

“A Study to Evaluate the Effectiveness of Structured Teaching Programme (STP) on Knowledge Regarding Door to Balloon Care of Patients with Myocardial Infarction Among Staff Nurses at Selected Hospitals, Bangalore.”

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Abstract:

Introduction. Door-to-balloon time is a key performance quality metric in the treatment of heart attacks. American heart association AHA guidelines recommend a door-to-balloon (D2B) interval of no more than 90 minutes. Staff nurses as a first responder in emergency should have adequate knowledge about D2B and have potential to achieve the management goal within this time frame.

Methodology: This is a pre experimental one group pre test- post test design, With 50 samples of subjects, conducted in a selected hospital, Bangalore Target population for the present study was staff nurses, participants were selected by non-probability purposive sampling technique. The structured self administered questionnaire was used to collect data.

Result: The mean post-test knowledge scores was found higher [mean=19.56, SD of 3.18] when compared with pre-test mean knowledge score value which was 13.54 with SD of 3.61. In pre test 74% respondents had average knowledge, 18% had poor knowledge and 8% had good knowledge. In post-test 58% of respondents had average knowledge and 42% had good knowledge regarding door to balloon care of patient with myocardial infarction.

Key words: Assess effectiveness, door to balloon, staff nurses, patient, structured teaching programme, hospital, myocardial infarctions, and knowledge.

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I. Introduction:

A non-communicable disease (NCD) is a medical condition or disease that is not caused by infectious agents (non-infectious or non-transmissible). NCDs can refer to chronic diseases which last for long periods of time and progress slowly. Sometimes, NCDs result in rapid deaths such as seen in certain diseases such as autoimmune diseases, heart diseases, stroke, cancers, diabetes, chronic kidney disease, osteoporosis, Alzheimer's disease, cataracts, and others.(1)

The WHO reported that in 2010, non communicable diseases led to 5.87 million deaths globally and in India led to 1.2 million deaths in men and 0.9 million deaths in women. These numbers are much more than in any other country in the world except China. According to the WHO, the South Asian region has one of the highest cardiovascular mortality rates in the world. Age-adjusted CVD mortality rates in countries of this region vary from a low of 179/100,000 in men and 153/100,000 among women in Bangladesh to a high of 349/100,000 among men in India and 294/100,000 in women in Pakistan. In India the age-adjusted CVD mortality rates are 349/100,000 in men and 265/100,000 in women. These rates are >2-3 times greater than in the United States, where rates are 170/100,000 in men and 108/100,000 in women.(2)

Coronary artery disease (CAD) is the most common non-infectious disease in India and by 2015; it is estimated to affect over 65 million of its population. Acute ST-segment elevation myocardial infarction (STEMI) is the most dramatic manifestation of CAD with high morbidity and mortality and timely reperfusion therapy has undoubtedly proved to reduce these adverse events. Treatment of an MI is time-critical. Aspirin is an appropriate immediate treatment for a suspected MI. Nitro-glycerine or opioids may be used to help with chest pain; however, they do not improve overall outcomes. Supplemental oxygen should be used in those with low oxygen levels or shortness of breath. In a STEMI, treatments attempt to restore blood flow to the heart, and

include percutaneous coronary intervention(PCI), where the arteries are pushed open and may be stented, or thrombolytic, where the blockage is removed using medications. (3)

Innovations has helped the healthy lives of thousands of people around the world all of these innovations and newer concepts such as, door to balloon care of the myocardial infarction patients, current guidelines for the treatment of ST-segment Elevation of Myocardial Infarction (STEMI) recommended a door to balloon time of 90 minutes or less, for patients undergoing percutaneous coronary intervention (PCI).(4)

Door-to-balloon is a time measurement in emergency cardiac care (ECC), specifically in the treatment of ST segment elevation myocardial infarction (or STEMI). The interval starts with the patient's arrival in the emergency department, and ends when a catheter guide wire crosses the culprit lesion in the cardiac cath lab. Because of the adage that "time is muscle", meaning that delays in treating a myocardial infarction increase the likelihood and amount of cardiac muscle damage due to localised hypoxia, American college of cardiology(ACC) / American heart association AHA guidelines recommend a door-to-balloon interval of no more than 90 minutes.(5)

Door to balloon care of especially acute MI (STEMI) includes, Door-to-first ECG time (goal <10 minutes), Proportion of STEMI-eligible patients receiving any reperfusion (PCI or fibrinolysis) therapy, STEMI Referring Centre ED door-to-balloon (first device used) time for patients transferred to PCI Centre. STEMI Referring Centre ED door to ED discharge and STEMI Referring Centre ED door-to-balloon (first device used) time within 90 minutes (including transport time).(6)

The sound nursing process is being used manage and care the emergency patients with use of concise nursing care plan(7)

From all above study findings, the researcher made a conclusion that Door to balloon care of myocardial infarction patients is a major problem, timely management and significant knowledge deficit experienced by most of the staff nurses.

Nursing is a balanced art of compassion and science of concern .When science gives up the art takes over the disease. Nurses should be able to interpret the ECG changes for STEMI or can assess the symptoms of acute myocardial infarction as early as possible and to provide the treatment within the frame of time can be a major key role in reducing the mortality of the patients. The nurse can observe and assess how the patient is managing her or his treatment and adapting to lifestyle changes, leading to an improved quality of life.

The goals of this study are to promote health, to preserve health, to minimize the mortality of the patients by timely reperfusion of the occluded coronary arteries. These goals are embodied in the word ‘timely action’

Objectives of the Study

The objectives of the study are;

1. To assess the knowledge regarding door to balloon care of patients among staff nurses.
2. To evaluate the effectiveness of structured teaching program (STP) regarding door to balloon care of patients with myocardial infarction among staff nurses by comparing mean pre-test and post-test knowledge scores.
3. To find the association between pre-test knowledge scores regarding door to balloon care of patients with myocardial infarction and selected socio-demographic variables of staff nurses.

II. Materials And Methods

This study is a quantitative– evaluative approach, research design selected for the study was a pre experimental one group pre test- post test design, With 50 samples of subjects, conducted in a selected hospital, Bangalore, Karnataka, India. Target population for the present study was staff nurses of selected hospital, Bangalore. Participants were selected by non-probability purposive sampling technique. Staff nurses who are In the age group of 21- 45 years, working in the emergency and in-patient setting, the nurses who is taking care of cardiac patients, willing to participate were included in study. Nurses having post graduate qualification with specialization of cardio- thoracic nursing, nurses who are sick at the time of study were excluded. The structured self administered questionnaire was constructed in three parts. **Part I:** It consists of 07 items related to demographic data which includes Age, gender, educational status, and years of experience, area of experience, previous knowledge and source of information. **Part II:** Through the thorough review of literature structured knowledge questionnaire was prepared for the present study which consists of 30 multiple choice questions. Blue print was prepared and items were prepared in the areas like anatomy and physiology of cardio vascular system, physiology of heart, cardiac myocardial infarction and door to balloon care of patient with myocardial infarction. There were four alternative answers for each item, from which the participants have to choose one best option by encircling it. The total knowledge scores ranged from 0– 30. The score is further divided statistically as Poor knowledge: 0-10; Average knowledge: 11-20; Good knowledge: 21-30.

Part III: Structured teaching program regarding door to balloon care of patient with myocardial infarction was

developed based on the objectives of the study and review from books, journals and research and non-research literature. steps were chosen to develop the structured teaching program, review of literature, preparation and organization of the content, consultation from experts, ascertaining of content validity ,preparation of the final draft. Content of Structured Teaching Program are anatomy and physiology of cardio-vascular system, physiology of heart, myocardial infarction and door to balloon care of patient with myocardial infarction. A prior permission is obtained from the authorities of A selected hospital, Bangalore. The data collection carried out from 15th JAN 2019 to 15th FEB 2019. The informed consent was obtained from the staff nurses and were assured the anonymity and confidentiality of the information provided them. A self-administered structured knowledge questionnaire was given to 50nursing staff nurses to collect data and the tool was collected after 45-60 minutes. Structured teaching program was administered followed by pre test and there after Post test was conducted on 7th day by using same structured knowledge questionnaire which was used during per-test. The data was organized and analyzed based on the objectives and hypotheses of the study by using descriptive and inferential statistics. Data were analyzed in terms of frequencies, percentages, mean, median, standard deviation. The significance of the difference between pre-test and post-test knowledge scores were determined by paired “t” test. The association between post-test level of knowledge and demographic variables were done by using “chi square”.

III. Results

The analysis of the data is organized and presented under following two Parts;

Table 1: Frequency & Percentage Distribution of Respondents n=50

Sl No	Demographic variables	Frequency (f)	Percentage (%)
1	Age (in yrs)		
	a. 20-30	12	24
	b. 30-40	25	50
	c. 40-45	13	26
2	Sex		
	a. Female	29	58
	b. Male	21	42
3	Educational Qualification		
	a. Diploma Nursing	20	40
	b. Basic Bsc Nursing	19	38
	c. Post Basic Bsc Nursing	11	22
4	Area of working		
	a. Emergency Unit	9	18
	b. Coronary Care Unit	18	36
	c. Cardiac ward	13	26
	d. Cath Lab	10	20
5	Years of Experience		
	a. 0 – 1 year	04	08
	b. 1 – 5 years	24	48
	c. 5 - 10 years	16	32
	d. >10 years	06	12
6	Previous Knowledge		
	a. Yes	23	46
	b. No	27	54
7	Source of Information		
	a. News papers	11	22
	b. Family & friends	19	38
	c. Social Media	13	26
	d. Other	07	14

Table 1 shows that, majority 50% of the respondents belong to the age group of 30-40years, 26% belong to the age group of 40-45 years and only few respondents 24% belong to the age group of 20-30 years. 58% of respondents were females and remaining 42% were males. 40% of the respondents had diploma nursing qualification, 38% of respondents were had Basic B.Sc nursing qualification and remaining 22% were had post basic B.Sc Nursing qualification. 36% of respondents were working in coronary care unit, 26% respondents were working in cardiac ward, 20% respondents were working in cath lab and remaining 18% were working in emergency unit. 48% respondents were had 1-5 years of experience, 32% were had 5-10 years of experience, 12% were had >10 years of experience and remaining 8% respondents were had up to one year of experience. With regards to previous knowledge regarding door to balloon care, majority 54% respondent were not had previous knowledge and remaining 46% were having previous knowledge. 38% of respondent’s source of knowledge was family and friends, 26% respondent’s source of knowledge was social media, 22% of

respondents source of knowledge was news papers and remaining 14% respondents source of knowledge was other source.

Table 2: Mean, median, mode, standard deviation and range of pre test knowledge scores of Respondents regarding door to balloon care of patient with myocardial infarction n = 50

Area of Knowledge	Number of Items	Mean	Median	Mode	Standard deviation	Range
Pre test scores	30	13.54	13	12	3.61	6-23
Post test scores	30	19.56	19	17	3.18	13-27

In pretest knowledge score, respondents mean was 13.54, median was 13, mode was 12 with standard deviation 3.61 and score range was 6-23. In post test knowledge score, respondents mean was 19.56, median was 19, mode was 17 with standard deviation 3.18 and score range was 13-27.

Table 3: Frequency and Percentage distribution of respondents according to level of Knowledge regarding door to balloon care of patient with myocardial infarction among staff nurses.

N=50

Level of Knowledge					
Pre test			Post test		
Poor f (%)	Average f(%)	Good f (%)	Poor f(%)	Average f(%)	Good f (%)
9 (18%)	37 (74%)	4 (8%)	00	29 (58%)	21 (42%)

The data presented in the **Table 3 & Fig.1** depicts the respondent’s level of knowledge during pretest and post test regarding door to balloon care of patient with myocardial infarction; With regard to pre test level of knowledge it shows that, maximum 74% respondents were having average knowledge, 18% respondents were having poor knowledge and remaining 8% respondents were having good knowledge. During post-test maximum 58% of respondents were having average knowledge and remaining 42% of respondents were having good knowledge regarding door to balloon care of patient with myocardial infarction.

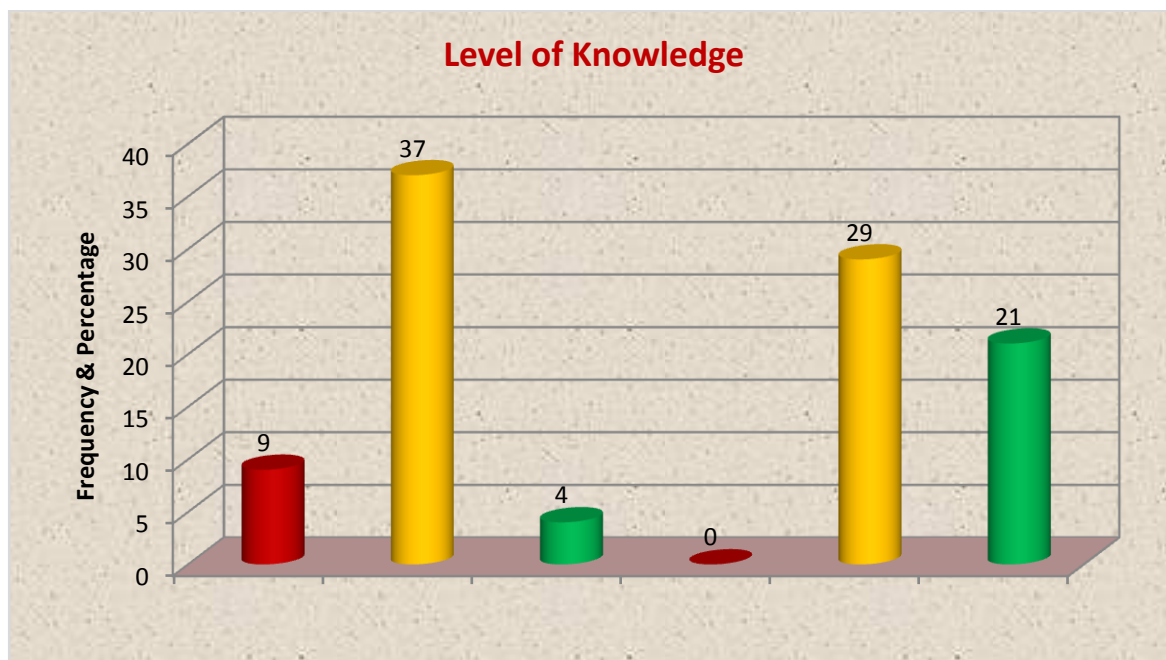


Figure 1.Pre test and post test level of knowledge of respondents regarding door to balloon care

Table 4: Mean, standard deviation, standard error of difference and ‘t’ value of pre-test and post-test knowledge scores regarding door to balloon care

N=50

Aspects	Mean	Sd	SEMD	Paired t Test
Pre-test	13.54	3.61	0.23	25.64*
Post-test	19.56	3.18		

* Significant at 5 % level

Table 4 indicates the overall mean knowledge scores of pre-test and post-test scores regarding door to balloon care of patient with myocardial infarction among staff nurses. Findings reveal that the post-test mean knowledge scores was found higher [mean=19.56, SD of 3.18] when compared with pre-test mean knowledge score value which was 13.54with SD of 3.61.

The statistical paired‘t’ implies that the difference in the pretest and post-test value was found statistically significant at 5% level (P<0.05) with a paired‘t’ value of 25.64. There exists a statistical significance in the difference of knowledge score indicating the positive impact of structured teaching program. This indicates that the enhancement in knowledge is not by chance and the staff nurses who exposed to structured teaching program on door to balloon care of patient with myocardial infarction, significantly improved in their knowledge.

Table 5: Chi-square values between levels of knowledge of respondents regarding door to balloon care of patients with myocardial infarction and their selected demographic variables.

N = 50

Sl No	Demographic variables	Knowledge score			d(f)	Chi square value	Level of significance
		Poor	Average	Good			
1	Age (in yrs)				4	1.98	NS
	a. 20-30	2	9	1			
	b. 30-40	5	17	3			
	c. 40-45	2	11	0			
2	Sex				2	2.09	NS
	a. Female	6	22	1			
	b. Male	3	15	3			
3	Educational Qualification				4	3.06	NS
	a. Diploma Nursing	3	14	3			
	b. Basic Bsc Nursing	4	15	0			
	c. Post Basic Bsc Nursing	2	8	1			
4	Area of working				6	5.83	NS
	a. Emergency Unit	2	6	1			
	b. Coronary Care Unit	5	13	0			
	c. Cardiac ward	2	9	2			
	d. Cath Lab	0	9	1			
5	Years of Experience				6	13.18	S
	a. 0 – 1 year	2	2	0			
	b. 1 – 5 years	4	19	1			
	c. 5 - 10 years	2	13	1			
	d. >10 years	1	3	2			
6	Previous Knowledge				2	0.71	NS
	a. Yes	3	18	2			
	b. No	6	19	2			
7	Source of Information				6	3.83	NS
	a. News papers	3	7	1			
	b. Family & friends	4	13	2			
	c. Social Media	1	13	0			
	d. Other	1	5	1			

$\chi^2_{(2)} = 5.99_{(6)} = 12.59$ (p>0.05) NS – Not Significant

The data presented in the **Table 5** shows that the computed Chi-square value for association between level of knowledge of staff nurses regarding door to balloon care of patient with myocardial infarction and their selected demographic variables is found to be statistically significant at 0.05 levels for years of experience and is not found statistically significant for age, sex, educational qualification, area of working, previous knowledge and source of information. Therefore, inferring that staff nurses level of knowledge regarding door to balloon care of patient with myocardial infarction significantly associated only with years of experience.

IV. Discussion

Analysis of knowledge score of respondents regarding door to balloon care In pretest knowledge score, respondents mean was 13.54, median was 13, mode was 12 with standard deviation 3.61 and score range was 6-23. In post test knowledge score, respondents mean was 19.56, median was 19, mode was 17 with standard deviation 3.18 and score range was 13-27. With regard to pre test level of knowledge it shows that, maximum 74% respondents were having average knowledge, 18% respondents were having poor knowledge and remaining 8% respondents were having good knowledge. During post test maximum 58% of respondents were having average knowledge and remaining 42% of respondents were having good knowledge regarding door to

balloon care of patient with myocardial infarction. Many nurses have difficulties in dealing with patients with coronary angioplasty and reports feeling anxious and unprepared to be with these patients.

Similar results were observed in another study conducted by Srivatsa UN et al, they reported that nurses have favorable attitude and moderate level of knowledge and practice regarding care of cardiac patients and cardiac surgical patients.

In another study in American country, Michelson KA et al. examined nursing students' knowledge toward caring for severely affected cardiac patients with using some questionnaire. Mean score of knowledge of participant's in the study was 16.32 that this score is higher than the mean score of scale in the present study.

V. Conclusion

The conclusions drawn from the study were as all staff nurses working in a selected hospital were willingly participated in the study. The staff nurses had average knowledge before structured teaching program and it has increased after exposure to teaching program. They gave free and frank responses. The study was based on the concepts of “King's Goal Attainment Theory (1971)”. Imogen King assumed that human beings are open system in constant interaction with the environment, that nursing focus in human being interacting with their environment and that nursing's goal is to help individuals and groups to maintain health.(8) It is based on the concepts of personal, interpersonal and social systems including perception, judgment, action, reaction, interaction and transaction..

Further, the conclusion drawn on the basis of the findings of the study includes:

1. Knowledge of staff nurses regarding door to balloon care of patient with myocardial infarction during pretest was average and is increased as good after teaching program.
2. Structured teaching program was effective to enhance knowledge of staff nurses regarding door to balloon care of patient with myocardial infarction
3. There was significant association found between the knowledge scores of staff nurses and years of experience

VI. Implications

The findings of the present study have implications for nursing practices, nursing education, nursing administration and nursing research

A. Nursing Practice

These studies throw light on the knowledge level of the staff nurses regarding door to balloon care of patient with myocardial infarction. Teaching can be provided to nurses on different aspects of nursing interventions to patients with emergency cardiac conditions to minimize such reactions from patient and update the knowledge and skills of staff nurses working in various units with serious cardiac patients where such care is undertaken.

B. Nursing Education

The findings of the study paved the way for an innovation in Nursing Education. The study results can be used as reference material by the student nurses.

C. Nursing Administration

The nurse administrators can organize continuing nursing education program and in-service education programs to teach nursing interventions to care of patients with cardiac emergencies and door to balloon care of patients with myocardial infarction. The nursing administrator can mobilize the available resources towards the in service education of nurses regarding nursing interventions for patients with serious cardiac problems and emergencies.

D. Nursing Research

This study helps nurse researchers to develop appropriate health education tools for educating the student nurses and staff nurses regarding care of patients with cardiac emergencies according to their clinical characteristics. Nurses should come forward to take up unsolved questions in the field cardiac nursing, cardiac emergencies and nursing care of cardiac patients.

LIMITATIONS OF THE STUDY

- The study did not use any control group.
- The study did not assess the attitude and practice of staff nurses regarding door to balloon care
- Small number of subjects limits generalization of the study.
- The sample for the study was limited to only 50 staff nurses.

- Single setting limits the generalization of the findings

VI. Recommendations

On the basis of the findings of the study following recommendations have been made:

- A similar study can be replicated on a large sample to generalize the findings.
- An experimental study can be undertaken with a control group for effective comparison of the result.
- A study can be conducted by including additional demographic variables.
- Research studies are recommended to be conducted on different settings.
- A comparative study can be conducted by taking multiple settings.

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