Original Study

Effect of Training Program on Nurses' Knowledge Towards Care of Patients with Myocardial Infarction in General Najran Hospital, Najran City, KSA

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ABSTRACT

Background: The most common cause of myocardial infarction is the occlusion of the coronary artery. Education and training in the nurses providing care for myocardial infarction patients lead to a decrease in patient morbidity and mortality. The aim is to determine the effect of training programs on nurses' knowledge toward the care of patients with myocardial infarction.

Methods: The study was conducted in the cardiac care unit at General Najran hospital, Najran city. A quasi-experimental design was used from August 2019 to April 2020 on 30 nurses. A questionnaire was used to collect data about nurses' knowledge toward myocardial infarction. According to the detected need of nurses develop a training program and implemented it through the session to update nurses' knowledge.

Results: The results revealed a statistically significant difference in nurses' knowledge related to care of myocardial infarction pre- post-training program. There was a significant relationship between nurses' knowledge and their demographic characteristics pre-post program.

Conclusion: A statistically significant difference in nurses' knowledge of pre and post-training programs was found. Pre and in-service training programs should be implemented for all nurses working in ICU to update their knowledge about myocardial infarction patient care.

Keywords: Myocardial infarction, Nurses knowledge, Training Program, Najran City

INTRODUCTION

The mortality rate caused by Myocardial Infarction (MI) is still high for both sexes, according to the world health organization's estimation, it was 5674 deaths each year (WHO, 2002). The most common cause of myocardial infarction is occlusion of the coronary artery, usually precipitated by rupture of vulnerable atherosclerotic plaque and subsequent thrombus formation[1]. After an acute myocardial infarction, the patient is discharged within a few days, often in a state of anxiety and great uncertainty. The spouse is usually even more anxious than the patient and often finds the immediate post-discharge period extremely stressful. Most patients, but few partners, will have received some instruction from the Coronary Care Unit (CCU)nurses about the nature and treatment of the attack,but unless there are formal educational sessions,the amount learned is unpredictable[2].

The most effective way to increase the probability that the patient will comply with a self-care regimen after discharge is to provide adequate education about the disease process and to facilitate the patient's involvement in MI rehabilitation program.Working with patients in development plans to meet their specific needs. To extend and improve the quality of life, a patient who has had MI must learn to regulate activity according to personal

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responses to each situation. The nurse and patient develop a program to help the patient achieve desired outcomes[3].Avoiding any activity that produces chest pain, dyspnea, or undue fatigue, avoiding extremes of heat and cold and walking against the wind, losing weight, stopping smoking, alternating activity with res tperiods, using personal strengths to compensate for limitations, developing regular eating patterns, adhering to medical regimen,pursuing activities that release tension and controlling of the co-morbid conditions[4].

Intensive care requires a high-level qualification and competencies. Therefore, there has been a need to examine and describe competence guidelines, standards, andframeworks of critical care nursing[5]. The nurse's role in myocardial infarction care includes chest discomfort relieving, reducing anxiety, assessing vital signs, and documenting the mental status and level of anxiety[6]. Improving Respiratory Function and Monitoring and managing potential complications[7].

AIM OF THE STUDY

This study aimed to assess the effect of the training program on nurses'knowledge toward the care of the patient with Myocardial Infarction.

SUBJECTS AND METHODS

The study was carried out in an intensive care unit in General Najran Hospital, Najrancity, KSA. A quasi-experimental design was used to study the effect of the training program on nurses' knowledge toward the care of patients with MI in General Najran Hospital, NajranCity, KSA. 30 nurses working in the intensive care unit were selected by simple random sampling. Data were collected by the use of the questionnaire.The questionnaire included 4parts:1) Nurses 'demographic characteristics,which includes 4 questions covering:age, qualification, marital status, and monthly income, 2) anatomy of the cardiovascular system includes 6 questions covering the: site of the heart, weight of heart, chambers of the heart, a wall of the ventricle, cardiac output and stroke volume, 3). Physiology of the cardiovascular system includes 4 questions covering the: consist of the cardiovascular system, sinus of the heart, layers of the heart, and important blood vessels a) Coronary artery disease,includes 24 questions covering the:causes of coronary artery disease, theories and risk factors of atherogenesis, pain and precipitating factors of angina, risk factors of atherosclerosis and MI, chest pain, clinical manifestation, complications, diagnostic tests, pharmacological management of MI, nursing role, nursing diagnosis, nursing intervention for the patient with MI.

The training program was applied for improving nurses' knowledge related to the care of the patient with Myocardial Infarction. The content validity was established by a panel of 5 expertse who reviewed the tool for clarity, relevance, comprehensiveness, understanding, applicability, and ease of implementation and according to their opinion, minor modifications were applied. A pilot study was carried out on five nurses (16.7%) in the intensive care unit to test the clarity and practicability of the tools. The results of the data obtained from the pilot study helped in the modification of the tool,the item was then corrected as needed.

Data collection was carried out from August 2019 to April 2020 in the morning and afternoon shifts, the questionnaire sheet was filled out by the nurses, while they were in the workplace. The data was collected pre and post-training program. Upon completion of data collection, variables included in each data collection sheet were organized and tabulated, and coded prior to computerized data entry by using SPSS, version 21. Datawere summarized by using mean ±SD as an average describing the central tendency of data. Used the paired t-test for the quantitative variable and the McNemar test for thequalitative variable. Statistical significance was considered at P-value< 0.05.

For the nurse knowledge score, a score of one was awarded for the correct answer and zero for an incorrect answer. The mean and standard deviation of the total knowledge score was calculated. The nascore of 60% o rmore was categorized as satisfactory and a score less than 60% as unsatisfactory.

The official permission to conduct the study was taken from the faculty of Nursing, at Najran University. Permission for data collection and implementation of the training program was obtained from the Manager of General Najran hospital and the head of nursing in the intensive care unit (ICU). The purposeof the study was explained prior to questionnaire distribution. At the initial interview,the researcher informed each nurse about the nature, purpose, and benefits of the study,and was informed that her participation is voluntary. The confidentiality and anonymity of the subjects were also assured through the coding of all data. The researcher was assured that the data collected and information was confidential and would be used only for the purpose of the study.

RESULTS

Table 1 documents that there are highly statistically significant differences among the study nurses in all items of knowledge in pre and post-program (P<0.0001). Table 3 shows the nurse's level of knowledge about

Table 1: The nurse's means core of their knowledge about the care of the patient with myocardial infarction pre and post-program(n=30)

Items	Pre-training program		Post-training program		t-test	*P*-value
	$\bar{X}$	± SD	$\bar{X}$	± SD		
Anatomy of the Cardiovascular system	41.33	18.14	89.66	14.19	12.89	0.000**
Causes,theories,and risk factors of Coronary Artery Disease	53.88	30.85	78.33	17.58	3.32	0.002**
Information about Myocardial Infarction	57.14	21.55	75.71	17.65	3.43	0.002**
Nursing care for patients with Myocardial Infarction	48.78	20.18	87.87	11.02	8.50	0.000**

**Statisticallysignificant

Table 2: The nurse's level of knowledge about the care of the patient with myocardial infarction pre and post-program (n= 30)

Items	Pre-training program				Post-training program				P-value*
	Satisfactory		Unsatisfactory		Satisfactory		Unsatisfactory		
	F	%	F	%	F	%	F	%	
Anatomy of Cardiovascular system	14	46.7	16	53.3	29	96.7	1	3.3	0.000**
Causes,theories and risk factor of Coronary Artery Disease	18	60	12	40	30	100	0	0	Can be not calculated
Information about Myocardial Infarction	18	60%	12	40	27	90	3	10	0.022**
Nursing care for patient with Myocardial Infarction	13	43.3	17	56.7	30	100	0	0	Can be not calculated

*McNemartest

□*statistically significant

Table 3: The relation between mean score of nurses knowledge and their age pre and post-program (n=30)

Nurses knowledge	Age range					
	18-30 year		>30 year		t-test	P-value
	$\bar{X}$	± SD	$\bar{X}$	±SD		
Pre training program	52.27	13.19	51.36	17.86	0.158	0.876
Post training program	83.63	9.96	95.09	8.78	4.64	0.011**

**Statisticallysignificant

Table 4: Relation between mean score of nurses knowledge and their marital status pre and post-program (n=30)

	Marital status					
	Unmarried		Married			
Nurses knowledge	X_	±SD	X_	± SD	t-test	P-value
Pre training program	49.1	17.01	53.40	13.48	0.758	0.455
Post training program	85.2	7.59	85.56	10.53	0.100	0.921

Table 5: Relation between mean score of nurses knowledge and their qualification pre and post-program (n=30)

	Qualification					
	Bachelor		Secondary education			
Nurse's knowledge	□□	±SD	□□	±SD	t-test	P-value
Pre training program	52.27	16.15	51.90	14.63	0.050	0.961
Post training program	88.18	8.09	84.90	9.83	0.795	0.454

the cardiovascular system and myocardial infarction pre-post program. According to the table, the nurse's level of knowledge was unsatisfactory in the pre-test results. At the post-test, nearly all nurses had asatisfactory level of knowledge about all items of the cardiovascular system and myocardial infarction. The difference in satisfactory nurse knowledge pre and post-program was statistically significant(P<0.001).

Table 4 clarifies that highly statistically significant differences were found in relation to knowledge after the program and in the nurse's age group (p<0.01).Table 5shows that there is no statistically significant differences were found between nurses'marital status and their score of knowledge preand post-program (P>0.05). Table 6 Indicates that no statistically significant differences between nurse's qualification and their knowledge of pre and post-training programs.

DISCUSSION

Regarding the general characteristics of the study subjects, the results of this study clarify that more than two-thirds of the studied subjects were married, aged between18- 30 years and more than three-quarters had a secondary diploma in nursing. This result is in agreement with the study conducted by Shalby (2009)[8], who reported thatthe mean age of nurses who graduated from the secondary school of nursing ranged between 22-24 years and most of them are single. Also, the present study agrees withSaid (2006)[9], who emphasized in her study at Benha University that lack of nurses'education is considered a failure in the system leading to unsatisfactory healthcare and that the majority of nurses didn't attend any training programs for patient care with myocardial infarction, thus there was bad knowledge and care introduced to patients.This may be due to a lack of service

in educational programs. This study disagrees with Chun-Hua et al (2008)[10], who reported that the mean educational level in their study in China was bachelor above (34.1%), while the current study results revealed the main studied nurses'qualification wasa secondary nursing diploma.

Regarding nurses 'knowledge ,the result of the present study clarifies that more than three-quartersof the studied subjects improved their knowledge scores in all items of myocardial infarction patient care after the implementation of the program.This result agrees with Maysoon et al (2011)[11], who showed that the Jordan nurses improved their knowledge and attitudes after the implementation of the program.It also agrees with Heatheretal (2011)[12],who said that Nursess howed significant improvement in knowledge (p = 0.02) and self-efficacy (p = 0.001) from baseline topost-training. It is also similar to that of Shalby (2009) [8] who found in his study an improvement in the nurse's knowledge scores after the program with highly statistically significant differences. This finding agrees with Taha (2006)[13] who found that the knowledge scores after implementation of the program are highly statistically significant differences.This is inline with paezetal (2003)[14]who showed achievement of teaching objects in their study on the assessment of the educational program. There might be nurses exposed to an educational program to update their knowledge about the care of the patient with myocardial infarction.

Concerning the relation between the nurses' age and their mean score level of knowledge about the myocardial infarction patient care pre-post training program.The present study revealed a high statistical relation between the nurses' age and their level of knowledge pre-post-program(*P*=.011). It shows that the nurses, aged between 30 years and above, had a high mean score of knowledge than the nurses belonging to the age group of eighteen to thirty. There might be nurses of the same age concentrate on their careers so they are interested in improving and updating their knowledge to get better opportunities for promotion. The younger nurses, on the other hand, are not interested in updating their knowledge because they had already fresh knowledge because most of them are new graduates.These results were in agreement with Shalby (2009) [8] who shows that there is a statistically significant difference between nurses' knowledge, practice, and empowerment after post scores. Also,the study conducted by Taha(2006)[13] documents apositive correlation between age and knowledge and practice.This result also agrees with Abd-Elmoniem (2001)[15] who found that there was a positive correlation between knowledge and nurses' age in the post-test.

As for the relationship between the nurse's marital status and their total score of mean knowledge pre and post-program, the study finding revealed no relation between nurses' marital status and their mean score of knowledge in pre -post-program. This finding was in line with the study conducted by Shalby (2009) 8, at Benha University hospital, who reported no significant relationship between nurses' knowledge pre and post-program and their marital status. Also, the present study finding is supported by a study by Janice et al (2005)[16] who found no statisticallysignificant difference between the study subjects' knowledge and their marital status before and after the program. But the present study finding was contradicted by Heatheretal (2011) [12]who reported a positive relationship between the study practice of knowledge and their marital status after the post-implementation of the program.Also, the same finding was mentioned by Adeline et al (2008)[17], who showed a positive correlation between the nurses' knowledge and their marital status throughout the programof health education.

The present study's finding revealed no relationship between the nurses' level of the mean score of knowledge and their qualification in pre - post-program. There

might be nurses who worked in the cardiac care unit who had a diploma in nursing and fewer of them had a bachelor's degree.The same finding was reported by Bangalore and Karnataka (2005)[18] who concluded that the qualification did not affect the knowledge and practice of the studied sample. However, this result disagrees with Shalby (2009) [8]who reported that previous qualifications were positively correlated with the knowledge scores of nurses. It also disagrees with Weber (2007)[19] who documented that there is a positive relationship between knowledge and qualification of the studied subjects and their knowledge throughout the program.

CONCLUSION

Based on the finding of the present study it can be concluded that: There are highly statistically significant differences in the mean score of nurses' knowledge pre and post-training programs. Nurses' Knowledge of care for patients with myocardial infarction improved significantly after program implementation.

RECOMMENDATION

Continuous in-service training programs for all nurses working in ICU to update their knowledge.

Conflict of interest: (Nil) no found conflict

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Ethical clearance- Taken from Scientific Research Ethical Committee; attachment by file name (approval of research committee for MI Najran)

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