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ORIGINAL ARTICLE

Pain Management for Patients with Acute Myocardial Infraction: An Interventional Study for Nursing Staff

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ABSTRACT

Background: Coronary artery disease is the most common type of heart disease. It encompasses a spectrum of clinical conditions ranging from asymptomatic atherosclerosis and stable or unstable angina to acute coronary syndrome caused by atheroma changes in the coronary arteries. It is one of the leading causes of death. Assessing risk factors for coronary artery disease and attaining the knowledge on how to deal with the symptoms' pain is the first step in its prevention.

Objective: To find out the effectiveness of an interventional program on Nurses' knowledge and practices about pain management for patients with acute myocardial infraction at Coronary Care Units.

Methodology: A pre-experiment design (one group pretest-posttest design) is applied has been done to obtain the study goals. A non- probability (purposive) sample was chosen to obtain representative and accurate data. From total (41) nurses working at CCU, (11) nurses were excluded from the educational program (five nurses for the pilot study, four nurses previously participated in pain management courses, and two nurse did not complete the program). The total number of nurses participating in the program of the study were (30) nurses. The sample had been taken in one group. The program is established and designed based on the preliminary assessment of nurses' knowledge and practices about pain management for patients with acute MI at CCU, and also on the information obtained from the related scientific literatures and previous studies. The program content is reviewed by a group of experts. Statistical Package for Social Sciences (SPSS, version 23) was used to analyze the study data.

Results of the study: The study findings presented that there was a highly significant differences of the knowledge between pre-test and post-test score at p value (.000), and a high significant difference between pre-test and post-test practices at p value (.000) related to pain management.

Conclusion: The results of this study showed that the interventional program was an effective educational method that enables the nurses to improve their knowledge and practices towards pain assessment and management.

Keywords: Pain Management, Acute Myocardial Infraction, Interventional Study, Nursing Staff

INTRODUCTION

Cardiovascular diseases (CVDs) are a group of disorders that affect the heart and blood vessels, which include coronary heart disease, angina pectoris, acute myocardial infarction, peripheral arterial disease, congenital heart malformations, cardiovascular disease, deep venous thrombosis, and pulmonary embolism, and transient ischemic Attacks (TIAs)[1].

The most prevalent type of cardiac illness is coronary artery disease (CAD). It describes a variety of clinical diseases ranging from asymptomatic atherosclerosis and stable angina to acute coronary syndrome (unstable angina, NSTEMI, STEMI) as a result of atheroma variations in the arteries feeding the heart. It is still one of the most common causes of death. The first step in the prevention of coronary artery disease is to assess risk factors[2].

Acute myocardial infarction (AMI) is a severe form of coronary artery disease that develops when arteries in the heart become occluded. The term "infarction" refers to tissue death caused by a reduction in blood supply. Acute myocardial infarction (AMI) is a kind of heart attack that causes lasting damage to the heart muscle and death of cells. Symptoms include chest discomfort (acute chest pain), breathing difficulty, fast heartbeat, nausea perspiration, restlessness and palpitations [3,4].

Acute myocardial infarction is becoming more common as a result of excessive drinking and smoking consumption, anxiety, and severe forms occlusion and absence of oxygen in the coronary artery, which causes muscular damage in the heart. Therefore, preventing unintended injury to the heart tissue by early detection and management of acute myocardial infarction is critical to ensuring patient safety [5].

Acute myocardial infarction is one of the most prevalent health conditions and the top cause of mortality throughout the world. It's a medical term for a situation in which severe myocardial ischemia develops quickly. Electrocardiogram (ECG) at rest and signs of myocardial injury are important role in the diagnosis techniques for able to detect patients with acute myocardial infarction. Troponin T and troponin I are myocardial injury-specific cardiac indicators [6].

The average recurrence of treated acute myocardial infarction patients was increased big props to successful system-of-care organizational strategy, managed to improve in-hospital acute myocardial infarction therapies, and better options for the control of long-term risks for heart failure and prevent complications. Generally, treatment methods for acute myocardial infarction are administered immediately following the beginning of symptoms in affluent nations, resulting in little cardiac damage and brief hospital stays [1].

International Association for the Study, (2018) defines pain (IASP) as an uncomfortable emotional perception linked with current or suspected pathological change, according to the IASP. Pain is a very specific emotion that manifests itself in a variety of ways. The nurse can only notice the change when the patient expresses his or her subjective impressions, expressions, and behavior. Pain is a unique, dynamic, and subjective experience of the nociceptive data centers in the higher brain. It can be influenced by a variety of elements, including perceptual, emotional, and cognitive events, as well as diversion, attitude, ideas, and heredity [7].

Pain is a common symptom of many medical conditions and is relieved by effective pain management, nurses have a necessary and main role in pain management. Failure to treat the pain significantly affects the psychological, physical and spiritual condition of the patient. According to health care providers, the best way to assess pain is self-report rather than the patient's behavior [8].

Nurses should consider the importance of understanding the pathophysiology of pain, the psychological and physiologic effects of acute and chronic pain, and the approach used to relieve and eliminate pain because they spend more time with the patient. Therefore, they must know the most important methods, skills, and techniques for pain assessment and knowing the effectiveness of these interventions [9].

Pain management is an important element of the work of health care professionals (HCPs), especially for people who deal with pain on a daily basis. HCPs must be well-educated and aware

about pain in order to effectively manage it. This begins with a thorough and accurate assessment of the patient's discomfort. Pain should be screened as part of a normal examination, according to the American Pain Society (APS), which has designated pain as the "fifth vital sign." Several studies have been undertaken to evaluate the knowledge and practices of HCPs towards pain [10].

The influence of pain on one's quality of life, social connections, physical capacity, and psychological wellbeing is significant. Lethargy, insomnia, anorexia, and worry are some of the other symptoms. Untreated pain can have major repercussions, such as increased use of health care services, timing and duration, and expenses. A nurse's or other health care professional's lack of information about pain evaluation and treatment, worries of opioid usage, abuse, and diversion, and misunderstandings about the therapeutic dose of analgesia can all contribute to inadequate pain relief. A lack of pain awareness is a major obstacle to successful pain management. National pain alleviation policies and programs, according to the World Health Organization (WHO), should be created and implemented [11].

Thus, this study aimed to find out the effectiveness of an interventional program on Nurses' knowledge and practices about pain management for patients with acute myocardial infraction at Coronary Care Units.

METHODOLOGY

Study Design: A pre-experiment design (one group pretest-posttest design) is applied has been done to obtain the study goals about Pain management for patients with acute myocardial infarction at the Coronary Care Unit in Al-Diwaniyah Teaching Hospital. Duration of study beginning from (15th November, 2021) to (28th April, 2022).

The researcher obtained the verbal informed consent from each nurse, and explained the purpose of the study before participation, told the participants that their participation in this study is voluntary and they can withdraw from this study at any time they want, and also assured them that he will safeguard the confidentiality of the data and they will be securely maintained during and after conducting the study according to the subject's agreement sheet.

Setting of the Study: The study had been done in Al-Diwaniyah Teaching Hospital at the Coronary Care Unit (CCU). The researcher had chosen this hospital because the only teaching hospital that contains CCU in Al-Diwaniyah City. The nurses in the CCU is cooperative, allowing the completion of data collection within a limited period of time. This hospital is equipped with educational facilities that may ease the implementation of the program such as the educational hall with its contents.

Sample of the Study: A non- probability (purposive) sample was chosen to obtain representative and accurate data. From total (41) nurses working at CCU in Al-Diwaniyah Teaching Hospital, (11) nurses were excluded from the educational program (five nurses for the pilot study, four nurses previously participated in pain management courses, and two nurse did not complete the program). So, the total number of nurses participating in the program of the study were (30) nurses. The sample had been taken in one group.

Construction of the interventional Program: The program is established and designed based on the preliminary assessment of nurses' knowledge and practices about pain management for patients with acute MI at CCU, and also on the information obtained from the related scientific literatures and previous studies. The program content is review by a group of experts.

The experts explained their notes and recommendations by carrying out whole review of the content of the program and to meet the requirement of nurses and the objectives of the research. The program was established to improve nurses' knowledge and practices about pain management for patients with acute MI at CCU. Interventional program content includes information about heart (location, and function), acute MI (definition, signs and symptoms, causes, risk factors, pathophysiology, manifestations, managements, and complications), pain management (overview of the pain, types, assessment of the pain, tool assessment, characteristics, Pharmacological and non-pharmacological management and nursing roles).

Instrument Format: To evaluate the effectiveness of the intervention program on the nurses' knowledge and practices about pain management for patients with acute MI at CCU in Al-Diwaniyah Teaching Hospital, the researcher has constructed a questionnaire format to achieve the objectives of the study, it consists of three parts, and it includes the following: Demographic data form, nurses' knowledge and practices about pain management for patients with acute MI, an observational checklist practices for nurses about pain management for patients with acute MI.

Reliability of the Questionnaire: This reliability of the questionnaire was determined by utilizing a test and re-tests methods gained by assessing (five) nurses which were employed at CCU in Al-Diwaniyah Teaching Hospital, and the interval period was two weeks to identify by the reliability of the study instrument. The finding of the reliability show that the person correlation coefficient is (r = 0.88) that is a statistically acceptable match to the minimum reliability coefficient. The result that was gathered through the pilot study displayed how clear and understandable the questions were, and the time was (20-30) minutes to complete the questionnaire.

Statistical Data Analysis: Statistical Package for Social Sciences (SPSS, version 23) was used to analyze the study data.

RESULTS OF THE STUDY

Table 1: Distribution of nurses' knowledge about pain management

List	Items	Sample Response							
		Pretest				Posttest			
		Freq.		Mean	Ass.	Freq.		Mean	Ass.
		Wrong	Right			Wrong	Right		
1	The function of the heart	10	20	1.66	M	3	27	1.9	H
2	A normal heartbeat ranges	17	13	1.43	M	5	25	1.83	H
3	Responsible for providing the heart muscle with the blood and oxygen	21	9	1.3	M	4	26	1.86	H
4	Acute MI is a health problem that includes	22	8	1.26	M	7	23	1.76	H
5	Diagnostic tools is most commonly used to locate acute MI	24	6	1.2	L	8	22	1.73	M
6	Most common symptom of myocardial infarction	26	4	1.13	L	9	21	1.7	M
7	Complications of myocardial infarction	24	6	1.2	L	5	25	1.83	H
8	Definition of the Pain	24	6	1.2	L	3	27	1.9	H
9	The pain associated with acute myocardial infarction is classified on the basis of	20	10	1.33	M	3	27	1.9	H
10	Responsible for the perception of pain	21	9	1.3	M	7	23	1.76	H
11	Assessment of pain associated with acute MI	20	10	1.33	M	10	20	1.66	M

12	The ranges of numerical assessment scale for pain	21	9	1.3	M	5	25	1.83	H
13	Physical reactions to acute MI pain	24	6	1.2	L	5	25	1.83	H
14	Disadvantages of visual analogue scale(VAS)	22	8	1.26	M	8	22	1.73	M
15	The time taken for effect of IV morphine to patients with acute MI	25	5	1.16	L	5	25	1.83	H
16	Indicators of the severity of pain in patients with acute MI	25	5	1.16	L	10	20	1.66	M
17	Reason for the patient to request an increase in the dose of pain relievers for patients with acute MI	26	4	1.13	L	7	23	1.76	H
18	Non-pharmacological management to control pain include	28	2	1.06	L	17	13	1.43	M
19	Non-pharmacological management to control pain are	28	2	1.06	L	8	22	1.73	M
20	Analgesic dose for patients with acute MI of intravenous morphine	24	6	1.2	L	7	23	1.76	H
21	Important instructions for patients with acute MI about medication self-care	23	7	1.23	L	5	25	1.83	H
22	Angised tablets work faster when	26	4	1.13	L	11	19	1.63	M
23	Aspirin and Plavix are used to prevent blood clots from forming after	25	5	1.16	L	7	23	1.76	H
24	Should not be taken when the stomach is empty	27	3	1.1	L	6	24	1.8	H

Ass. = Assymptomatic significant; H. = High (1.75-2); M. = Moderate (1.25-1.75); L. = Low (1. – 1.25), freq.= frequency,

Table 2: Distribution of the Study Samples according to their Practices about pain management

List	Items	Sample Response									
		Pretest					Posttest				
		Freq.			Mean	Ass.	Freq.			Mean	Ass.
		Never	Some- times	Always			Never	Some- times	Always		
1	Hand washing	23	6	1	1.27	L	1	3	26	2.83	H
2	Measure vital signs and document it	9	13	8	1.96	M	0	1	29	2.96	H
3	Connection of the monitoring device to the patient and ECG	26	4	0	1.13	L	0	15	15	2.5	H
4	Check the level of consciousness of the patient with acute MI	29	1	0	1.03	L	6	15	9	2.1	M
5	Use of pain assessment tools such as numerical rating scale or facial scale	16	12	2	1.53	M	1	5	24	2.76	H
6	Assessment pain for patient with acute MI	30	0	0	1	L	1	14	15	2.46	M
7	Determine location of the pain for patient with acute MI	29	1	0	1.03	L	8	20	2	1.8	M
8	Determine the nature of pain for patient with acute MI	11	13	6	1.83	M	1	8	21	2.66	H
9	Determine the prevalence of pain for patient with acute MI	29	1	0	1.03	L	5	21	4	1.96	M
10	Identify factors that increase pain for patient with acute MI	19	9	2	1.43	L	1	6	23	2.73	H
11	Identify factors that decrease pain for patient with acute MI	26	4	0	1.13	L	1	11	18	2.56	H
12	Ask the patient if he has taken any pain reliever	21	9	0	1.3	L	0	9	21	2.7	H
13	Chang the patient's position in bed	30	0	0	1	L	11	11	8	1.9	M
14	Monitor signs of hypoxia for the patient with acute MI	30	0	0	1	L	1	13	16	2.5	H
15	Give oxygen to the patient if needed	26	4	0	1.13	L	1	4	25	2.8	H
16	Use of non-pharmacological procedures to reduce pain	19	8	3	1.45	L	6	10	14	2.26	M
17	Give the necessary medications to reduce the severity of pain according to the doctor's orders	24	5	1	1.23	L	3	9	18	2.5	H
18	Monitor medications side effects	14	10	6	1.73	M	3	10	17	2.46	M
19	Reassess the pain periodically	25	3	2	1.23	L	4	11	15	2.36	M
20	Document the information in the patient file and signature it	28	1	1	1.1	L	4	12	14	2.33	M

Ass. = Assymptomatic significant; H. = High (2.5 - 3); M. = Moderate (1.50 – 2.5); L. = Low (1. – 1.50), freq.= frequency

Table 3: Comparison significant of pre and post-test knowledge and practices scores for the study sample

score	N	M	SD	t	df	P.value	Sig.
Pretest and Posttest knowledge	30	1.5	0.68	12.04	29	.000	H.S
Pretest and Posttest Practices	30	1.36	0.55	13.46	29	.000	H.S

N= number, M = mean of score, SD= standard deviation, NS =non-significant at P>0.05, S= significant at P<0.05

DISCUSSION

Discussion of Nurses' Knowledge about Pain Management for Patients with Acute MI in the CCU at Pre-Test and Post-Test (After implementing the interventional program), as Offer in the Tables 1 and 3:

The importance of pain management for patients with acute MI is well documented and it is known that pain management is essential to decrease the complication and mortality rate among those patients in the CCU. The significance of this study for nursing was to test whether a combined interventional program of education and practice skills-building could improve nurses' knowledge and practices about pain management for patients with acute MI at the CCU in Al Diwaniyah teaching hospital, particularly since nurses there, as everywhere else, are required to maintain a good base of knowledge about this important health issue, to keep them updated and able to communicate with doctors and other health care providers .

In the post-test period, the study showed improvement in the nurses' knowledge about pain management for patients with acute MI after implementation of the interventional program, as shown in the table 1, where the overall evaluation of the nurses' knowledge was high with statistical mean. The study revealed that there are highly statistically significant differences between the overall nurses' knowledge in pre and post-test periods (at p-value= 0.000).

These findings are similar to those in the study done by Saied and Mansour[7], where they reported that there are statistically significant differences between the nurses' knowledge about pain management in pre-test and post-test, where they

found that there is improvement in the nurses' knowledge after conducting the pain management educational program.

This result is consistent with the study conducted by Salim[11] and colleagues that determine the impact a pain management program on nurses' knowledge toward pain. In the same context, a study by Khader found in their study that there are highly significant differences between nurses' knowledge about pain management before and after implementation of the educational program sessions.

These results revealed by Hussein[12] that the implementation of the educational program had a positive effect on the nurse's knowledge and about pain assessment and management; through the total level of knowledge response of the study sampling to the post-education test was good level.

This finding is in line with the data reported by Shalabia[11] to determine the impact of a brief educational program on nurses' knowledge, and practices toward pain management, which found that the educational program's effectiveness on nurses' knowledge and practices is confident and positive. In addition, Gustafsson and Borglin[14] found that following the intervention program, the total mean score is improved.

Depending on these results that show in the table 1 appear there were significant differences in the mean of the study sample responses between the pre and post-test, which revealed that there was a high improvement in the participants' knowledge related to pain management. the interventional program has a positive impact on the improvement of the nurses' knowledge concerning pain management for patients with acute MI. Nurses' knowledge can be raised and enhanced by concluding that the educational program, can be continuous use for all nurses who work in the CCU. And can also be applied to improve nurses' knowledge as a research process to solve actual or potential problem occurring in any health condition and to giving the best quality of managing for patients. This results may encourage all concerned to embrace more similar goals in their curricula at future.

Discussion of Nurses' Practices about Pain Management for Patients with Acute MI in the CCU at Pre-Test and Post-Test (After implementing the interventional program), as Offer in the Tables 2 and 3:

After implementing the interventional program, the study revealed a remarkable development in the nurses' practices towards pain management as shown in Table 2, where the overall evaluation of nurses' practices was high, that there are highly statistically significant differences between the practices mean scores in pre and post-test (at p value= 0.000) where the practices mean scores in post-test were better than it in the pre-test. These results indicate that the interventional program has a positive effect on the nurses' practices towards pain management in the CCU.

This result consistent with the study conducted by Ahmed and Abed[15] in the CCU where they found that there are highly statistically significant differences in practices score between the pre-test and post-test, where the mean score of nurses' practices, concerning pain management, in pre-test was (1.54), which improved in post-test to become (2.59). In addition, Shalabia[13] who conduct a study in (2015), reported that there are significant differences between the mean scores of nurses' practices, regarding pain management, before and after implementation of the educational program, where the mean scores in the post-test were higher than it in the pre-test.

Salim[11] in a governmental hospital in the United Arab Emirates respectively, supported the present study, where they reported that there are significant differences between the scores of pre-test and post-test were improved after the educational session regarding pain management practices. In addition, all previous study reported that the education session positively affected the nurses' knowledge and practices concerning pain management.

Depending on these results that show in the table 3 reflected that there were significant differences in the mean between the pre and post-test of the study sample related to their practice about pain management, which revealed that there was a significant improvement in their nurses' practices. the interventional program has a positive impact on the improvement of the nurses' practices concerning pain management for patients with acute MI in the CCU. Good nurses' practices can be raised and enhanced patient satisfaction and reducing the burden and cost for the patient and the hospital.

CONCLUSION

The results of this study showed that the interventional program was an effective educational method that enables the nurses to improve their knowledge and practices towards pain assessment and management. Furthermore, the study shows that the interventional program had a positive effect on the nurses' knowledge and practices toward pain management for patient with acute MI, where the p-value was (0.000) in two periods of measurements (pre-test and post-test).

REFERENCES

1. Skal BM, Ahmed SA. Effectiveness of an Educational Program on Nurses' knowledge about Risk Factors for Bleeding of Acute Myocardial Infarction in Patient Receiving Thrombolytic Therapy at Coronary Care Unit in Al-Diwaniya Teaching Hospital. Indian Journal of Forensic Medicine & Toxicology. 2021 Jul 1;15(3).
2. Regmi M, Siccardi MA. Coronary artery disease prevention.
3. Hao P, Gao X, Li Z, Zhang J, Wu F, Bai C. Multi-branch fusion network for Myocardial infarction screening from 12-lead ECG images. Computer methods and programs in biomedicine. 2020 Feb 1;184:105286.
4. Khasal QA, Atiyah HH, Oleiwi SR. Effectiveness of an Education Program on Life-Style of Patients with Myocardial Infarction in Al Nasiriyah Hospitals. Prof. RK Sharma. 2019 Jan;13(1):307.
5. Thygesen K, Alpert JS, Jaffe AS, Chaitman BR, Bax JJ, Morrow DA, White HD, Mickley H, Crea F, Van de Werf F, Bucciarelli-Ducci C. Fourth universal definition of myocardial infarction (2018). European heart journal. 2019 Jan 14;40(3):237-69.
6. Hodzic, E., Perla, S., Iglica, A., and Vucijak, M. (2018). Seasonal Incidence of Acute Coronary Syndrome and its Features. Materia socio-medica, 30(1), 10-14.
7. Saied DR, Mansour KA. Effectiveness of an Educational Program on Nurses' Knowledge and Attitudes about Pain Assessment and Management in Imam Hussein Medical City in Holy Karbala. Indian Journal of Forensic Medicine & Toxicology. 2021 Jul 1;15(3).
8. Manwere A, Chipfuwa T, Mukwamba MM, Chironda G. Knowledge and attitudes of registered nurses towards pain management of adult medical patients: a case of Bindura hospital. Health Science Journal. 2015;9(4):1.
9. Hinkle JL, Cheever KH. Brunner and Suddarth's textbook of medical-surgical nursing. Wolters kluwer india Pvt Ltd; 2018 Aug 30.
10. Nuseir K, Kassab M, Almomani B. Healthcare providers' knowledge and current practice of pain assessment and management: how much progress have we made?. Pain Research and Management. 2016 Oct;2016.
11. Salim NA, Tuffaha MG, Brant JM. Impact of a pain management program on nurses' knowledge and attitude toward pain in United Arab Emirates: Experimental-four Solomon group design. Applied Nursing Research. 2020 Aug 1;54:151314.
12. Hussein AM, Hassan HS. Effectiveness of Educational Program on Nurse's Knowledge Concerning Management of Cardiogenic Shock at AL-Mosul Teaching Hospitals. Kufa Journal for nursing Sciences. 2016;6(1).
13. Shalabia EL, Al-Kalaldeh M, Al-Tarawneh O. Impact of applying brief educational program on nurses knowledge, attitude, and practices toward pain management.
14. Gustafsson M, Borglin G. Can a theory-based educational intervention change nurses' knowledge and attitudes concerning cancer pain management? A quasi-experimental design. BMC health services research. 2013 Dec;13(1):1-1.
15. Ahmed, R. G & Abed, R. G. Effectiveness of an Educational Program on Nurses Knowledge and Practices Concerning Pain Management at Cardiac Care Unit in Baqubeh Teaching Hospital. [unpublished Master Thesis]. University of Baghdad. 2020.