



A STUDY TO ASSESS THE EFFECT OF STRUCTURED TEACHING PROGRAM ON KNOWLEDGE REGARDING INTERPRETATION OF ELECTRO- CARDIOGRAPH IN MYOCARDIAL INFARCTION AMONG THE STAFF NURSES WORKING IN SELECTED HOSPITALS OF METROPOLITAN CITY.

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ABSTRACT

Background:

The prevalence of cardiovascular diseases is increasing in developing countries due to population growth, aging, unhealthy diets, obesity, and sedentary lifestyles. Over 30 million have now been diagnosed with coronary artery diseases in India. The CPR (Crude prevalence rate) in the urban areas of India is thought to be 13 percent. It is essential, to have knowledge regarding interpretation of electrocardiograph in myocardial infarction among the Staff Nurses.

Methodology:

A pre experimental method was undertaken where 100 Staff Nurses working in selected hospitals of metropolitan city were recruited as sample by non- probability convenient sampling method. Using structured questionnaire for knowledge (30 questions) and data were collected. Data analyzed using both descriptive and inferential statistics to describe and show the association between the variables.

Results:

Out of 100 Staff Nurses in pre- test knowledge scores, 15% of subjects were having good knowledge, 73% were having average knowledge and 12% in the poor knowledge category, Whereas In in post- test knowledge scores, out of 100 Staff Nurse 94% of subjects were having good knowledge, 6% were having average knowledge and no one in the poor knowledge category. Paired t' test was used to assess the effect on knowledge regarding ECG interpretation, the calculated t' value (17.29) as more than table value (1.98), thus the Null hypothesis (H_0) is rejected and alternative hypothesis (H_1) is accepted. Knowledge scores were found to be not associated with age, gender and working experience ($P > 0.05$). Knowledge score were found to be associated with education and working area ($P < 0.05$). Here the other Null hypothesis (H_{01}) is rejected and other alternative hypothesis (H_2) is accepted in some specific demographic variables.

Conclusion: The knowledge of Staff Nurses working selected hospitals was increased after giving the structured teaching program, thus the structured teaching program was found to be effective and It is recommended that frequent training programs on such topics has to be arranged for Staff Nurses in each hospital.

Key word: Structured teaching programme, ECG, Myocardial infarction, staff nurses

INTRODUCTION:

Many forms of heart disease can interrupt the normal contract-relax cycle cause abnormally fast or unusually slow heart rates called arrhythmias. These conditions make pump less effectively, so that not enough blood reacted to brain and other vital organs when the body's blood flow is inadequate. The person can faint or suffer chest pain even sudden death can occur.

Electrocardiography (ECG or EKG from the German Elektro-kardiogramm) is a transthoracic interpretation of the electrical activity of the heart over a period of time, as detected by electrodes attached to the outer surface of the skin and recorded by a device external to the body. The etymology of the word is derived from the Greek word 'electro', because it is related to electrical activity, 'kardio', for heart, and 'graph', a Greek root meaning "to write".

An initial breakthrough came when Willem Einthoven, working in Leiden, Netherlands, used the string galvanometer that he invented in 1903. Einthoven assigned the letters P, Q, R, S and T to the various deflections, naming of the waves in the ECG and described the electro- cardio-graphic features of a number of cardiovascular disorders. In 1924, he was awarded the Nobel Prize in Medicine for his discovery. Electrocardiogram (ECG) plays a crucial role in helping to diagnose, follow-up, and detect any abnormalities in a patient's condition.

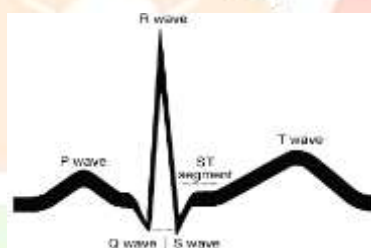


Figure.01: ECG WAVES

Nurses are usually the first to conduct an ECG and therefore need to know how to interpret them. This is because a failure to detect abnormalities means that physicians will not be notified which will affect patients' care. However, some nurses do not know exactly where to place the electrodes on the patients, and some routinely carry out an ECG without comparing the results to previous ECGs. Consequently, any complications will not be noticed as they do not possess the requisite interpretation skills.

BACKGROUND OF THE STUDY:

Today's professional nurse is no more only in the role of carrying out doctor's order. Today's nurse is expected to make independent decisions in the day-to-day health care activities. This decision-making ability comes from having relevant knowledge, appropriate attitude and expert skills about health care measures, which together may be referred to as health care competency. Also precision in decision making about a health related activity depends on elaborate health assessment, analysis of the health parameters and identifying specific health problems and needs. One of such important health parameters is electrocardiograph (ECG).

Many acutely ill patients have 12 lead ECG recorded either on admission to hospital, either undergoing operations or when specific cardiac concerns have arisen. Traditionally, ECG have aided clinically diagnoses and, by learning how to understand and interpret them, nurse will know when they need to summon expert help (Woodrow, 2010) Nurses trained in resuscitation were crucial in providing 24- hour, expertise in rhythm recognition and early defibrillation to patients at the bed side. Despite some early controversy about the ineffectiveness of coronary care is reducing mortality when compared to home care (Kenmure 1980) must acute hospital maintain a CCU. The success of CCU concept was, and remains, highly reliant on the expertise of nurses working in close collaboration with medical colleagues. From the early days of CCU, there has been recognition of the value of nurses developing specialist knowledge and skill in, for ECG interpretation, understanding of treatment of AMI (acute myocardial infarction)

complications and experts in cardiopulmonary resuscitation. (Meltzer 1964) Because of nurses vital role in linking the ECG strip with the clinical Status of the patient and the nurses identification and recognition of STEMI and NSTEMI in the initiation of appropriate nursing and medical response. Knowledge about the categorization of MI and subsequent validation of Nurses competency are critical knowledge and safe effective practice.

Therefore, It is of critical importance to nursing that nurses are able to analyze electrocardiograph (ECG) reading accurately in MI condition, in order to make independent decisions in health care and to assist in therapeutic process of AMI management.

NEED FOR THE STUDY

Twelve-lead electrocardiograms (ECGs) record 12 different views of cardiac electrical activity, or leads. They therefore provide more information than bedside monitors, which usually record one or sometimes two leads. Many acutely ill patients have 12- lead ECGs recorded either on admission to hospital, before undergoing operations or when specific cardiac concerns have arisen. Traditionally, ECGs have aided clinical diagnoses and, by learning how to understand and interpret them, nurses will know when they need to summon expert help.

A study was conducted to determine whether ward nurses have basic knowledge regarding 12 Lead electrocardiograph (ECG) recordings and their interpretation, to be performing ECGs safely and as frequently as is documented at ward level. An availability study of 40 nurses (at random) in general ward areas was performed. The individuals were instructed to complete a 14 item questionnaire on basic 12 Lead electro-cardiograph (ECG) knowledge. Reasons for attending ECGs in ward areas, and previous in service education were elicited. Anonymity was assured, and the questionnaire completed by staff in normal ward conditions, as opposed to exam-like conditions. Results revealed that overall knowledge was insufficient, considering the percentage of ECGs attended for chest pain. Findings suggest in service education is required and desired by the participants.

Nurses need to have high levels of understanding of a range of diagnostic patient information, presented in multiple visual formats such as X-ray, electrocardiograph (ECG) and other common diagnostic data presented in specialized diagnostic formats.

Analyzing ECGs and interpreting their diagnostic information is a highly complex cognitive activity. Significant amounts of physiological data, displayed in ECGs, have to be processed, understood and analyzed.

The study is aimed at assessing the effect of structured teaching program for nursing staffs.

PROBLEM STATEMENT

“A study to assess the effect of structured teaching program on knowledge regarding interpretation of electro-cardiograph in myocardial infarction among the staff nurses working in selected hospitals of metropolitan city”

OBJECTIVES OF THE STUDY

PRIMARY OBJECTIVE

1. To assess effect of structured teaching program regarding Interpretation of ECG in myocardial infarction among staff nurses.

SECONDARY OBJECTIVE

1. To find out the association between knowledge regarding interpretation of ECG and specific demographic variables among staff nurses.

PRIMARY HYPOTHESIS:

H0: There is no significant difference in the pre-test and post-test knowledge scores of staff nurses regarding ECG interpretation in myocardial infarction.

H1: There is significant difference in the pre-test and post-test knowledge mean scores of staff nurses regarding ECG interpretation.

OTHER HYPOTHESIS

H01: There is no significant association between knowledge of staff nurses regarding electro-cardiograph interpretation in myocardial infarction and specific demographic variables.

H2: There is significant association between knowledge regarding electro-cardiograph interpretation in myocardial infarction and specific demographic variables among Staff Nurses.

RESEARCH DESIGN

The research design used for study is pre experimental, one group pre-test post-test design.

SAMPLE AND SAMPLING TECHNIQUE

In this study sample size was estimated by using *Thumb Rule* and 100 samples selected from staff nurses working in different wards in selected hospitals by non- probability convenient sampling method.

DESCRIPTION OF THE TOOL

The self-administered knowledge questionnaire was constructed with a total 30 number of items.

SECTION I: Demographic data

Includes 05 items related to the demographic variables of respondents about age, gender, education status/ qualification, current working area/ department, total years of work experience.

SECTION II: Semi-structured questions

Consists of 30 items related to knowledge regarding Myocardial infarction and its interpretation on ECG.

DATA COLLECTION:

- Approval from the research committee member and written permission from the head of institution to conduct the research.
- Explain the purpose of the research to the samples.
- Obtained informed written consent from samples.
- Assess effect of structured teaching program on knowledge regarding interpretation of electro-cardiograph in myocardial infarction among the staff nurses working in selected hospitals of metropolitan city

ETHICAL REVIEW:

This study was reviewed and approved by the Ethics Committee of the college. All participants signed informed consent. The authors promise that there will be no academic misconduct such as plagiarism, data fabrication, falsification, and repeated publication.

DATA ANALYSIS:

Data analysis is done by using Microsoft Access software and analysis of data is done by using SPSS. Analysis and interpretation was done based on objectives of study.

SECTION I

Deals with analysis of demographic data of the staff Nurses working in selected hospitals of metropolitan city in terms of frequency and percentage.

TABLE NO- 01: Distribution of staff nurses according to demographic variables in terms of frequency and percentages **N=100**

Sr. No.	Variable	Groups	Frequency	Percentage
1.	Age	21-31 years	25	25%
		31-41 years	59	59%
		41-51 years	14	14%
		More than 51 year	2	2%
2.	Gender	Male	9	9%
		Female	91	91%
3	Education	RGNM	73	73%
		Basic BSc N	8	8%
		PB BSc N	18	18%
		MSc Nsg	1	1%
4.	Working area	CVTS wards	33	33%
		ICCU	22	22%
		CCU	21	21%
		Emergency	24	24%

5.	Work experience	Less than 10 yrs	48	48%
		11-20 yrs	46	46%
		21-30 yrs	6	6%
		more than 31 yrs	0	0%

Section II

PART-I: Deals with analysis of data related to assessment comparison of knowledge regarding Anatomy of heart and myocardial infarction in terms of frequency and percentage

Table 02: Knowledge – Anatomy of heart and myocardial infarction

Groups		PRE- TEST		POST- TEST	
		Frequency	Percentage	Frequency	Percentage
Poor	0-25%	2	2	0	0%
Average	26-50%	46	46	0	0%
Good	51-75%	40	40	24	24%
Excellent	76-100%	12	12	76	76%

PART-II: Data that deals with analysis of data related to assessment and comparison of knowledge regarding basics of ECG interpretation in terms of frequency and percentage.

Table 03: Knowledge - Basics of ECG interpretation

Groups		PRE- TEST		POST- TEST	
		Frequency	Percentage	Frequency	Percentage
Poor	0-25%	8	8%	0	0%
Average	26-50%	47	47%	5	5%
Good	51-75%	29	29%	18	18%
Excellent	76-100%	16	16%	77	77%

PART-III: Deals with analysis of data related to assessment and comparison of knowledge regarding interpretation of ECG in myocardial infarction in terms of frequency and percentage

Table 04: Knowledge - Interpretation of ECG in myocardial infarction

Groups		PRE- TES T		POST- TEST	
		Frequency	Percentage	Frequency	Percentage
Poor	0-25%	16	16%	0	0%
Average	26-50%	35	35%	0	0%
Good	51-75%	41	41%	32	32%
Excellent	76-100%	8	8%	68	68%

SECTION III

Deals with analysis of data related to assessment of the existing knowledge and assessment of the Post- test knowledge in terms of frequency and percentage.

Table 05: General assessments of Knowledge Pre & Post- test

Variable	Groups	Scores	PRE- TEST		POST- TEST	
			Frequency	Percentage	Frequency	Percentage
Knowledge	Poor	0 - 10	12	12%	0	0%
	Average	11 - 20	73	73%	6	6%
	Good	21 - 30	15	15%	94	94%

Table 06: Comparison of the pre and post- test Knowledge (paired t test)

Group	Frequency	Mean	S.D.	S.E.	t value	P value
Pre- test	100	16.12	4.39	0.03	17.74	0.000
Post- test	100	24.92	2.29	0.55		

SECTION IV

Table 07: Assessment of association of Knowledge average score with demographic variables

VARIABLE	GROUPS	N	MEAN	F VALUE	P VALUE	SIGNIFICANC E
Age	21-30	25	17.66	1.52	0.40	Not significant
	31-40	59	17.22			
	41-50	14	16.28			
	51 & above	2	15.10			
Education	RGNM	73	15.10	2.44	0.009	Significant
	Basic BSc Nsg	8	16.20			
	PB BSc Nsg	18	16.98			
	MSc Nsg	1	17.88			
Working Area	CVTS Wards	33	19.18	2.91	0.025	Significant
	ICCU	22	18.50			
	CCU	21	17.50			
	EMERGENCY	24	16.98			
Work Experience	Less than 10 yrs	48	15.20	3.22	0.57	Not significant
	11-20 yrs	46	17.10			
	21-30 yrs	6	17.88			
	More than 31 yrs	0	0			

CONCLUSION

Present study focuses on assessment of the knowledge of Staff Nurses and effect of structured teaching program on knowledge regarding interpretation of electrocardiograph in myocardial infarction. From this study researcher concluded that the structured teaching program was effective to improve the knowledge of Staff Nurses regarding interpretation of electrocardiograph in myocardial infarction.

Total 100 Staff Nurses selected as sample at the time pre- test knowledge scores, 15% of subjects were having good knowledge, 73% were having average knowledge and 12% in the poor knowledge category.

At the time of post- test knowledge scores, 94% of subjects were having good knowledge, 06% were having average knowledge and no one in the poor knowledge category.

The relationship of knowledge with demographic variable calculated by using anova, where age, education, working area calculated value is less than table value and hence there is no association of knowledge with these variables. Whereas for work experience calculated value is more than table value, which shows this factor is associated with knowledge.

IMPLICATION OF THE STUDY

The finding of study have implication for nursing practice in hospital, nursing education, nursing administration and nursing research.

NURSING SERVICE

Present study emphasizes the need of knowledge regarding interpretation of electrocardiograph in myocardial infarction. Nursing includes preventive, promotive, curative, and rehabilitative services. They can play a vital role in early detection of MI in golden minutes and thus can minimize the extent of myocardial damage. The knowledge of interpretation of electrocardiograph in myocardial infarction play a vital role in recognition of localization of MI and its age. Staff Nurses have a limited basic knowledge regarding ECG interpretation and lacking in recognition of MI and initiate necessary intervention in acute cases. This study finding would help the Staff Nurses involved in surveillance and early detection of myocardial infarction and will be able to take necessary step towards ECG interpretation through structured teaching. This study helped to understand that Staff Nurses have good amount of knowledge towards ECG interpretation but still need to improve their knowledge towards interpretation of electrocardiograph in myocardial infarction which will reduce the mortality and morbidity rate.

NURSING EDUCATION

More emphasis has to be placed in the regular and periodical teaching or demonstration sessions on interpretation of ECG among nursing students. Students Nurses can be motivated to organize discussion and teaching programs to enhance the knowledge of ECG interpretation. Encourage the students nurse to participate actively in training programs held regarding ECG interpretation. In service education must emphasize on education to Staff Nurses regarding ECG interpretation. The education curriculum must include imparting knowledge of ECG interpretation through the use of various audio visual aids and teaching strategies.

Nursing teachers can use the result of the study as an informative illustration for the students. Nursing education should help in inculcating values and a sense of responsibilities in the students to educate the nurses regarding ECG interpretation.

Students Nurses can be motivated to organize demonstration and teaching programs to enhance the knowledge regarding ECG interpretation.

Nursing education is developing rapidly in India and nurses are expected to provide care through base of scientific nursing education. Information can be given through, Seminar and Conference, Workshops and other measures which can be organized by nursing department of hospital or as a part of study.

Finding of this study can be used by the teaching faculty to illustrate the importance of teaching such topic to students who will be soon working as staff nurse. Nurse educator can incorporate this finding of the study in her in-service education programme that will help in improvement in knowledge of staff nurse.

Nursing curriculum has incorporated interpretation of electrocardiograph in myocardial infarction in syllabus. Nursing students should be posted in cardiac outpatient department and clinics control unit during his/ her clinical posting.

NURSING ADMINISTRATION:

Nurse administrator can develop their own hospital policy for imparting the health education and leaflet for staff nurses and nursing students on ECG interpretation in myocardial infarction. Nurse administrators can arrange Seminars, conferences, workshops etc. for imparting knowledge to different departments of hospital care unit. The nurse administrator should organize activities to train her subordinates regarding early recognition of MI through ECG. Nurse administrator has to organize educational programs for the Staff Nurses on ECG interpretation. Necessary administrative support has to be provided to conduct educational programme on ECG interpretation at primary health center, village level & other community nurses with appropriate A.V Aids, mass media, posters and role plays, drama and puppet show. The nurse administrators have a responsibility to provide Staff Nurses with substantive education programs. This will enable them to update their knowledge in interpretation of electrocardiograph in myocardial infarction.

NURSING RESEARCH

This research study covered the assessment of knowledge regarding interpretation of electrocardiograph in myocardial infarction among Staff Nurses working in selected hospitals of metropolitan city. The study finding can be used as review of literature for future research study. Nurse researcher can use this research study finding as source of information of nursing research. The methodology, tools and finding of this study can add to nursing literature. Future research can be done to strengthen this study.

The finding of the research can be utilized for further research in same area on larger scale. Extensive research studies can be undertaken in different fields to quantify the magnitude of deficiency of knowledge regarding interpretation of electrocardiograph in myocardial infarction.

RECOMMENDATIONS FOR FUTURE STUDY

1. A similar study can be conducted on large sample.
2. A comparative study can undertake to assess the knowledge and Practices regarding interpretation of Electrocardiograph in myocardial infarction
3. A comparative study can be conducted between government and private Staff Nurses regarding Interpretation of electrocardiograph in myocardial infarction
4. A same study can be conducted for assessment of knowledge and plan training program on ECG Interpretation in other heart conditions also.

LIMITATION

- ❖ There was difficulty in getting permission.
- ❖ The results cannot be generalized due to small number of samples and restricted time period.
- ❖ Study is limited to population of only 5-6 departments of each hospital.
- ❖ Limited time was available for the study.
- ❖ In this study focus was to assess the knowledge only.
- ❖ As staff nurses are lacking in time, it was difficult to coordinate with them.

SUGGESTIONS FOR IMPROVING THE PRESENT STUDY

- The larger samples could be taken in the study for the purpose of generalization.
- A control group in same setting could be beneficial for result analysis.
- Regular in-service education is very much necessary.
- Motivation among the staff nurses to spend time for acquiring advanced knowledge.

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