availability, ICU ventilators, medicine shortage lack of oxygen supply etc in the hospitals. The situation has arouse in such a way that the care is supposed to be given in the home itself.

Sharma A D etal (2020) in their study revealed that the 31.7% of students had good knowledge about Covid-19 and emphasized there is a need for educational programmes to enhance the knowledge levels of the nursing students.

Shinde R and Waghmare S (2020) shows that the majority of the participants had satisfactory knowledge regarding its management and hence it future planning and educational interventions to be done to improve the focus of that area.

As this pathetic situation is continuing, people should be aware and should take necessary safeguarding measures to be free from the infection so as to break the chain of spread. The nursing students can be a good information provider to sensitize the public about the facts of Coivid-19 and how to take care of Covid-19 cases at home, also clear the myths of the disease. With this background keeping in the mind the researcher aimed to assess the knowledge regarding Covid-19 and its home care among nursing students.

OBJECTIVES

- To evaluate the knowledge regarding Covid-19 pandemic and its home care among nursing students
- To find association of knowledge regarding Covid-19 pandemic and its home care among nursing students with socio demographic variable

MATERIALS AND METHODS

Research Approach: Descriptive research Approach

Research Design: Non Experimental Descriptive Survey Design.

Study Population: Nursing students who are studying in selected nursing colleges in Rajkot.

Sample size: 100 nursing students.

Sampling Technique: Non Probability Purposive sampling technique

Inclusion criteria: Students from Basic B.Sc. Nursing and GNM course who is having android mobile phone and those students who are agreeable to take part in the study

Exclusion criteria: Nursing students who are studying in ANM course and those students with medical illness and are under medical treatment.

Data Collection Tool: Data was collected using the Online Questionnaire which contains 2 sections:

- Section A: Socio demographic variables with 11 variables such as Age, gender, religion, course, current year of studying, type of family, family income, type of accommodation, Clinical experience, Whether you got infected with COVID 19 and Is there any history of COVID 19 in your family.
- Section B: Structured Knowledge questionnaire to assess knowledge regarding Covid-19 pandemic and its home care among the nursing students during COVID-19 Pandemic with 36 questions which was easy to understand, general and free in nature.

Ethical Consideration: Permission and approval was obtained from concerned authority and the individual participants. Confidentiality was also maintained.

Delimitation: This study is delimited to nursing students of selected colleges in Rajkot and it assessed the knowledge only once.

Statistical Analysis: Data collection was done by online survey using structured Knowledge questionnaire. Data was analyzed by organizing the data in master sheet and then collected data was analyzed using Descriptive and inferential statistics. The frequency and percentage of data was calculated for describing socio demographic variables. Frequency and Percentage distribution of Knowledge among nursing students was checked. Level of knowledge and

area wise knowledge was also calculated. Association of Knowledge with the socio demographic variables was done using chi square test. Analyzed data was presented in the form of tables and graphs.

RESULTS

Analysis and interpretation of the data collected from 100 nursing student from the selected colleges of Rajkot. The purpose of the study was to evaluate the knowledge regarding Covid-19 pandemic and its home care. Data collection was done by structured knowledge questionnaire. Data analysis and interpretation was done by employing both descriptive and inferential statistics.

(1) Organization and presentation of the data

The obtained data was entered in the master sheet for tabulation and statistical processing. The data analyzed was organized and presented under the following sections.

- Section A: Distribution of socio demographic variables of nursing students.
- Section B: Evaluate the level of knowledge regarding Covid-19 pandemic and its home care among nursing students
- Section C: Association of knowledge score regarding Covid-19 pandemic and its home care among nursing students with socio demographic variable.

(2) Section A: Distribution of socio demographic variables of nursing students

This part deals with frequency and percentage distribution of participants according to their socio demographic variables. Data was analyzed using descriptive statistics and was summarized in terms of percentage in the Table 1.

Table 1: Frequency and percentage distribution of nursing students according to selected socio demographic variables

N=100

S.No:	Sample Characteristics	F	(%)
1	Age in years		
	a) 17- 24	86	86
	b) 25 -29	14	14
	c) 30-35	0	0
2	Gender		
	a) Male	25	25
	b) Female	75	75
3	Religion		
	a) Hindu	57	57
	b) Muslim	27	27
	c) Christian	5	5
	d) Others	11	11
4	Course of Training	45	45
	a) GNM Nursing		
	b) B.Sc. Nursing	55	55
5	Current year of studying		
	a) First year	30	30
	b) Second year	50	50
	c) Third year	9	9
	d) Fourth year	11	11
6	Type of Family		
	a. Joint family	8	8
	b. Nuclear Family	87	87
	c. Extended Family	5	5
7	Family Income		
	a. Below Rs 5,000	20	20
	b. Rs. 5,001 – 10,000	30	30
	c. Rs. 10,001 – 15,000	40	40
	d. Rs. 15,000 Above	10	10
8	Type of Accommodation		
	a. Rural	11	11
	b. Urban	89	89
9	Clinical experience		

	a. Yes	65	65
	b. No	35	35
10	Whether you got infected with Covid-19?		
	a. Yes	25	25
	b. No	75	75
11	Is there any history of COVID-19 in your family		
	a. Yes	20	20
	b. No	80	80

According to Table 1a the distribution of the nursing students reveals that majority 86% were in the age group of 17 to 24 years. 75% of the participants were females, 57% belonged to Hindu religion. 55% of the students were studying in B.Sc. Nursing. Highest 50% of the students were studying in second year. Most 87% of the students belonged to nuclear family. 40% of the participant's income level was between Rs. 10,001 to Rs. 15,000. 89% of the students were residing in urban area. 65% had clinical experience. 75% of students had no history of Covid-19 infection. 80 % of the participants had also no family history of Covid-19.

Section B: Analysis of knowledge regarding Covid-19 pandemic and its home care among nursing students

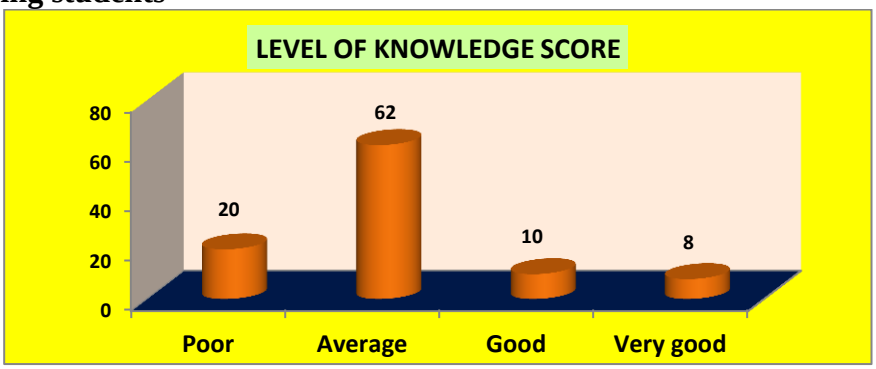


Figure 1 Level of Knowledge Score

As per the Figure 1 shows that 62% had average knowledge, 20% had poor knowledge, 10% had good knowledge and least 8 % had very good knowledge regarding Covid-19 pandemic and its home care among nursing students.

Section C: Area-wise analysis of knowledge scores

Table 3: Area-wise mean, SD, and mean percentage of knowledge scores regarding Covid-19 pandemic and its home care among nursing students

N = 100

Sl. No.	Knowledge area	Max. score	Mean score	SD	Mean percentage
1.	General aspects of Covid-19	9	1.56	0.861	17.33
2.	Causes of Covid-19	5	2.08	1.469	41.6
3.	Signs and symptoms of Covid-19	8	3.16	1.057	39.50
4.	Prevention and Home Care of Covid-19	14	5.54	2.150	39.57
Total		**36**	**12.34**	**3.723**	**34.28**

As per Table 3, Area-wise analysis of knowledge scores regarding Covid-19 pandemic and its home care among nursing student's reveals that the highest 41.6 mean % was in the area of causes of covid-19 and least 17.33 mean % was in the area of knowledge related to general aspects of Covid-19. Overall knowledge scores regarding Covid-19 pandemic and its home care among nursing students was found to be 34.28 mean %.

Section D: Association of knowledge score regarding Covid-19 pandemic and its home care among nursing students with socio demographic variable.

Table 4: Association of knowledge scores regarding Covid-19 pandemic and its home care among nursing students with selected socio demographic variables

Sample Characteristics	Level of Knowledge				χ^2	df
	Poor	Average	Good	Very good		
Age in years						
a. 17- 24	20	50	0	6		
b. 25 -29	4	10	0	0	3.100	3
Gender						
a. Male	2	13	10	0		
b. Female	20	30	24	1	4.28	3
Religion						
a. Hindu	10	30	12	5		
b. Muslim	10	8	6	3	6.755	9
c. Christian	1	3	1	0		
d. Others	3	6	1	1		
Course of Training						
a. GNM Nursing	10	22	6	7	9.828	3
b. B.Sc. Nursing	8	25	20	2		
Current year of studying						
a. First year	5	18	4	3		
b. Second year	6	33	7	4	3.426	9
c. Third year	2	5	2	0		
d. Fourth year	3	6	1	1		
Type of Family						
a. Joint family	2	4	2	0		
b. Nuclear Family	20	40	20	7	2.952	6
c. Extended Family	1	3	0	1		
Family Income						
a. Below Rs 5,000	7	10	2	1		
b. Rs. 5,001 – 10,000	6	16	4	4	5.012	9
c. Rs. 10,001 – 15,000	5	25	6	4		
d. Rs. 15,000 Above	2	6	1	1		
Type of Accommodation						
a. Rural	1	6	2	2		3
b. Urban	24	32	20	13	2.306	
Clinical experience						
a. Yes	15	40	8	2	2.823	3
b. No	5	26	2	2		
Whether you got infected with Covid-19?						
a. Yes	5	15	3	2	0.757	3
b. No	10	50	10	5		
Is there any history of COVID-19 in your family						
a. Yes	5	10	2	3	2.441	3
b. No	13	37	20	10		

Df 2=5.99,3=7.81, 4=9.488, 6=12.592,9= 16.92, p=0.05, * = Significant (p<0.05)

Table 4 shows that there was no significant association between knowledge score when compared with age, gender, religion, current year of studying, type of family, family income, type of accommodation, clinical experience, whether you got infected with Covid-19 and is there any history of Covid-19 in your family so research hypothesis was accepted. But there was significant association when knowledge score was compared with course of training. Hence null hypothesis was accepted and research hypothesis was rejected.

DISCUSSION

This study shows that 62% had average knowledge and 20% had poor knowledge, whereas a similar descriptive study was conducted among nursing students in New Delhi regarding home based care of corona positive patients(mild, pre symptomatic) and quarantined people shows that 84.81% had average knowledge and were aware that early diagnosis and treatment helps in the recover. These study findings suggest the necessity of online educational

program through webinars for the nursing students so that through the awareness they can help the public for the early prevention, diagnosis and home care management of Covid-19 in this pathetic situation.

CONCLUSION

This study focus on the knowledge regarding Coivd-19 Pandemic and its home care among nursing students where the result shows that 62% had average knowledge and there was a significant association when knowledge score was compared with course of training. This study evidence helps in planning early intervention strategies at the earliest to promote healthy preventive measures to care the people at home during this Covid-19 pandemic and to keep the society safe.

REFERENCES

1.Rashmi (2020). A descriptive study to assess the knowledge regarding Home based care of coronapositive patients(Mild, Presymptomatic) and Quarantined People among the students of selected nursing college, New Delhi. Int J Nurs Midwif Res; 7(3):12-15.

2.Roma Shinde, Shital Waghmare, (2020). A study to assess the knowledge regarding coronavirus and its management among people residing in Pune city. Indian Journal of Forensic Medicine & Toxicology. 14(4), 3924-3926.

3.Sharma A D, Verma K, Sehgal M, Verma Y, Aupama K (2020). A descriptive study to assess the knowledge of coronavirus among nursing students, Sirmaur, Himachal Pradesh. Int J Res Med Sci; 8: 4422-5.

4.World Health Organization (2021). WHO Coronavirus (Covid-19) Dashboard; WHO health Emergency Dashboard.

UTILISATION OF DIGITAL LIBRARY RESOURCES IN PRIVATE AND GOVERNMENT EDUCATION COLLEGES OF SRTM UNIVERSITY IN MARATHWADA REGION

Kalyan D. Yadav*,
***Research Scholar, Jagdish Prasad Jhabarmal Tiberwala University, Rajsthan.**
Guide Name:-Dr. Mrs. Vaishali Bhakt.

ABSTRACT:-In India, numerous digital library development efforts have been launched in recent years. 63 published papers on digital libraries in India were evaluated to acquire insight, analyse, & comprehend growth, progress, & present state of digital library efforts in India as reflected in scholarly publications. Except for few studies on copyright issues & digital library administration, majority of publications focus on building digital libraries & digital collections, according to research. No research has been done on digital rights management, security, or digital library policy. This research looks at how Digital library resources in private & government education colleges of SRTM University in marathwada region use its information resources & services. Opinions of library users on use of information resources & services were collected using well-structured questionnaire. investigator delivered 125 questionnaires to 200 users, of which 100 (80%) questionnaires were returned by respondents & 25 (20%) questionnaires were discarded due to incomplete responses from users. current study illustrates & elaborates on different elements of library collections uses within available resources, frequency & purposes of visits, library service use, & library staff behaviour. study's findings & conclusion are presented at end of article.

KEY WORDS- Utilisation, Digital Library, Resource, Education.

INTRODUCTION:-Today's information resources are critical library & information centre services. After air, water, food, & shelter, information is considered essential resource. People require information in order to make decisions. They may obtain information through research process, which is methodical examination of concepts, facts, & fresh information in order to locate new information. University library, described as "a place where books & users interact for transmission of civilization & cultivation of human beings" & "the most important resource in pursuit of institution's general goals & objectives," collects, processes, & disseminates information. India publishes over 20 intellectual periodicals. Field of study is library & information science. Articles report on digital libraries has been published in India. [1] Journals published in India & abroad collection of articles from Indian & foreign periodicals have been presented as synopsis. Obtaining information on digital libraries in India would be useful. Assess & grasp current state of digital library research & development in India. Library serves as nerve centre or core of scholarly activity. It is necessary tool for intellectual growth. Well-stocked library is repository of knowledge or record of human experience that users may consult for facts or information. Character of libraries has evolved dramatically with introduction of information & communication technologies. In libraries, computers are utilised to process, store, retrieve, & disseminate information. Libraries have evolved into hybrid organisations that offer mix of print & digital information. One of primary issues & essential element of library & information science practitioners is evaluating usage of library & information systems. Although it has been looked at or described in many ways, it is easily recognised as significant concern. Ranganathan's five principles of library science are intended to offer appropriate items to fulfil information demands of library patrons. This can only happen if library system is examined on regular basis. [2]

REVIEW OF LITERATURE

Ugah (2007) investigated usage of university libraries with focus on Michael Okpara University of Agriculture in Umudike, Nigeria, & discovered that library is used by both

students & employees, with students accounting for bulk of users. [3] Nearly three-quarters of users explore shelves to find resources, demonstrating their incapacity to utilise library catalogue. He advocated for thorough library orientation on how to utilise catalogue as useful instrument for information retrieval. Academic library use is subject of Oyesiku & Oduwele (2004). Library was mostly used by students during tests & to complete class tasks, according to investigation. Students mostly utilised library during tests & to do class tasks, according to inquiry. Investigation also indicated that collections were insufficient to fulfil needs of users.
For successful information retrieval, research suggests acquiring current resources & properly organising them. [4] In various Nigerian universities, Edem & colleagues (2009) performed research on students' perceived efficacy in using library resources. Major tool for data collection was questionnaire. Total of 600 questionnaires were issued, with 530 of them being returned. Overall response rate was 88.3%. Majority of users get their information through catalogue indexes, according to replies. Those who were dissatisfied with their information search blamed it on lack of tangible items & clumsy library arrangement. Some suggestions for improvement were given, including function of e-library & its application, orderliness, resource relevance, & user education through orientation. In his survey, Aura (2011) discovered that 150 respondents (42.86 percent) said their library accommodations are acceptable, whereas 200 respondents (57.14 percent) said their library accommodations are not adequate. Most significant barrier to using these libraries is lack of current & up-to-date information items (42.86 percent), followed by inadequate library accommodations (25.71 percent) & poor library orientation (25.71 percent) (20 percent). Librarians, information scientists, communication scientists, sociologists, & psychologists are all interested in how people seek information. User recognises need and, as result, puts demands on formal systems such as libraries, information centres, internet services, or another person in order to meet perceived need. “Information seeking behaviour” is defined as “any activity done by individual in order to find message that meets perceived need” (Wilson, 1997). [5]

METHODOLOGY OF STUDY

The questionnaire approach was utilised to gather data in this study. User questionnaire consists of 20 questions with possibilities to make any opinions about use of information sources & services. Researcher delivered 125 questionnaires to SRTM University in marathwada region 200 users, of which 100 (80%) questionnaires were returned by respondents & 25 (20%) questionnaires were rejected due to incomplete responses from users. [6]

DATA ANALYSIS

The study's findings are summarised & presented in this document, which includes tables.

SAMPLES

There is significant number of users, ranging from postgraduates to professors. Sample of users from all categories was gathered to find out what they thought of library's services. Types of users & size of study's sample are listed in table below. According to table above, PGDM students make up 60% of overall population under study, PGDMM students make up 30%, & teachers make up 10%. Sample size chosen for study is fairly vast in order to make procedures of discovering easier. [7]

Table 1: Size of sample

Sr. no	Categories	No of Response(n=100)	%age
1.	PGDM	60	60
2.	PGDMM	30	30
3.	Faculty Members (FM)	10	10

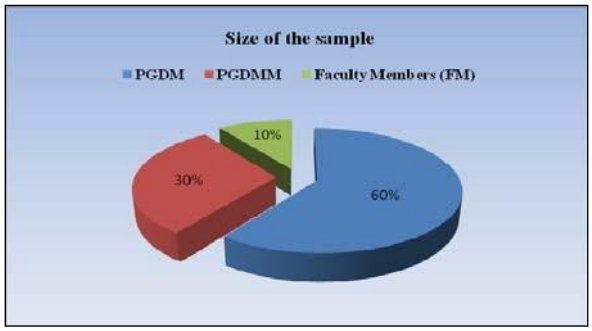


Fig.1 Size of sample

Table-2: Frequency of visit library

S.No.	Category	PGDM	PGDMM	FM
1	Daily	20(33.33)	10(33.33)	6(60)
2	Weekly	10(16.66)	8(26.66)	2(20)
3	Twice weak	17(13.33)	2(6.66)	0
4	Monthly	8(13.33)	6(20)	1(10)
5	Occasionally	5(8.33)	4(13.33)	1(10)

Table 2 shows that 33.33 percent of PGDM users use library almost daily, with minimum of 13.33 percent using it monthly, whereas 33.33 percent of PGDMM users use library daily, with minimum of 6.66 percent using it twice week, & 60 percent of faculty members use library daily, with minimum of 6.66 percent using it once week. [8]

Table-3: Purpose of visit to library

S.No.	Category	PGDM	PGDMM	FM
1	For studying course materials	58(96.66)	29(96.66)	10(100)
2	For competitive examination	51(85)	23(76.66)	7(70)
3	For popular materials	53(88.33)	21(70%)	7(70)
4	For borrow & return books	60(100)	30(100)	10(100)
5	For consult reference books	60(100)	29(96.66)	8(80)
6	Others	47(78.33)	22(73.33)	6(60)

Table 3 shows that majority of PGDM, PGDMM, & faculty members go to library first to examine reference books before studying course contents.

Table 4 shows average amount of time spent at library.

S.No.	Category	PGDM	PGDMM	FM
1	Less than one hour	25(41.66)	13(43.33)	3(30)
2	One hour	20(33.33)	11(36.66)	6(60)
3	Two to three hours	8(13.33)	4(13.33)	1(10)
4	More than three hours	7(11.66)	2(6.66)	0

Table 4 shows that 41.66 percent of PGDM users spend less than hour in library, while 11.66 percent spend more than three hours, & that 43.33 percent of PGDMM users spend less than hour in library, while 36.66 percent spend more than three hours, & that 60 percent of faculty members spend more than three hours in library. [9]

IV. TABLE-5: STUDY REQUIREMENT

S.No.	Study requirement	PGDM	PGDMM	FM

1	Yes	40(66.66)	20(66.66)	8(80)
2	No	20(33.33)	10(33.33)	2(20)

Table 5 demonstrates that majority of users are pleased with library's study requirements. Students in PGDM & PGDMM programmes are dissatisfied with general facilities, but faculty members are happy.

V. TABLE-6: LIBRARY ATMOSPHERE IN CONDUCIVE

S.No.	Adequacy	PGDM	PGDMM	FM
1	Yes	35(58.33)	25(83.33)	9(90)
2	No	25(41.66)	5(16.66)	1(10)

Table 6 demonstrates that majority of customers are happy with library's ambiance. Users of PGDM & PGDMM libraries are dissatisfied with library atmosphere, but academic members find it to be conducive. [10]

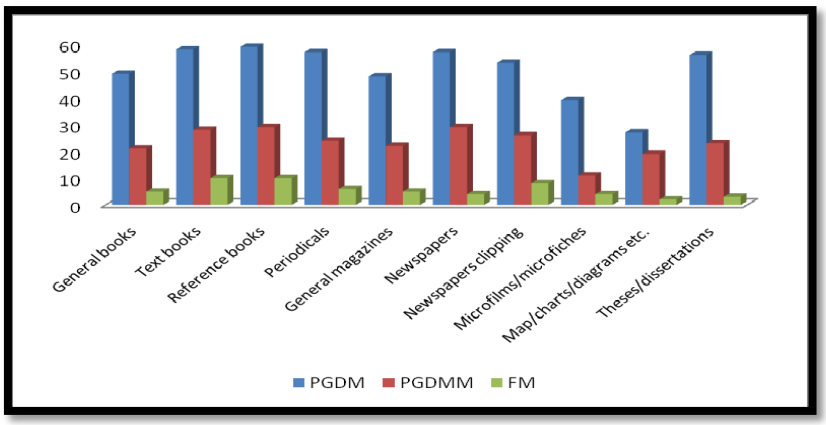
VI. TABLE-7: HELPFULNESS OF LIBRARY STAFF

S.No.	Facilities	PGDM	PGDMM	FM
1	Most helpful	32(53.33)	20(66.66)	8(80)
2	Unhelpful	8(13.33)	4(13.33)	0
3	Least helpful	15(25)	6(20)	2(20)
4	Not at all helpful	0	0	0

Table 7 shows that 53.3 percent of PGDM users find library personnel to be most helpful, 13.33 percent find library employees to be unhelpful, & 25% find library staff to be least helpful. Following that, majority of PGDMM users think library staff is most helpful & 20% say library staff is least helpful, followed by 80 percent faculty members who say library staff is most helpful & 20% faculty members who say library staff is least helpful. Table-8 indicates that text books, general books, news papers, & periodicals were required by greatest number of users, whereas map/charts/microfilms were required by smallest number of users. [11]

VII. TABLE-8: USE OF INFORMATION SOURCES

S.No.	Information sources	PGDM	PGDMM	FM
1	General books	49(81.66)	21(70)	5(50)
2	Text books	58(96.66)	28 (93.33)	10(100)
3	Reference books	59(98.33)	29(96.66)	10(10)
4	Periodicals	57(95)	24(93.33)	6(60)
5	General magazines	48(80)	22(73.33)	5(50)
6	Newspapers	57(95)	29(96.66)	4(40)
7	Newspapers clipping	53(88.33)	26(86.66)	8(80)
8	Microfilms/microfiches	39(65)	11(36.66)	4(40)
9	Map/charts/diagrams etc.	27(45)	19(63.33)	2(20)
10	Theses/dissertations	56(93.33)	23(76.66)	3(30)



VIII. FIG.2 USE OF INFORMATION SOURCES

IX. TABLE-9: DOCUMENT LOCATIONS

S.No.	Category	PGDM	PGDMM	FM
1	Consult library catalogue	14(23.33)	10(33.33)	3(30)
2	By assistances of library staff	20(33.33)	7(23.33)	4(40)
3	Searching Shelves your staff	12(20)	3(10)	2(40)
4	Taking help of friends/colleagues	8(13.33)	6(20)	2(20)
5	Any other	5(10)	4(13.33)	1(10)

Table-9 indicates that PGDM 20(33.33 percent), PGDMM 7(23.33 percent), & faculty members 4(40 percent) use library staff to locate papers, whereas PGDM 14(23.33 percent), PGDMM 10(33.33 percent), & faculty members 3(30 percent) use library catalogue to locate documents. Following that, PGDM 12(20 percent), PGDMM 3(10 percent), & faculty members 2(40 percent) found documents by searching book shelves on their own, while PGDM 8(13.33 percent), PGDMM 6(20 percent), & faculty members 2(20 percent) found document for study purposes with assistance of friends & colleagues.

X.

XI. TABLE-10: DOCUMENTS SEARCH THROUGH CATALOGUES

S.No.	Category	PGDM	PGDMM	FM
1	By Title	47(78.33)	25(83.33)	8(80)
2	By Author	51(85)	27(90)	9(90)
3	By Subject	36(60)	21(70)	8(80)
4	By Call No.	9(15)	87(23.33)	2(20)

Table-10 shows that majority of PGDM, PGDMM, & faculty members search for documents using author search element tool, whereas minority look for documents using title search element tool. Following that, PGDM, PGDMM, & faculty members search document by subject, with tiny fraction of users searching by call number. [12]

XII. TABLE-11: SATISFACTION WITH COMPUTER FACILITIES

S. No.	Satisfaction	PGDM	PGDMM	FM
1	Yes	4(6.66)	2(6.66)	2(20)
2	No	56(93.33)	28(93.33)	08(80)

Table-11 shows that majority of users are dissatisfied with Library's computer services.

XIII. TABLE-12: BEHAVIOR OF LIBRARY STAFF

S.No.	Category	PGDM	PGDMM	FM
1	Excellent	37(61.66)	18(60)	6(60)
2	Good	13(21.66)	7(23.33)	4(40)
3	Fair	8(13.33)	5(16.66)	00
4	Average	2(3.33)	00	00

Table-12 shows that majority of customer's rate library staff's behaviour as "great." While small number of users believes that library employee conduct is average. [13]

XIV. TABLE-13: DATABASES SERVICES

S. No.	Databases services	PGDM	PGDMM	FM
1	Yes	53(88.33)	26(86.66)	9(90)
2	No	7(11.66)	4(13.33)	1(10)

Table-13 demonstrates that majority of library customers are happy with library's atmosphere. General facilities of PGDM & PGDMM are not entirely pleased by users, while general facilities are fully satisfied by teachers.

XV. TABLE-14: GENERAL ASSESSMENT ABOUT LIBRARY

S.No.	Category	PGDM	PGDMM	FM
1	Excellent	31(51.66)	13(43.33)	4(40)
2	Good	17(28.33)	11(36.66)	5(50)
3	Fair	9(15)	5(16.66)	1(10)
4	I have no opinion	3(5)	1(3.33)	00

Table 14 reveals that 51.66 percent of PGDM users rate library as outstanding, 5% state they have no opinion, 43.33 percent of PGDMM users rate library as excellent, & 50% of professors rate library as good. [14]

CONCLUSION

According to conclusions of this study, library personnel should emphasise value of using OPAC as retrieval tool, particularly to students. Users should be discouraged from just looking through shelves. Before going to shelves, they should be encouraged to use OPAC. [15] For adequate & successful services, research highly advises active user education, library computerization, & purchase of current information resources. Library should also hold quarterly training session on how to use library items & services for both teachers & students. Because photocopying from many encyclopaedias is beyond financial grasp of scholars/researchers, it is advised that no restrictions be placed on it. Time between issuance & return should be prolonged. At wide scale, ILL should be extended to all sorts of users. Library administration should make it priority to increase automation of its library so that customers may access library materials & services without wasting lot of time. This manner, both students & faculty members will be happy with library's materials & services.

REFERENCES

1. Choukhande Vaishali G. & Kumar, P.S.G., 2004, Analytical Study of Information Needs & Use Pattern of Faculty Members & Research Scholars of Amravati University. ILA Bulletin, 40, 23-31.

2. Fatima, Nishat & Ahmad, Naved, 2008. Information seeking behavior of students at Ajmal Khan Tibbiya College, Aligarh Muslim University: survey, Annals of Library & Information Studies, 55(2), 141-144.

3. Gautam, J.N. & Srivastava, Mahendra Narayan, 2006, State-of-the-Art of Documentation & Information Services in SAU Libraries in India, Library Herald, 44(1), 33-40.
4. George, P. Joshi, 2007, Information needs & information seeking behaviour of ayurveda information users, Kelpro Bulletin, 11(1), 26-32.
5. Gopalakrishnan, S., Babu, B. Ramesh, & Gopalakrishnan, S., 2008, information use pattern by academicians: case study of NIFT centers in India, Library Herald, 46(2), 63-80.
6. Gurdev Singh, 2002, Use of college libraries by faculty members of university of Delhi, Library Herald, 40(4), 263-270.
7. Harinaryana, N.S. Vasantha, Raju N. & Swamy, Shiv Kumar, 2008, measuring effectiveness of library services of selected college libraries in Mysore city from user's perspective, IASLIC Bulletin, 53(2), 71-81.
8. Helen, Woo, 2005, 2004 user survey at university of Hong Kong libraries, College & Research Libraries, 66(2), 115-135.
9. Hussain, Akhtar & Krishna Kumar, 2010, use of collections & services at IIT Delhi library: survey, International Journal of Library & Information Science, 2(6), 114-123.
10. Hussain, Akhtar, Krishna Kumar & Fatima, Nishat (2010). Study of information source & services of National Medical Library in India, Library Philosophy & Practice, Available at: http://unllib.unl.edu/LPP/hussain-kumar-fatima-kumar.htm
11. Hussain, Akhtar, Muzeeb, Uzma & Fatima, Nishat, 2011, user's survey of five women's college libraries in south campus, University of Delhi, Library Philosophy & Practice. Available at: http://unllib.unl.edu/LPP/hussain-muzeeb-fatima.htm
12. Ikoja-Odongo, Robert, 2001, Study of information needs & uses of informal sector in Uganda: preliminary findings, LIBRES: Library & Information Science Research Information Studies, 55(2), 141-144.
13. Kemp D.A., 1976. Nature of Knowledge: Introduction for Librarians, Clive Bingley, London.
14. Oyesiku FA, Oduwole AA (2004).Use of Academic Library: Survey on Olabisi Onabanjo University Libraries. Lagos J. Libr. Info. Sci., 2(2): 96-101.
15. Ugah D (2007). Evaluating Use of University Libraries in Nigerria: Case Study of Michael Okpara University of Agriculture, Umudike. Library Philosophy & Practice 1-8.

Changing Dimensions in Logistics and Distribution Networks

Rupali Jadhav

Mail id: rupali0804@gmail.com

Mob no: 9145456767

Shri J.J.T. University

Abstract:-In sync with Industry 4.0, supply chains, logistics and distribution networks are getting ready for 4.0. Firstly, supply chains are getting digitalized. Second, the systems are moving to cloud computing replacing traditional on-premise systems. Thirdly, retailers are resorting to omni channel formats in response to online shoppers and traditional ones. Fourthly, supply chains are becoming sustainable. This means they are giving equal consideration to social and environmental aspects. This is one of the most important trends apart from technological trends. Lastly, supply chains will use big data technology to analyze customer data to gauge past performances and future trends. All in all, these changes are making supply chains 4.0 ready.

Keywords: - Logistics 4.0, Supply chain 4.0, digitalization, cloud, big data, sustainability

Introduction:-As organizations progressively utilize their supply chain to contend and acquire piece of the pie, spending and movement in this space are outstandingly on the up-swing. Technology and cycle redesigns at forward thinking organizations obviously show that supply chain greatness is all the more generally acknowledged as a component of by and large business methodology, and that expanding worth to customers isn't simply management's, yet everyone's, business. The change in how organizations see their supply chain is grabbing hold (Vaio, 2019).

Literature Review:

There is considerable research around recent trends in logistics or logistics 4.0. Below are a few abstracts from recent literature.

Winkelhaus and Grosse (2020) have posited that, undertakings are faced with new customer requirements and tested by global competition prompting central changes of the present industry. Against this foundation, at present Industry 4.0 is the principal idea of managing these difficulties in assembling. Coming up short on a tantamount covering idea in logistics, this examination expects to rigidly bind together different methodologies in exploration to a Logistics 4.0-system to create a new image of the condition of logistics research. In this article, an extensive structure of Logistics 4.0 is created. To start with, the term Logistics 4.0 is characterized, and afterward a methodical writing survey of 114 articles on Logistics 4.0 is performed. The subsequent structure consolidates external triggers, primary technological innovations, impacts of human interactions and logistics tasks. Existing arrangements that help Logistics 4.0 are summed up as indicated by the advances: cyber-physical systems, internet of things, cloud computing, Big Data, mobile-based systems, social media-based systems and further advances. Administrative ramifications are laid out and open examination issues are analyzed.

Kayikci (2018), has argued that, today, most ventures are going through a digitization interaction with the fourth industrial revolution, named industry 4.0. The focal point of the computerized change lies primarily on manufacturing, subsequently the terms, for example, "Manufacturing plant of the Future" or "Savvy Factory" is utilized comparative with this idea. Nonetheless, there are numerous explanations behind considering the effect of

digitalization in logistics and the significance of supply chain for industry 4.0. The vital guarantees of this idea are empowering constant full-straightforwardness from providers to customers, small lot sizes, numerous item variations, associated measures and decentralized, self-sufficient administration. These advantages can't be accomplished by manufacturing alone, yet just along the whole supply chain. Besides, logistics should acquire a more prominent vision to satisfy the requirements of industry 4.0 as reasonably as conceivable as far as utilizing proper advancements and upgrading vertical and horizontal integration among the supply chain partners. In this regard, this examination features the advantages of the digitization of logistics measure and inspects the supportability effect of digitization in logistics. The investigation is sought after as a solitary contextual analysis inside the FMCG organizations and their transport providers in Turkey and it is based on a subjective strategy and on associated semi-structured interviews.

Mangla et al. (2019) have opined that, to improve the corporate sustainability of agro-food esteem chains, business associations need to depend on a higher performing and more reliable logistics system. Especially, if there should be an occurrence of dairy industry, associations are confronting some significant challenges containing people management, short shelf life, high food losses and wastage, high greenhouse gas emissions. Based on "Confederation of Indian industry - Dairy Vision 2025", it is accepted that the dairy area in India has high potential if associations can build up an effective logistics and supply chain system. This article endeavors to break down the association between distribution related challenges with a center operational excellence and higher corporate green development and supportability perspectives in food supply chains by considering the business illustration of four Indian dairy item based associations utilizing chart hypothesis and grid approach. The outcomes show that food associations should deal with cold chain to manage logistics and distribution challenges to lessen wastage, decline monetary losses and to consider ecological issues.

According to Glistau and Machado (2018), Industry 4.0 and Logistics 4.0 are highly recent terms. They are associated with the basic pattern of digitalization, virtualization and networking of data and information. Typical implementation is the execution of new information and communication technologies into production and logistics practice. This will change the functioning conditions; measures just as plans of action.

According to Frederico et al. (2019), Industry 4.0 is perhaps the most emergent research subjects pulling in huge interest by specialists just as professionals. Numerous articles have been distributed with respects Industry 4.0; in any case, there is no exploration that unmistakably conceptualizes Industry 4.0 with regards to supply chain. This paper intends to propose the expression "Supply Chain 4.0" along with a novel reasonable system that catches the substance of Industry 4.0 inside the supply chain setting. As Industry 4.0 is characteristically a revolution, and as revolutions are transformative, this examination likewise intends to catch the advancement of Supply Chain 4.0 from maturity levels perspective to work with the plan and improvement of Supply Chain 4.0 system. The SLR showed that there is restricted exploration connecting Industry 4.0 to supply chain. It was feasible to remove a bunch of thematic categories from the investigation of the articles which are alluded to as develops as they structure the center of the reasonable Supply Chain 4.0 system. This builds are managerial and capability supporters, technology levers, processes performance requirements and strategic outcomes.

Key Trends:

1) Supply Chain Digitalization: Digitization of the supply chain, enveloping all endeavors to incorporate corporate systems into a unified system just as executing new computerized technologies, will keep on being a need. The objective of digitization is a savvy, productive supply chain ecosystem that destroys silos, makes straightforwardness and improves responsiveness. It conceives a computerized climate that gets rid of manual processes and

gives a solitary perspective on the association. It incorporates drives for creating paperless systems directly through to strategies for modeling supply chain networks and creating what-if scenarios.

2) Move to Cloud: While numerous organizations actually depend on inheritance on-premise supply chain software, what's to come is in the cloud. Accessible in numerous structures, including Software as a Service (SaaS), Infrastructure as a Service (IaaS) and Platform as a Service (PaaS), supply chain cloud computing offers flexibility, scalability and a global reach while getting rid of the need to keep up extensive, expensive on-premise computing infrastructure.

3) Omni channel presence: In response to customer demand, organizations will take big steps towards offering a genuine omni channel buying experience. Permitting customers to flawlessly shop online or in physical stores, omni channel supply chains place more prominent demands on calculated and supply chains with the concurrent requirements of supplying singular customer order just as renewing stock at retail outlets.

4) Sustainable supply chains: Sustainability has gotten one of the key global supply chain patterns, with customers demanding green products and sustainable practices. The NYU Stern Center for Sustainable Business reports products promoted as sustainable developed 5.6 occasions quicker than those that didn't.

5) Big Data: Big Data has become important, on account of the digitization of the supply chain, the development in IoT, and the more prominent accessibility of customer data. Organizations today approach colossal measures of data and are utilizing this to create business knowledge going from understanding past performances to anticipating future patterns (riverlogic.com, 2020).

Conclusion:-Just as industry is transforming to 4.0, supply chains, logistics and distribution networks are getting 4.0 ready. The key emerging trends are – supply chains are increasing becoming digitalized, supply chains are moving to cloud platforms, retailers are having to invest in omni channel formats, catering to both online and traditional customers, supply chains are becoming sustainable which care for social and environmental aspects and lastly, the modern supply chains use big data to analyze past performances and future trends. These changes in the supply chains are making them 4.0 ready.

References:

1. Frederico, G. F., Garza-Reyes, J. A., Anosike, A., & Kumar, V. (2019). Supply Chain 4.0: concepts, maturity and research agenda. *Supply Chain Management: An International Journal*.
2. Glistau, E., & Coello Machado, N. I. (2018). Industry 4.0, logistics 4.0 and materials-Chances and solutions. In *Materials Science Forum* (Vol. 919, pp. 307-314). Trans Tech Publications Ltd.
3. Kayikci, Y. (2018). Sustainability impact of digitization in logistics. *Procedia manufacturing*, *21*, 782-789.
4. Mangla, S. K., Sharma, Y. K., Patil, P. P., Yadav, G., & Xu, J. (2019). Logistics and distribution challenges to managing operations for corporate sustainability: study on leading Indian diary organizations. *Journal of Cleaner Production*, *238*, 117620.
5. Riverlogic.com. (2020). Retrieved from https://www.riverlogic.com/blog/top-supply-chain-trends-you-need-to-know-in-2020
6. Vaio, T. (2019). Six Key Trends Changing the Supply Chain Management Today. Retrieved from https://www.sdcexec.com/sourcing-procurement/news/10358095/hitachi-consulting-six-key-trends-changing-the-supply-chain-management-today
7. Winkelhaus, S., & Grosse, E. H. (2020). Logistics 4.0: a systematic review towards a new logistics system. *International Journal of Production Research*, *58*(1), 18-43.

A study to evaluate knowledge regarding CPR among nurses working at Yashwant charitable hospital at kodoli

Grace Chetan Gaikwad
PhD scholar JJTU University
Reg. No 28216064

ABSTRACT:-Nurses can be life saving rescuer for a cardiac arrest victim. A skill of CPR and their implementation mostly depends on the training of nurse's, year of experience and their level of confidence. Graduate nurses working together should co ordinate their care and perform chest compressions as well as ventilations in a team-based approach. All rescuers regardless of training should provide chest compressions to all cardiac arrest victims.

Objectives:

(1) To assess the knowledge level of nurses about cardiopulmonary resuscitation guidelines,
(2) To identify the relationship between the knowledge level and selected variables.

Methods:

Fifty nurses has purposely selected from yashwant charitable hospital kodoli of shree yashwant shikshan prasarak mandals kodoli. Convenient sampling technique has used for selecting the sample. Total period of study was from August 2019 to October 2019. A self-prepared multiple-choice questionnaire has used for data collection.

Results:

Studies showed that nurses' knowledge on cardio pulmonary resuscitation is above average (10.56/14). There was no statistically significant difference in mean knowledge score and age, years of ICU experience and ACLS Training programmed attendance.

Conclusion:

Based on the findings of the study Cardiac nurses have average knowledge about cardio pulmonary resuscitation guidelines.

Key words : ED - Emergency Department, CPR - Cardio pulmonary Resuscitation, ACLS - Advanced Cardiac Life Support, BLS - Basic Life Support

INTRODUCTION:-Cardiopulmonary resuscitation (CPR) is the foundational technique for the emergency treatment of cardiac arrest (CA). The standardized training of CPR has been emphasized more than ever. Common people in developed countries and regions have received popular education of CPR program of advanced cardiac life support (ACLS) training which was launched jointly by Universal Medical

Background

Successful resuscitation following cardiac arrest requires an integrated set of co-ordinate actions the link include the following;

1. Immediate recognition of cardiac arrest and activation of the emergency response team
2. Early CPR with an emphasis on chest compressions
3. Rapid defibrillations
4. Effective advanced life support
5. Integrated post cardiac arrest care.

CPR traditionally has integrated chest compressions and rescue breathing with the goal of optimizing circulations and oxygenation. Rescuer and victim characteristics may influence the optimal application of the components of CPR. Everyone can be a life saving rescuer for a cardiac arrest victim. CPR skills and their applications depend on the rescuers training, experience and confidence. Chest compressions are the foundations of CPR. All rescuer's regardless of training should provide chest compressions to all cardiac arrest victims .Because of their importance, chest compressions should be the initial CPR actions for all victims regardless of age .Rescuers who are able should add ventilations to chest

compressions. Highly trained rescuers working together should co ordinate their care and perform chest compressions as well as ventilations in a team based approach. Integrating the critical components of CPR The universal Adult advanced cardiac life support (ACLS) algorithm is a conceptual frame work for all levels of rescuer can and should perform .when encountering a victim has experienced a cardiac arrest, based on unresponsiveness and lack of normal breathing .After recognition, the rescuer should immediately activate the emergency response system ,get an AED/defibrillator ,if available and start CPR with chest compressions. If an AED is not close by, the rescuer should proceed directly to CPR .If other rescuer are present, the first rescuer should direct them to activate the emergency response system and get the AED/defibrillator. The first rescuer should start CPR immediately .When the AED /defibrillator arrives apply the pads, if possible, without interrupting chest compression and turn the AED ―ON. The AED will analyze the rhythm and direct the rescuer either to provide a shock or to continue CPR without interruptions until more experienced rescuer assume care.

Recognition and Activation of Emergency Response:

Pulse detection alone is often unreliable, even when performed by trained rescuer, and it may require additional times. Consequently rescuers should start CPR immediately if the adult victim is unresponsive and not breathing or not breathing normally.

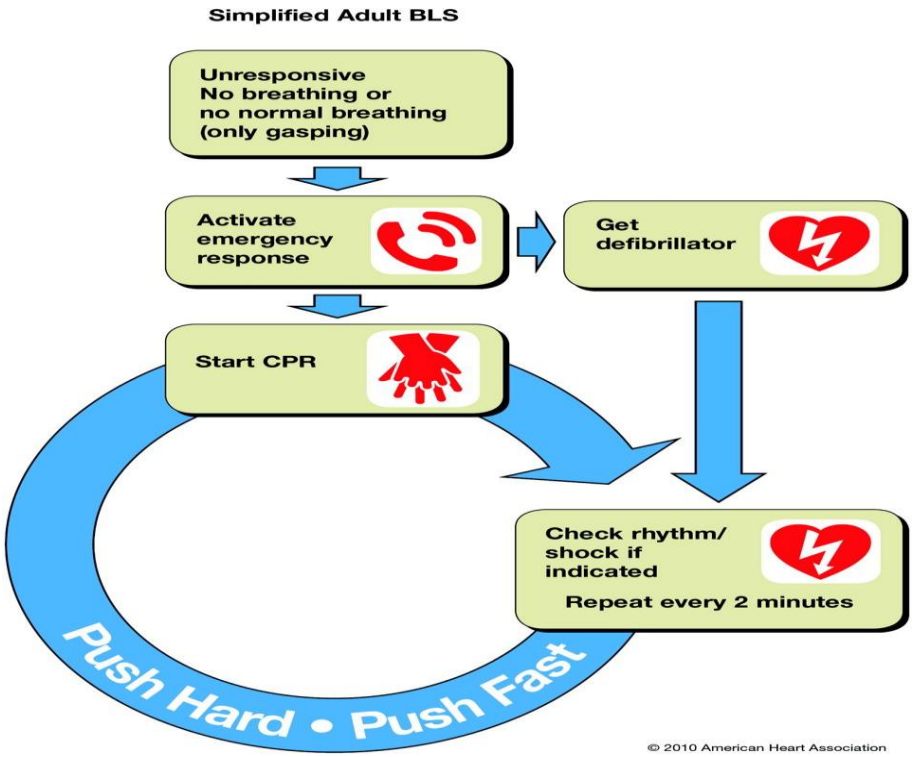
Chest compressions: The prompt initiation of effective chest compressions is a fundamental aspect of cardiac arrest resuscitation. CPR improves the victim chance of survival by providing heart and brain circulation .Rescuer should perform chest compression for all victim in cardiac arrest, regardless of rescuer skill level, victim characteristics, or available resources .Rescuer should focus on delivering high quality CPR.

- Providing chest compression of adequate rate (atleast100/min)
- Providing chest compression of adequate depth
- Adults: a compressions depth of at least 2 inches (5cm)
- Infant and children :a depth of at least one third the anterior –posterior (AP) diameter of chest or about 1 1/2 inches (4cm)in infants and about 2 inches in children .
- Allowing complete chest recoil after each compression minimizing interruption in compression
- Avoid excessive ventilation
- If multiple rescuers are available, they should rotate the task of compressions every 2 minutes.

Airway and Ventilations: Opening the airway (with a head tilt chin lift or jaw thrust) followed by rescue breath can improve oxygenation and ventilations. The maneuvers can be technically challenging and requires interruption of chest compressions , particularly for a lone rescuer who has not been trained .Thus the untrained rescuer will provide hands only (compressions only) CPR (i.e. compressions without ventilations) and the lone rescuer who is able should open the airway and give rescue breaths with chest compressions . Ventilations should be provided if the victim has a high likelihood of an asphyxia cause of the arrest (infants, child, or drowning victim).Once an advanced airway is in place, health care providers will deliver ventilation at regular rate breaths 6 to 8 seconds and chest compression can be delivered without interruptions.

Defibrillation

The victims chance of survival decreases with an increasing interval between the arrest and defibrillation .Thus early defibrillation remains the cornerstone for ventricular fibrillation and pulse less ventricular tachycardia .Hospital strategies should aggressively work to reduce the interval between arrest and defibrillation .one of the determinants of successful defibrillation is the effectiveness of chest compressions. Defibrillation outcome is improved if interruption in chest compression are kept as minimum.



BLS AMERICAN HEART ASSOCIATION 2010 BLS GUIDELINES

Include:

- Immediate recognition of sudden cardiac arrest based on assessing unresponsiveness and absence of normal breathing (ie, the victim is not breathing or only gasping)
- Look, listen and feel 'removed from Bls algorithm
- Encouraging hand only (chest compression over the middle of chest) for the untrained lay rescuer.
- Health care providers continue effective chest compressions/CPR until return of spontaneous circulation (ROSC)or termination of resuscitative efforts.
- Increased focus on methods to ensure that high quality CPR (compressions of adequate rate and depths, allowing full chest recoil between compressions, minimizing interruption in chest compression and avoiding excessive ventilation)is performed.
- Continue de-emphasis on pulse check for health care providers.
- Recommendation of a simultaneous choreographed approach for chest compressions. Airway management, rescue breathing rhythm detection and shock by an integrated team of highly trained rescuers in appropriate settings.
- Immediate recognition of cardiac arrest and activation of emergency response system.
- Early CPR that emphasis chest compressions.
- Rapid defibrillation if indicated
- Effective advanced life support
- Integrated post cardiac arrest care

Need and significance of the study:-Poor knowledge and skill retention are following cardiopulmonary resuscitation training for nursing and medical staff. Cardiopulmonary resuscitation training is mandatory for nursing staff and is important as nurses often discover the victims of in-hospital cardiac arrest. Many different methods of improving this retention have been devised and evaluated. However, the content and style of this training lack standardization. The researcher experience in Intensive care unit of yashwant charitable hospital kodoli, showed that as nurses often notice the casualty of in-hospital cardiac arrest, the content and knowledge of the CPR method lack standardization. This hospital is

providing BLS training programmed for staffs and students every year, maximum of members have been trained every year. Hence the researcher has planned to conduct a study to assess the knowledge of nursing staff on CPR techniques.

Objectives

The objectives of this study are:-

(1) To assess the level of knowledge regarding cardiopulmonary resuscitation guidelines from the nurses who are working in yashwant hospital

(2) To identify the relationship between the knowledge level with selected variables.

Operational definitions

Knowledge: - A state of awareness or understanding with conscious mind. In this study the investigator assesses the knowledge on cardio pulmonary resuscitation guidelines among cardiac nurses using a self prepared validated knowledge test.

Cardio pulmonary resuscitation; - CPR consisting of external cardiac massage and artificial respiration; the first treatment for a person who has collapsed and has no pulse and has stopped breathing; attempts to restore circulation of the blood and prevent death or brain damage due to lack of oxygen.

Critical care:- The specialized care of patients whose conditions are life-threatening and who require comprehensive care and constant monitoring, usually in intensive care units. Also known as intensive care.

Methodology

Research approach A descriptive survey approach is used.

This is a descriptive survey of nursing staff. The investigators first assess the knowledge about cardio pulmonary resuscitation a guideline among nurses with a self prepared questionnaire .The total duration of assessment is 10 minutes. Fifty nursing staff will be selected for the study .The duration of the study is August- October.

Setting of the study The study was conducted in yashwant charitable hospital. Here the institute offers CPR training programme for the staff and students every year.A written exam and practical exam should be conducted by the nursing department.

Study population The target population of the study was staff nurses from yashwant charitable hospital

Sample and sampling techniques The sample was selected from the nursing staff working in yashwant charitable hospital. A purposive sampling technique was used to collect the samples. The samples were selected from the staff nurses. The duration of study period was from August 2019 to October 2019. Sample size was fifty.

Inclusion Criteria Nursing staff working in yashwant charitable hospital

Exclusion criteria Nursing staff working in departments OPD, Dressing room, Injection room

Data Collection The tool present in the study consists of the following parts.

PART –1 The part 1 consist of socio demographic data ,which consist of age, sex, educational qualification, Total years if professional experience, Total year of ICU experience, ACLS Training programmed attended or not.

PART -2 It consist of fourteen multiple choice questions about CPR guidelines .It covers nurses knowledge on CPR ,about the depth ,time ,sites for checking pulse, ratio for compression to ventilation .The questions were multiple choice questions .Each correct answer carries one mark Actual duration for completing the questionnaire was ten minutes. The maximum obtained score is 14

PLAN FOR ANALYSIS After data collection, data will be organized, tabulated, summarized and analyzed and presented in the forms of tables, bar diagrams and pie diagrams.

ANALYSIS AND INTERPRETATION OF DATA

The finding of the study were analyzed and arranged under the following sections.

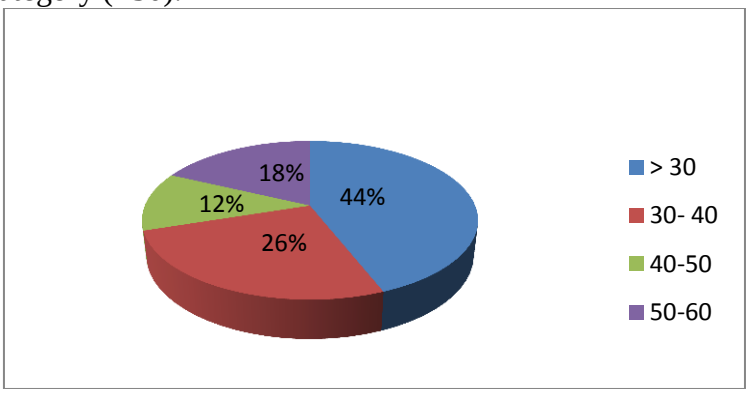
1. Distribution of sample according to demographic data.
2. Distribution of sample according to knowledge score.
3. Comparison of mean, standard deviation and p value of nurses' knowledge about CPR guidelines and selected variables

Distribution of sample according to demographic data

Distribution of data according to age: - The age of the sample ranged from 23 to 58 with a mean age of 34.28, standard deviation of 10.72, and median age of 31 and mode of 24.

AGE	FREQUENCY	PERCENTAGE
<30	22	44%
30 -39	13	26%
40 -49	6	12%
50 - 60	9	18%
TOTAL	50	100%

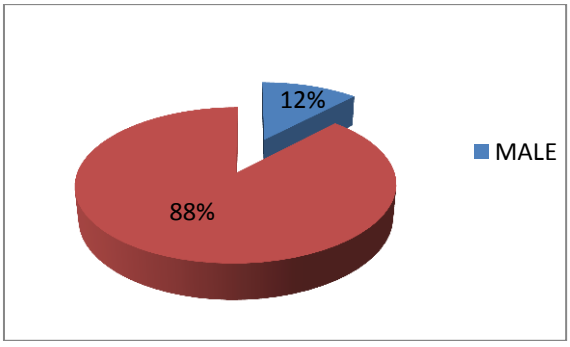
Age categories were based on the age distribution of samples so as to have a minimum number under each class. The data given in table shows that majority of samples belonged to the younger age category (<30).



The above pia diagram showing the distribution of samples according to age category.

Distribution of samples according to sex: - Table shows the distribution of sample according to sex.there were (88%) females in the sample.

SEX	FREQUENCY	PERCENTAGE
FEMALE	44	88%
MALE	6	12%
TOTAL	50	100%



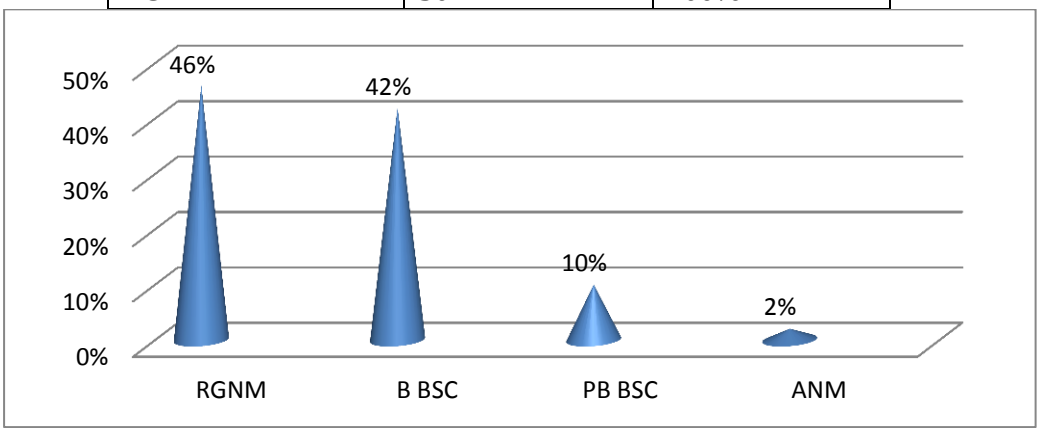
The pie diagram shows distribution of sample according to sex category.

Distribution of sample according to educational qualification

Data collected from cardiac nurses working in Yashwant charitable hospital shows that 46% of them are RGNM, 42% of them are B.Sc (N), 2% of them are ANM Nursing and 10% of them had PB BSC (N).

Distribution of sample according to educational qualifications

EDUCATIONAL QUALIFICATIONS	FREQUENCY	PERCENTAGE
RGNM	23	46 %
BSC (N)	21	42 %
ANM	1	2 %
PB BSC	5	10 %
TOTAL	50	100%



Distribution of sample according to year of professional experience: Data collected from nurses with their year of experience, which ranged from more than 5 years and less than 35 years.

Distribution of sample according to year of professional experience

EXPERIENCE	**FREQUENCY**	**PERCENTAGE**
< 5 years	22	44%
5-14	13	26%
15-24	7	14 %
25-34	6	12 %
> 35	2	4 %
TOTAL	50	100%

Data given in Table shows that 22 of them had < 5 years of professional experience ,13 of them had 5—14 years of experience ,7 of them had 15—24 years of professional experience,6 of them had 25-34 years of professional experience ,2 of them had > 35 years of experience.

Distribution of sample according to ACLS Training. Data shows that 52% have attended ACLS training program and 48% of them have not attended the programmed.

ACLS TRAINING PROGRAMME	**FREQUENCY**	**PERCENTAGE**
ATTENDED	26	52 %
NOT ATTENDED	24	48 %
TOTAL	50	100 %

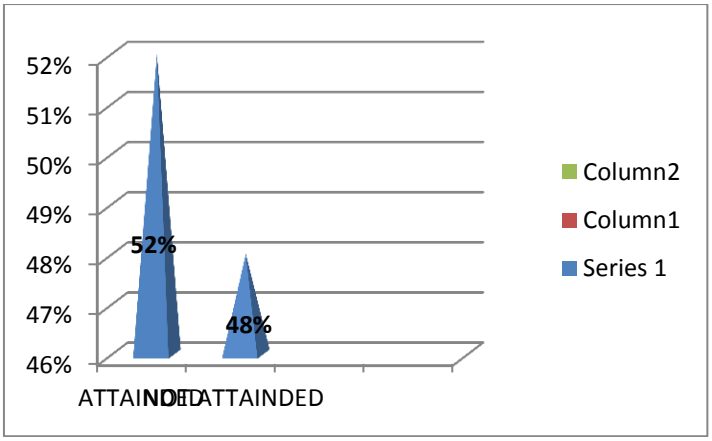


DIAGRAM SHOWING DISTRIBUTION OF SAMPLE ACCORDING TO ACLS TRAINING PROGRAMM

Distribution of sample according to percentage of knowledge score about CPR Guidelines among nurses.

KNOWLEDGE SCORE	FREQUENCY	PERCENTAGE
< 8	7	14%
9-11	28	56%
12-14	15	30 %
TOTAL	50	100%

There were fourteen questions in the knowledge test related to CPR Guidelines with a maximum score of fourteen .Total knowledge score obtained ranged from 5—14 with a mean of 10.56,standard deviation of 2.27,median of 11 and mode of 11, this shows the nurses have above average

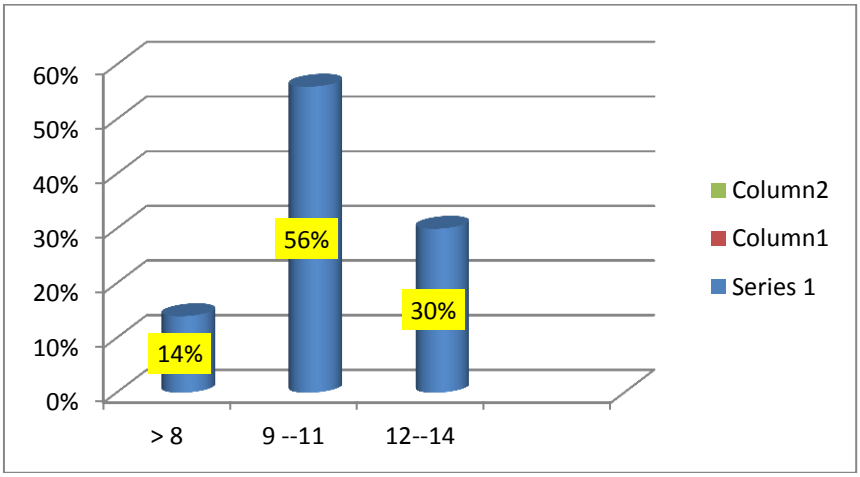


Diagram shows the knowledge score of nurses about CPR Guidelines.

Percentage of score in the area of knowledge about CPR Guidelines. The data given in table 4.8 shows the percentage of knowledge obtained in each item of knowledge test on CPR Guidelines. Result shows that the area of lesser knowledge (85%) are why not advisable for blind sweep on unconscious chocking infant (96%) , preference of bag mask to ventilate (96%),when to call help for unresponsive adult (92%).

Table Percentage of knowledge about CPR Guidelines in each item of knowledge test among cardiac nurses. N==50

AREA OF KNOWLEDGE	FREQUENCY	PERCENTAGE
Depth of sternum depression in adult	17	34%
Depth of sternum depression in infant	38	76 %
Hand placement on the chest to perform CPR in infants	37	74%
Hand placement on the chest to perform CPR in adul	40	80 %

Step just before ventilate in CAB'S	26	52%
Common cardiac rhythm during cardiac arrest	39	78%
Pulse location in infant	34	68 %
Why not advisable to blind finger sweep on unconscious chocking infant	48	96%
Method to open airway in non trauma patient	40	80 %
Time taken to check pulse	39	78 %
Preference of bag mask for ventilation	48	96 %
Ratio of compression to ventilation in one rescuer on a child	41	82 %
When to call help for an unresponsive adult	46	92 %
Rate of chest compression for infants / min	35	70 %

Comparison of mean standard deviation and p value of knowledge score and selected variables.

AGE IN YEARS	MEAN	STANDARD DEVIATION	P VALUE
Young age < 31	11.04	2.18	0.15
Older age >31	10.12	2.30	

The median was used to divide the group in to two –young < 31years and older age > 31years.. The knowledge score of younger age group ranged from 5 to 14 with a mean of 11.04 ± 2.18 and that of older age group ranged from 5 to 14 with a mean of 10.12 ± 2.30.An unpaired 't' test showed that there was no significant difference in the mean knowledge (p=0.15) of both groups.

According to the ACLS Training programmed attended Table shows Mean knowledge score

ACLS TRAINING PROGRAMME	MEAN	STANDARD DEVIATION	P VALUE
ATTENDED	10.13	2.53	0.41
NOT ATTENDED	10.83	1.97	

In ACLS attended group the knowledge score ranged from5—14 with a mean of 10.13 ± 2.53 .In the case of ACLS not attended group the knowledge score ranged from 8—14 with a mean of 10.83±1.97. There is no significant difference in the mean knowledge score of both groups (P = 0,41)

Discussion In this study 14-item survey includes specific questions about cardio pulmonary recitations guidelines .A total fifty cardiac nursing staff responded to the survey. The data given in Table shows that the nurses had above average knowledge on cardio pulmonary resuscitation guidelines. Study shows that cardiac nurses knowledge on cardio pulmonary resuscitation guidelines are about 75.43% that is (10.56/14). While CPR/ACLS competency is considered a fundamental skill for health care workers, the evidence suggests that retention of CPR/ACLS knowledge and skills is generally poor

The researcher has concluded that nurses have sufficient knowledge about cardio pulmonary resuscitation guidelines and could benefit from additional education. Standardized training in CPR is expected to be associated with improvement in many aspects of resuscitation

CONCLUSION:-Based on the findings of the study following conclusion were drawn. Nurses have above average knowledge about cardio pulmonary recitation guidelines. Younger age group had higher mean knowledge than that of older age group. However the study shows that there is no statistically significant difference between the mean knowledge score and age, years of ICU experience or ACLS training

REFERENCE

1.Abella, B.S., Alvarado, J.P., Myklebust, H., Edelson, D.P., Barry, A., O'Hearn, N., et.al (2005). Quality of cardiopulmonary resuscitation during in hospital cardiac arrest. JAMA, 293(2):305 10. 2.

2.Buck Barret, I. and Squire, I.(2004). The use of basic life support skills by hospital staff; what skills should be taught .Resuscitation, 60(1):39 44.

3.Brown, T.B., Dias, J.A., Saini, D., Shah, R.C., Cofield, S.S., Terndrup, T.E., Kaslow, R.A. and Waterbor, J.W. (2006). Relationship between knowledge of cardiopulmonary resuscitation guidelines and performance. Resuscitation, 69(2):253 261.
4.De Regge, M., Calle, P.A., De Paepe, P. and Monsieurs, K.G. (2008). Basic life support refresher training of nurses:Individual training and group training are equally effective. Resuscitation, 79(2): 283 287.
5.Dwyer, T.A., Mossel Williams, L. and Mummery, K.(2005). Defibrillation beliefs of rural nurses: focus group discussion guided by the theory of Planned Behavior. The International and Electronic Journal of Rural and Remote Health, Research, ducation, Practice and Policy, 5(322):1 15.
6. Fleishhackl, R., Roelssler, B., Domanvits, H., Singer, F., Fleishackl, defibrillation ANPAD. Resuscitation, 77(2):195 200.
7.Mahony, P., Griffiths, R., Larsen, P. and Powell, D. (2008).Retention of knowledge and skills in first aid and resuscitation by airline cabin crew. Resuscitation, 76(3):413 418.
8.Monsieurs, K.G., Vogels, C., Bossaert, L.L.P.M. and Calle, P.A.(2005).A study comparing the use of fully automatic versus semi automatic defibrillation by untrained nursing students. Resuscitation, 64(1):41 47.
9.Valenzuela, T.D., Kern, K.B., Clark, L.L., Berg, R.A., Berg, M.D., Berg,D.D.,et.al. (2005). Interruptions of chest compressions during emergency medical systems resus citation.Circulation, 112(9):1259 65.
10.Verplancke, T., De Paepe, P., Calle, P.A., De Regge, M., Van Maele, G. and Monsieurs, K.G. (2008). Determinants of quality of basic life support by hospital nurses. Resuscitation, 77(1):75 80.
11.Wik, J.L., Kramer Johansen, J., Myklebust, H., Sørebø, H., Svensson, L., Fellows, B.et.al. (2005). Quality of cardiopulmonary resuscitation during out of hospital cardiac arrest. JAMA, 293(3):299 304
12.Pediatr,j,.(2007).The new guidelines for cardio pulmonary rescuitation:a critical analysis. Epub,83(2 Suppl):64-70.
13.Rodgers, DL,. Bhanji, F,.McKee, BR,.(2010).Written evaluation is not a predictor for skills performance in an Advanced Cardiac Life Support course. Epub, 81(4):453-6.

EFFECTIVENESS OF SENSORY STIMULATION PERFORMED BY FAMILY MEMBERS ON VITAL SIGNS & CONSCIOUSNESS AMONG PATIENTS ADMITTED IN ICUS

Kapil Sharma* Dr. Geeta Vikash Siroor**
PhD. Scholar* Professor**
SJJT University, Jhunjunu, Rajasthan

Abstract:-Admission in the intensive care unit (ICU) provides great physical and psychological tension to the patient. Being away from family members during admission period at ICU and also short duration of visiting time are considered as risk factors of psychological tension for patients. To overcome this application of sensory and motor stimulation are found to be feasible, safe, did not increase costs, and is associated with decreased intensive care unit and hospital length of stay. The objective of study was to assess the effect of sensory stimulation performed by family members on vital signs & consciousness among patients admitted in selected ICUs. A quasi experimental study by using purposive sampling technique was conducted on 40 patients admitted in selected ICUs of a tertiary care hospital, Ludhiana, Punjab. Data was collected by using Patients vitals sign sheets and Consciousness assessment sheet. The sample was divided into experimental (n1 = 20) and control group (n2 = 20). Family members of experimental group was taught about sensory stimulation and instructed to perform the same two times per day for 3 days under supervision. Vital signs were assessed 10 min before and 10 min after the intervention and consciousness was assessed on 1st (pre) and 3rd (post) day. In the present study there was a significant statistical difference in pre and post interventional vital signs such as body temperature, heart rate, respiration rate and blood pressure in difference days ($p<0.05$). But it was found to be non-significant between the two groups ($p>0.05$) except blood pressure on 1st day evening ($p=0.002$).There was a significant statistical difference in mean score of consciousness before and after intervention among the experimental and control group. The mean difference was maximum in experimental group as compared to control group both in GCS (3.15 and 1.5 respectively) and FOUR Score Scale 5.10 and 2.25 with p=0.001and0.002 respectively. It was found that the vital signs were not influenced by sensory stimulation performed by family members. But there was an effect of sensory stimulation found on consciousness of patients admitted in ICUs.

Keywords:-Sensory stimulation, family members, vital signs, Consciousness.

Introduction:-Admission in the intensive care unit (ICU) provides great physical and psychological tension to the patient. [1, 2] being away from family members during admission period at ICU and also short duration of visiting time are considered as risk factors of psychological tension for patients. [3, 4] Limitations have been defined for visiting the patients in ICUs in many hospitals at EuropeandIran.[5] Despite scientific advancements and progresses in the medicine and nursing profession, visiting the patient by family members is one of the most important issues in the hospitals that inappropriately have been neglected. Approximately, it is near to40 years that visiting regulations have not been revised in Iran. [6] The results of studies since 1970 to1980 showed that visitors may cause the blood pressure and heart rate of the patients to be increased; but recent studies indicate that no significant changes occur in cardiovascular state of patients during visiting by family members. [7] Likewise, the effects of visiting by family members have not established on heart rate, blood pressure or other ventricular events [8]. Mitchell et al revealed that hemo dynamic indices of patients with cerebra vascular accident admitted in ICU shad not significantly changed before, during and after visiting time. [9] Loyalty et al showed that a statistically significant

difference in systolic blood pressure and heart rate of patients admitted in ICU before, during and after visiting time. [10] In addition, Fumagali et al in a 2-year follow-up study on 226 patients concluded that visiting not only does not impair the cardiovascular status, but also the elongation of visiting time will reduce cardiovascular events and alleviate patients' anxiety [11] Currently, little papers are available focusing on the impact of presence of visitors at ICU on patients' medical condition. Moreover, researchers believe that depriving the human from receiving stimulus and also over stimulation as well, may impair the physical and emotional balance. Application of sensory and motor stimulation for head injury patients in a systematic manner may improves the brain organization, and functional activity. The rationale is that exposure to sensory stimulation will facilitate both dendrite growth and improve synaptic connectivity for head injury patients with damaged nervous systems leading to improved cognitive functioning and environmental interaction. [14]

Material and Methods: The present study was based upon the quantitative research approach. A Quasi-experimental design was used to assess the effect of sensory stimulation performed by family members on vital signs & consciousness among patients admitted in selected ICUs of tertiary care hospital, Ludhiana, Punjab. Total of 40 head injury and brain surgery (20 Experimental Group and 20 Control Group) patients were included as subjects. The study tool comprises four parts:

Part A (I):–It includes Socio-demographic profile of patient admitted in ICUs. The profile has 07 components including factors; Age, Gender, and Marital status, Religion, Habitat, Dietary Pattern and Socio Economic Status.

(II): –It includes Socio-demographic profile of family member of the patient admitted in ICUs. The profile has 04 components including factors; Age, Gender, Relation with patient and Educational status.

P**art B**: It includes Clinical Profile sheet of patient admitted in ICUs. The sheet includes Diagnosis of the patients, Duration of present illness, Duration of treatment, any other chronic illness and medication.

Part C: **Vital sign assessment sheet:-**It includes Temperature (^{0}F), Heart Rate (Beats/min), Respiration (breaths/min) and Blood Pressure (mmhg).

Part D:-Tool for Consciousness assessment.

I. **FOUR Score Scale: -** It includes Eye response (with 0-4 scoring), Motor response (with0-4scoring), Brain stem reflexes (with 0-4 scoring) and Respiration (with 0-4 scoring), higher the score improvement in consciousness level.

II. **II. Glasgow Coma Scale: -** It includes Eye response (with 1-4 scoring), Verbal response (with 1-5 scoring) and Motor response (with 1-6 scoring), higher the score improvement in consciousness level.

Results: In Experimental Group

❖ Less than half of patients (40%) were in the age group of 51 to 60 years. Majority (85%) were males. (65%) were married. Half of the patients (50%) belonged to Hindu religion and having Lower middle (III) socio economic status.

❖ Most of family members (55%) were in the age group of 21 to 30 years, males (75%) and son (55%).

❖ Less than half of the patients 40% were diagnosed with ICH. Most of the patients were having 05 – 10 days duration of illness and treatment (75%) and chronic illness (70%).

❖ All the patients 100% of patients were receiving Antibiotic, Diuretic, Proton pump inhibitors and multivitamins.

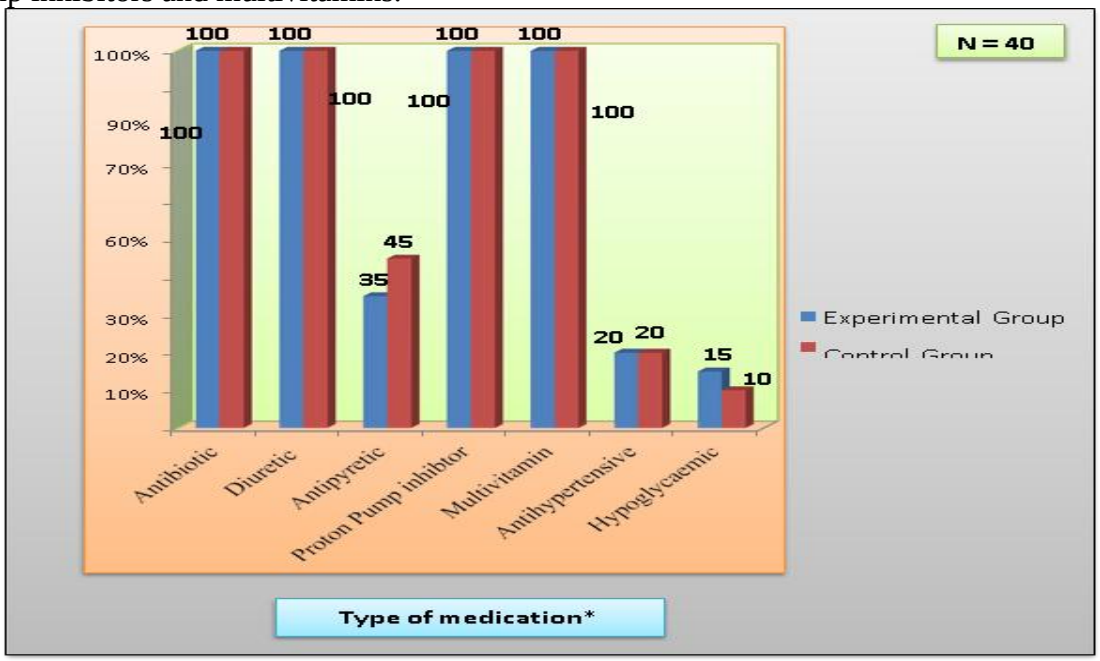
In Control Group

❖ Almost 1/3rd of patients (35%) were in the age group of 21 to 30 and 51 to 60years each, Majority were males (90%), married (55%), Hinduism (50%) and residing in urban area (55%)

❖ Half of family members (50%) were in the age group of 21 to 30 years, (70%)were males, (35%) son.

❖ Less than half of the patients (35%) were diagnosed with ICH.

❖ Most of the patients (75%) were having 11 – 15 days duration of illness and treatment, (75%) with chronic illness and all were receiving Antibiotic, Diuretic, Proton pump inhibitors and multivitamins.



1) **Frequency Distribution of Patients as per type of medications (both in experimental and control group***)*

Figure:-depicts that in experimental group 100% of patients were receiving Antibiotic, Diuretic, Proton pump inhibitors, multivitamins followed by 35% receiving Antipyretic, 20% receiving anti hypertensive and15% receiving hypoglycaemic and in control group 100% of patients were receiving Antibiotic, Diuretic, Proton pump inhibitors, multivitamins followed by 45% receiving Antipyretic, 20% receiving hypertensive and 10% receiving hypoglycemic.

2) Table: Comparison of mean consciousness scores of patients among experimental and control group.

N= 40

Consciousness	**Days**	**M/E**	**Pre/Post**	**Mean ±SD**		**T value**
				Experimental n= 20	**Control n= 20**	
As per Glasgow Coma Scale**	I	M	Pre	06.20±01.67	05.95±01.43	0.508 P=0.615^{NS}
	III	E	Post	09.35±01.56	07.45±01.66	03.71 P=0.001*
			Mean Diff	3.15	1.5	

			T value	10.44 P=0.000*	05.40 P=0.000*	
As per FOUR Score Scale***	I	M	Pre	05.80±02.39	05.70±02.47	0.130 P=0.897^{NS}
	III	E	Post	10.90±02.75	07.95±02.76	03.38 P=0.002*
			Mean Diff	5.1	2.25	
			T value	-11.27 p =0.000*	-06.40 p =0.000*	

****Minimum Score= 03 Maximum Score =15** *****Minimum Score =00 Maximum Score=16** **(*significant) (NS Non-significant)**

Table: depicts the Comparison of consciousness score (Glasgow coma scale and FOUR score scale) of patients among experimental and control group in pre-Test and Post-Test within the Groups and between the groups. As per Glasgow Coma Scale, the mean consciousness score has been increased to 09.35±01.56 from 06.2±01.67, after intervention with mean difference of 3.15 in experimental group, whereas in control group, it has been increased from 05.95±01.43to 07.45±01.66 with a mean difference of 1.5 (p=0.000*).Also there was statistically significant difference found in post-test among experimental and control group (p=0.001*).As per FOUR Score Scale, the mean consciousness score has been increased to 10.90±02.75 from 05.80±02.39, after intervention with mean difference of 5.1 in experimental group, whereas in control group, it has been increased from 05.70±02.47to 07.95±02.76 with a mean difference of 2.25 (p=0.000*).Also there was statistically significant difference found in post-test among experimental and control group (p=0.002*). It concluded that sensory stimulation provided by the family members increased the level of consciousness assessed by both scales i.e. GCS and FOUR score Scale. In the present study there was a significant statistical difference in pre and post interventional vital signs such as body temperature, heart rate, respiration rate and blood pressure in difference days ($p<0.05$). But it was found to be non-significant between the two groups ($p>0.05$) except blood pressure on 1st day evening (p=0.002). So it was concluded that vital signs was not influenced by sensory stimulation performed by family members. In the present study, there was a significant statistical difference in mean score of consciousness before and after intervention among the experimental and control group. The mean difference was higher in experimental group as compared to control group both in GCS (3.15 and 0.50 respectively) and FOUR Score Scale (5.10 and 2.25 respectively).This showed that the application of sensory stimulation performed by family members increased the consciousness among patients admitted in ICUs (p=0.001and 0.002)

Discussion: Discussion of the findings has been done in accordance with the analysis and interpretation of the data under following sections:-

Section I: - Socio Demographic profile of patients and family members. Section II:-Effect of sensory stimulation on vital signs.

Section III:-Effect of sensory stimulation on consciousness.

3) Section I:-Socio Demographic profile of patients and family members.

The analysis of socio demographic profile of the patients revealed that in experimental group out of 20 patients less than half of patients i.e. 08 (40%) were in the age group of 51 to 60 years, Majority of the patients i.e. 17 (85%) were males and half of the patients(50%) belonged to Hindu religion. In Control group majority of the patients (90%) were males, and half of the patients (50%) belonged to Hindu religion. According to the relation with patient more than half (55%) were son, 04(20%) were wife, 03(15%) were father and 01(05%) were brother and Daughter.

4) Section II:-Effect of sensory stimulation on vital signs.

In the present study, there was a significant statistical difference in pre and post interventional vital signs such as body temperature, heart rate, respiration rate and blood pressure in difference days ($p<0.05$). But it was found to be non-significant between the two groups ($p>0.05$) except blood pressure on 1st day evening ($p=0.002$). So it was concluded that vital signs was not influenced by sensory stimulation performed by family members.

5) Section III: - Effect of sensory stimulation on consciousness.

In the present study, there was a significant statistical difference in mean score of consciousness before and after intervention among the experimental and control group. The mean difference was maximum in experimental group as compared to control group both in GCS (3.15 and 0.50 respectively) and FOUR Score Scale (5.10 and 2.25 respectively). This shows that the application of sensory stimulation performed by family members increase the consciousness among patients admitted in ICUs ($p=0.001$ and 0.002)

6) Conclusion

It was found that the vital signs were not influenced by sensory stimulation performed by family members. But there was effect of sensory stimulation found on consciousness of patients admitted in ICUs.

Conflict of Interest

None

Source of Funding

Self

Ethical Clearance

The research study was approved by research and ethical committee of Hospital and University. The subjects were explained about the objectives and activities of research projects. Instructions were given to them and they were assured that their responses would be kept confidential by providing information sheets and informed consent was obtained from the patients

REFERENCE

1.Norton SA, Hogan LA, Holloway RG, Temkin-Greener H, Buckley MJ, Quill TE. [2007] Proactive palliative care in the medical intensive care unit: Effects on length of stay for selected high-risk patients. Crit Care Med, 35(6): 1530-5.

2.Treece PD, Engel berg RA, Shannon SE, Nielsen EL, Braungardt T, Ruben field GD.[2006]Integrating palliative and critical care: Description of an intervention. Crit Care Med, 34(11 Suppl): S380-7.

3.Livesay S, Gilliam A, Mok race k M, Sebastian S, Hickey JV. [2005] Nurses ' perceptions of open visiting hours in neuro science intensive care unit. J Nurs Care Qual, 20(2): 182-9.

4.GonzalezCE,CarrollDL,ElliottJS,FitzgeraldPA,VallentHJ.[2004]Visitingpreferencesofpatientsintheintensivecareunitandinacomplexcaremedicalunit.AmJCritCare:Anofficialpublication, AmericanAssociationof Critical-Care Nurses. 13(3): 194-208.

5. Chapman DK, Collingridge DS, Mitchell LA, Wright ES, Hopkins RO, ButlerJM.[2016]Satisfactionwitheliminationofallvisitationrestrictionsinamixed-profile intensive care unit. Am J Crit Care: An official publication, American Association of

Critical- Care Nurses. 25(1):46-50.
6.Shelton W, Moore CD, So caris S, Gao J, Dowling J. [2010] The effect of a family support intervention on family satisfaction, length-of-stay, and cost of care in the intensive care unit. Crit Care Med, 38(5): 1315-20.
7.Riley BH, White J, Graham S, Alexandrov A. [2014] Traditional/restrictive vs patient-centered intensive care unit visit ation: Perceptions of patients' famil members, physicians, and nurses. Am J Crit Care: An official publication, American Association of Critical-Care Nurses. 23(4):316-24.
8.Mitchell M, Chaboyer W, Burmeister E, Foster M. [2009] Positive effects of anursing intervention on family-centered care in adult critical care. Am J CritCare: An official publication, American Association of Critical-Care Nurses. 18(6):543-52.
9.Lolaty HA, Bagheri-Nesami M, Shorofi SA, Golzarodi T, Charati JY. [2014]The effects of family-friend visits on anxiety, physiological indices and well-being of MI patients admitted to a coronary care unit. ComplTherClinPract,20(3):147-51.
10.Fumagalli S, Boncinelli L, Lo Nostro A, Valoti P, Baldereschi G, Di Bari M.[2006] Reduced cardiocirculatory complications with unrestrictive visiting policy in an intensive care unit: Results from a pilot, randomized trial.Circulation,113(7): 946-52.
11.Athanasiou A,PapathanassoglouED,Patiraki E,Mc Carthy MS,Giannakopoulou M. [2014] Family visitation in greek intensive care units: Nurses 'perspective. Am JCrit Care: An official publication, American Association of Critical-Care Nurses. 23(4): 326-33.
12.McAdam JL, Puntillo K. [2009] Symptoms experienced by family members of patients in intensive care units.AmJCritCare:Anofficialpublication,AmericanAssociation ofCritical-CareNurses. 18(3):200-9.
13.Bach Y,RitaP.Theoretical basis for brain plasticity after atraumaticbrain injury.Brain InjuryJ. 2003; 17(8):643-51.