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A Study to Assess the Effectiveness of Structured Teaching Programme among Staff Nurses working in ICU Regarding the Knowledge on Management of Patients with Myocardial Infarction in Selected Hospital, Bangalore

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Abstract: ***This study aimed to evaluate the effectiveness of a structured teaching program in enhancing the knowledge of ICU nurses regarding the management of patients with myocardial infarction MI. The research utilized a pre-test and post-test design and was conducted in Sakra World Hospital, Bangalore. A sample of 60 ICU staff nurses participated, and data were collected through a structured knowledge questionnaire. The findings revealed that the majority of nurses had inadequate knowledge before the program, but post-program results showed a significant improvement in knowledge scores. Additionally, the study explored the association between knowledge scores and demographic variables such as age, years of ICU experience, exposure to MI patients, and sources of previous knowledge. The results indicated statistically significant associations between these variables and MI management knowledge. Overall, the study underscores the importance of structured teaching programs for enhancing the competency of ICU nurses in managing MI patients.***

Keywords: Structured teaching program, Myocardial infarction, ICU nurses, Knowledge enhancement, Demographic variables

1. Background of the Study

The heart requires a balance between oxygen supply and demand in order to function properly. The integrity of the coronary artery is an important determinant of oxygen supply to the heart muscles. Any disorder that reduces the size of lumen of coronary arteries may cause a decrease in blood flow and oxygen delivery to the myocardium which is life threatening condition characterized by the formation of local necrotic areas within the myocardium. Acute Myocardial Infarction usually follows the sudden occlusion of a coronary artery and the abrupt cessation of blood and oxygen flow to the heart muscles. Because the heart muscle must function continuously, blockage of blood to the muscle leads to development of necrotic areas which can be lethal[1].

Acute Myocardial Infarction is caused by acute plaque and thrombus formation in the coronary artery resulting in a sudden disruption in blood flow to the heart muscle. Acute Myocardial Infarction can be classified into ST segment elevation Myocardial Infarction (STEMI) and non STEMI which are distinguished based on the findings from a diagnostic electrogram.3

There are 32.4 million myocardial infarctions and strokes worldwide every year. Patients with previous myocardial infarction (MI) and stroke are the highest risk group for further coronary and cerebral events. Survivors of MI are at increased risk of recurrent infarctions and have an annual death rate of 5%-six times that in people of the same age who do not have coronary heart disease. Similarly, patients who have suffered a stroke remain at an increased risk of a further stroke (about 7% per annum).4

Atherosclerotic plaque and subsequent thrombus formations are the most common causes. It is identified that nearly 95 per cent of the people who developed a fatal cardiovascular diseases had at least one of these major risk factors: high blood pressure, smoking, diabetes beside a poor diet and over weight[5]

The clinical manifestations associated with Myocardial Infraction results from ischemia of the heart muscle and the decrease in function and acidosis associated with it. The major clinical manifestation of acute Myocardial Infarction is chest pain which may radiate to the neck, jaw, shoulder, back, or left arm.6

As per the European Society of Cardiology/ ACCF/AHA/ World Heart Federation Task Force STEMI is a clinical syndrome defined by characteristic symptoms of myocardial ischemia in association with persistent electrocardiographic (ECG) ST elevation and subsequent release of biomarkers of myocardial necrosis.7

Myocardial infarction can be recognized when blood levels of biomarkers are increased in the clinical settings of acute myocardial ischemia. The preferred biomarker for myocardial damage is cardiac troponin which has nearly absolute myocardial tissue specificity. STEMI continues to be a significant public health problem in industrialized countries and is becoming an increasingly significant problem in developing countries.8

Acute Myocardial Infarction may also be associated with atypical chest pain, back ache, or abdominal pain, nausea, dizziness, unexplained anxiety, weakness or fatigue, palpitation, cold sweat, or paleness, the Blood pressure and pulse rate may be elevated, late the blood pressure may drop, urine out put may be decreased, crackles may be noted in the lungs persisting for several hours to several days.9

Although the exact incidence is difficult to ascertain using first listed and secondary hospital discharge data, there were 1680, 000 unique discharges for Acute coronary syndrome (ACS) in 2010. Applying the conservative estimate of 30% of the ACS patients who have STEMI from the National Registry of MI we estimate 500000 STEMI events per year in US.1[0]

Community studies have consistently shown that the overall fatality of acute heart attacks in the first month is between 30% and 50% and of these deaths about half occur within the first 2hour.3

Projected Global mortality rates due to the various forms of cardiovascular disease, 2012 shows that 17.1 million deaths attributable of cardiovascular disease every year, 7.2 million are due to ischemic heart disease resulting in Myocardial infarction.1[1]

According to WHO in 2004 there were 7.2 million death from coronary heart disease will become the leading cause of both death and disability worldwide. With number of fatalities projected to increase to more than 20 million a year and to more than 24 million a year by 2030.1[2]

In both developed and developing countries 40-75% of all heart attacks victims dies before reaching the hospital projections suggest that for coronary heart disease. Mortality for all developing countries will increase by 120% for women and 137% for men Coronary care units were developed in the 1960s to reduce death following acute myocardial infarction. They provided a specialized hospital facility staffed and equipped to monitor patients with suspected acute myocardial infarction and facilitate rapid defibrillation of patients in cardiac arrest. Nurses trained in resuscitation were crucial in providing 24hr expertise in rhythm recognition and early defibrillation to patients at the bedside. [14]

The advent of thrombolytic therapy. intravenous medication used to breakdown or lyse blood clots occluding coronary arteries which leads to acute MI. Brought now opportunities for nurses to develop and use their expertise in patient assessment. [16]

Need for the study:

Recent data on the global burden of disease has shown that cardiovascular disease will seen become the leading cause of death worldwide, killing close to 15 million people in the world each year.1[5]

A study conducted in ST Thomas Hospital, London questioned 112 qualified nurses working in General wards about their resuscitation experience and knowledge of electrocardiogram interpretation and defibrillation. Among 112 nurses 75% nurses were involved in resuscitation as first responders but only 18% had used a defibrillator during a cardiac arrest. The responses to this inquiry suggest that nurses on medical wards are enthusiastic about advanced cardiac life support but have limited basic practical knowledge therefore they suggest that appropriate training and retraining of staff will help to improve the outcome of resuscitation efforts on medical wards.1[6]

A descriptive study was conducted on nursing judgement in the assessment and the management among nurses in Rogue college on unrelieved cardiac pain in patients admitted to a coronary care unit with a diagnosis of myocardial infarction was examined from the prescriptive of nursing judgement. The purpose of this study was to reveal expert clinical knowledge and judgement in this specific area of critical care practice using a naturalistic approach nurses were obtained and interviewed as they made judgement about cardiac pain. Findings indicated that clinical knowledge of the titration drugs was used n the treatment of cardiac pain is also important in pain assessment.1[4]

The emergence of cardiovascular diseases as the major cause of death in the world's most populated regions. Such as India and China, along with falling death rates from infectious communicable diseases in these countries are clearly the major reasons for the elevation of cardiovascular diseases to their position as the leading cause of death globally.1[5]

Projections of mortality taking into account the expected increases in population and increased life expectancy, suggest that cardiovascular disease will be the leading cause of mortality, measured as "lost years of life" and the leading cause of "years lived with disability" in all parts of the world by the year 2020.1[7]

The 2016 Heart Disease and Stroke Statistics update of the American Heart Association (AHA) has recently reported that 15.5 million persons ≥20 years of age in the USA have CHD, whilst the reported prevalence increases with age for both women and men and it has been estimated that approximately every 42 seconds, an American will suffer for an MI.1[8]

Statement of the problem

"A Study to assess the effectiveness of Structured teaching programme among staff nurses working in icu regarding the knowledge on management of patients with Myocardial Infarction in selected hospital, Bangalore."

Objectives

The objectives of the study are:

1) To assess the pretest knowledge of staff nurses regarding management of patients with myocardial infarction at selected hospitals.
2) To determine the effectiveness of structured teaching programme regarding management of patients with myocardial infarction by comparing pretest and posttest knowledge scores.
3) To determine the association between the pretest and posttest knowledge scores of the staff nurses and selected demographic variables.

Research Methodology

Research Design: one group pre and post test design, pre experimental

Research Setting: Sakra world hospital and Meenakhsi hospital, Bangalore.

Sample: 60 ICU nurses
Sampling Technique: Non probability purposive sampling technique
Methods of Data Collection: Structured knowledge questionnaire
Tools Used: Structured knowledge questionnaire and Structured teaching programme (STP)
Validity: validity done by consultation with guide and experts.
Reliability: r=0.88

2. Results

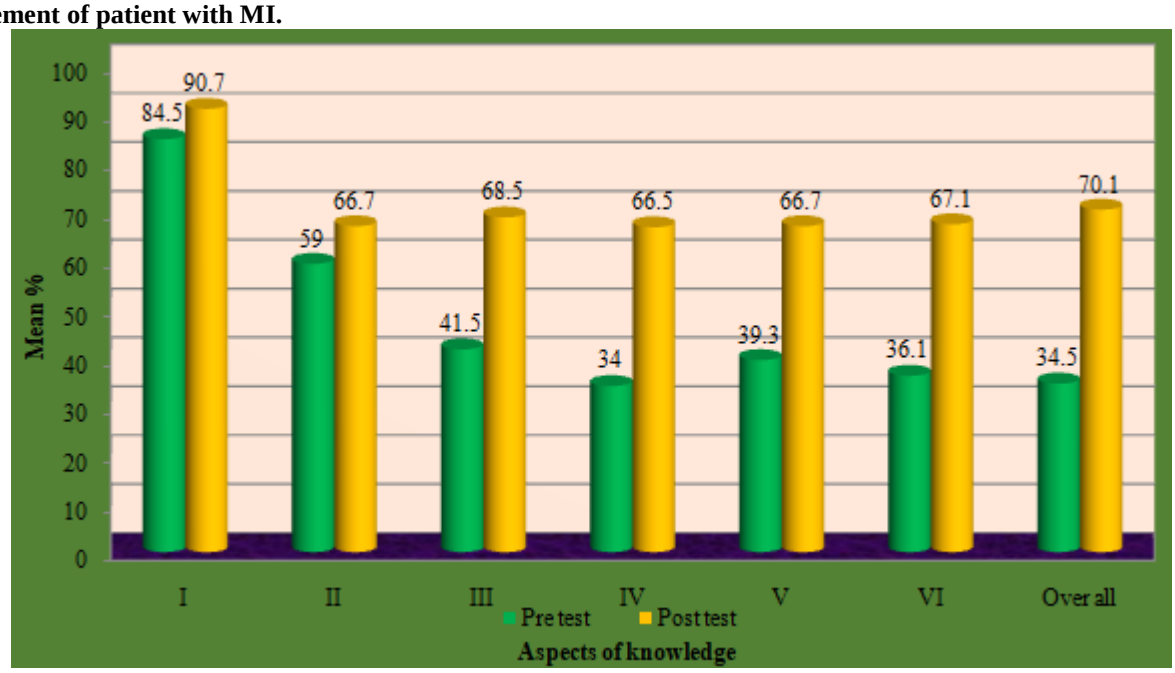
Major Findings:

- Majority of staff nurses were in the age group of 25-30 years, highest (66.7%) of were females, 46.7% of were Bsc nursing, 50% respondents had 0-5 year of ICU experience. Highest 36.7% had exposure to patients. Majority of respondents 31.7% were having previous knowledge.
- Area wise comparison of pre and post test knowledge score of staff nurses working in ICU regarding management of patient with MI.
- Effectiveness of STP on knowledge regarding management of patients with MI among staff nurses working in ICU.
- Association between post test knowledge with the selected demographic variables of staff nurses

Area wise comparison of pre and post test knowledge score of staff nurses working in ICU regarding management of patient with MI.

S. No.	Aspects of knowledge	Max score	Pre-test				Post-test			
			Range	Mean	SD	Mean %	Range	Mean	SD	Mean %
I	Structure of heart	4	2-4	3.38	0.58	**84.5**	2-4	3.63	0.55	**90.7**
II	Concept of MI	3	0-3	1.77	0.90	**59.0**	0-3	2.20	0.89	**66.7**
III	Risk factors of MI	2	0-2	.83	0.78	**41.5**	0-2	1.37	0.71	**68.5**
IV	Clinical manifestation of MI	2	0-2	.68	0.81	**34.0**	0-2	1.33	0.70	**66.5**
V	Diagnostic investigation	3	0-3	1.18	0.91	**39.3**	0-3	2.00	0.82	**66.7**
VI	Complication and management of MI	21	0-15	7.57	3.68	**36.1**	10-19	14.22	2.53	**67.1**
	Over all	35	5-21	12.08	4.370	**34.5**	18-32	24.75	4.213	**70.1**

Bar diagram for area wise comparison of pre and post test knowledge score of staff nurses working in ICU regarding management of patient with MI.



Effectiveness of STP on knowledge regarding management of patients with MI among staff nurses working in ICU.

S. No.	Variable	Max score	Enhancement			Paired t-test	p-value
			Mean difference	SD of difference	Mean%		
I	Structure of heart	4	0.25	0.50	6.3	3.80	p<0.05
II	Concept of MI	3	0.43	0.96	14.3	3.48	p<0.05
III	Risk factors of MI	2	0.53	0.74	26.5	5.52	p<0.05
IV	Clinical manifestation of MI	2	0.65	0.73	32.5	6.87	p<0.05
V	Diagnostic investigation	3	0.81	0.87	27.0	7.24	p<0.05
VI	Complication and management of MI	21	5.56	3.68	26.4	11.69	p<0.05
	Over all	35	12.67	5.068	36.2	19.36	p<0.05

Association between post test knowledge with the selected demographic variables of staff nurses

SL NO	Demographic Variables	Chi Square	Level of Significance
1	Age	2.372	P>0.05
2	Gender	0.036	P>0.05
3	Educational Qualification	4.576	P>0.05
4	ICU Experience in Years	1.507	P>0.05
5	Exposure to MI Patients Per Month	0.693	P>0.05
6	Previous Knowledge about Management of Mi	4.622	P>0.05

***Significant at p<0.05 level, 59df**

3. Discussion

- In this study majority 76.7% of the staff nurses had inadequate knowledge and 23.3% had moderate knowledge in the pre test. after conducting of Structured teaching program 36.7% of the subjects had adequate knowledge, 63.3% had moderate knowledge regarding management of patients with MI in the post test, which is supported by a study conducted by konki Jhansi on assess the knowledge of nursing personnel on first 24 hours of care of patients with Myocardial Infarction where 50 nursing personnel were selected randomly. structured questionnaire was used for data collection. The results of the student showed that 26% of nursing personnel's had below average knowledge 44% had average level of knowledge and 30% had above average. The study concluded by saying that the nurses need to be given special training in caring the cardiac patients in order to improve their knowledge.5
- No Significant association was found between post test knowledge score of staff nurses with their demographic variables such as age, gender, educational qualification, ICU experience, and previous knowledge regarding management of patients with Myocardial Infarction.
- Significant association found between pre test knowledge score with their demographic variable-age, ICU experience, exposure to MI patients and previous knowledge which is supported by a study conducted by **Binu Xavier**, SUM nursing college A quasi experimental study to assess the effectiveness of self instructional module regarding emergency management of patient with MI on knowledge among staff nurses. which reveals that the knowledge level was more among age group of 21-25 years, those having more ICU experience and those having BSc (N) degree.6

4. Summary

The study was conducted in Sakra world hospital and Meenakshi hospital, Bangalore. Purposive sampling technique was used for the present study. Structured knowledge questionnaire was prepared to assess the knowledge of staff nurses working in ICU before and after implementation of Structured teaching programme. Data was collected after obtaining permission of concerning authority. Data was planned to analyse by using descriptive and inferential statistics. The results shows that the difference between the pre test and post test knowledge scores of the management of Myocardial Infarction is statistically significant and this difference is due to the Structured teaching programme.

5. Conclusion

Findings of the study show that there was a significant difference in pre test and post test level of knowledge of staff nurses. From this it is concluded that the structured teaching program is effective in improving the level of knowledge of staff nurses. And there was no significant association between level of knowledge of staff nurses and selected demographic variables such as age, gender, education, ICU experience, exposure to MI patients and previous knowledge about management of Myocardial infarction.

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