

Effectiveness of Educational Program on Nurses Knowledge toward Nursing Management for Patients Undergoing Percutaneous Coronary Intervention in Cardiac Center at Al-Dewaniyah City

فاعلية البرنامج التعليمي على معارف الممرضين باتجاه التدابير التمريضية للمرضى الخاضعين للتدخل القسطاري التاجي في مركز القلب بمدينة الديوانية

Hayder M. Obaid , MScN*

Suad J. Mohammed, PhD **

* Academic Nurse, Higher Health Institute, AL- Dewaniyah Health Directorate , Ministry of Health .E:mail:alnayleehayder91@gmail.com

**Assist. Professor, Fundamental of Nursing Department, College of Nursing/ University of Baghdad. E:mail:dr.suadjassim@gmail.com

المستخلص

الهدف: تهدف الدراسة الى تقييم فاعلية البرنامج التعليمي في معارف الممرضين باتجاه التدابير التمريضية للمرضى الخاضعين للتدخل القسطاري التاجي وكذلك لمعرفة العلاقة بين معارف الممرضين وبعض صفاتهم الديموغرافية (العمر ، الجنس ، مستوى التعليم ، سنوات الخبرة في وحدات القلب).

المنهجية: أجريت دراسة شبه تجريبية (المجموعة الواحدة ، الاختبار القبلي والبعدي) على عينة تكونت من (٤٠) ممرض يعملون في مركز القلب في مدينة الديوانية، لتطبيق البرنامج، بدأت الدراسة من 2019/12/7 الى 2020/2/23 تم استخدام استمارة إستبانة لتقييم المعارف، تم إجراء المقابلة المباشرة مع الممرضين لاعطائهم البرنامج الذي تألف من أربعة أجزاء:

الجزء الأول: الخصائص الاجتماعية والديمغرافية للممرضين، الجزء الثاني: معلومات عامة حول معارف الممرضين باتجاه أمراض القلب والشرابين التاجية ، الجزء الثالث: معارف الممرضين حول أحتشاء عضلة القلب والتدخل القسطاري التاجي ، الجزء الرابع: معارف الممرضين حول التدابير التمريضية للمرضى الخاضعين للتدخل القسطاري التاجي تم تحديد ثبات الاستبيان (أداة الدراسة) من خلال دراسة استطلاعية والصدق من خلال لجنة من الخبراء. تم تحليل البيانات من خلال استخدام الرزمة الإحصائية للعلوم الاجتماعية (الإصدار 23 من IBM-SPSS). تم استخدام الإجراءات الإحصائية الوصفية والاستنتاجية لتحليل البيانات.

النتائج: أظهرت نتائج الدراسة أن غالبية أفراد العينة تتراوح أعمارهم بين (31-40) سنة ، وأنثى (52.5٪) ، والمستوى التعليمي هو دبلوم (37.5٪) ، والخبرة في الوحدات القلبية (6-9) سنوات. كذلك المشاركة في الدورات التدريبية (نعم 82.5٪) ، وعدد الدورات التدريبية (2) ، ومكان الدورات التدريبية، داخل العراق (93.93٪) ، وهناك فروق ذات دلالة إحصائية بين الاختبارات السابقة واللاحقة في المجالات العامة الرئيسية فيما يتعلق بمعرفة الممرضات بإدارة التمريض للمرضى الذين يخضعون للتدخل القسطاري. وكانت الإجابة الصحيحة في الاختبار القبلي (السابق) 0.417٪ وفي الاختبار البعدي (اللاحق) ازدادت هذه الإجابة إلى 0.814٪ مما يدل على ازدياد معارف الممرضين لتقديم الرعاية الجيدة.

التوصيات: أوصت الدراسة بضرورة إجراء دورات تعليم مستمر لزيادة معارف الممرضين، وإجراء دراسات مماثلة على حجم عينة أكبر في المدن العراقية وكذلك على بقية المراكز.

Abstract

Objectives: The study aims to evaluate the effectiveness of the educational program on nurses' knowledge towards nursing management for patients undergoing percutaneous coronary intervention (PCI), as well as to find out the relationship between nurses' knowledge and some of their demographic characteristics (age, gender, level of education, and years of experience in cardiac units).

Methodology: A Quasi-experimental as one group (pre and post test) study was conducted at the Heart Center in Al-Diwaniyah city for the period from December 7, 2019 to February 23, 2020. A sample of (40) nurses working in the heart center was chosen from different nursing addresses. The sample covered one group, (40) nurses and the crew had a face-to-face educational program on nurses' knowledge towards nursing administration for patients undergoing (PCI). Data were gathered during the utilization of the adopted questionnaire and interview technique. The questionnaire was consists of (53) multiple-choice questions(MCQ) related to Nursing management For Patients Undergoing PCI , the reliability of instrument for knowledge is (0.93) Sequentially, by using Cronbachs alpha, the data analysis done by using the statistical methods which include (descriptive, and inferential statistics).

Results: Vast majority of sample are at age of (31-40) years old, female (52.5%), educational level is diploma degree (37.5%), experience in cardiac units is (6-9)years , Participation in training course is (yes, 82.5%), number of training courses (2), Training course place is Inside Iraq (93.93%), and there are statistically significant differences between the pre and post tests in the main general areas with regard to the nurses' knowledge regarding the nursing management towards the patients undergoing PCI. The correct answer in the pre-test was 0.417% and in the post-test, these answers increased to 0.814%.

Recommendations: The study recommended to provide nurses with continuous educational courses to enhances nurses knowledge, & the necessity of conducting similar studies on a larger sample.

Keywords: Educational program, knowledge, nursing management, Percutaneous Coronary Intervention.

Introduction

Coronary artery diseases (CAD), additionally known as coronary heart disease (CHD) or heart disease (HD), CAD is the most common type of cardiovascular disorder (CVD), contribute approximately half of all CVD deaths Worldwide. It is a essential public health problem among adult with excessive morbidity and mortality ⁽¹⁾.

percutaneous coronary intervention is invasive procedure and not surgical used to treat narrowing and blocked of the coronary arteries of the heart, After getting access to the blood stream through the femoral or radial artery. Also, PCI is a mechanical system to increase blood flow and oxygen to the myocardium. Emergency PCI is being used regularly in the management of acute MI, with comprehensive consequences for patients ⁽²⁾.

The risks and problems of PCI is connected with percutaneous coronary intervention procedures, related to the patient's concomitant stipulations and to the ability and judgment of the operator, The main problems are allergic and adverse reactions, infections, nephropathy, cholesterol embolism, local vascular injury, conduction disturbances, cerebrovascular complications, and dying ⁽³⁾. In pre-procedural phase, prepare the affected person for the procedure is an vital section of nursing care, mainly supplying records and support, In the context of acute MI, patient care focus on decreasing stress and anxiety , elective procedures supply clinicians greater time to explore the worries and information gaps of the patient and their family, Factors recognized to affect uptake of facts include: the stressful nature of the event and cultural troubles impacting on knowledge, attitudes and beliefs ⁽⁴⁾. As for the intra-phase, all patients need to be managed on continuous electrocardiograph(ECG) monitoring in order to become aware of signs and symptoms of ischemia and arrhythmias. Regular evaluation of respiratory rate,

pulmonary ventilation, blood pressure (BP) and blood saturation(SpO2) measures are necessary with appropriate or comfortable position for the patient. In addition to all patients must be supplied moderate sedatives prior to the procedure ⁽⁵⁾.

Post procedural phase is extraordinarily important, as critical signs and symptoms observation, arterial access site monitoring, limb circulation observation, monitoring coagulation and assessing renal function. Vital symptoms observation. Monitoring essential symptoms is a necessary issue of the post PCI phase. All patients who have symptoms or signs suggestive of myocardial ischemia during or after the cardiac catheterization and these with tricky processes need to have a 12-lead ECG and cardiac enzymes measured ⁽⁶⁾.

According to the WHO, in 2005, 30% of the whole death was lead to cardiovascular illnesses (CVD), specially coronary heart disease and stroke. Evaluation that through 2020, CVD will be the due to mortality and morbidity worldwide, and creating countries will be the important contributors to this increase ⁽⁷⁾.

PCI is relevant to most varieties of coronary artery disease, an estimated 2 million PCIS are performed worldwide every year, making it one of the most widely used medical procedures. Its reputation is based mostly on its simplicity, the need for only local anesthesia, a short (approximately 1 day) hospitalization, and negligible post procedure recovery time ⁽⁸⁾.

In Iraq, the quantity of CAD is growing according to hospitals morbidity facts supplied through Iraqi Ministry of Health in 2004 appear a 65% rise of the hospital admission due to CAD and smoking. More than a fivefold make bigger in outpatient visits with the equal diagnosis between 1989 and 1999 and the quantity of patients who had been admitted

to Iraqi hospitals in 1989 used to be 9487 and this quantity elevated to 19963 patients in 2010⁽⁹⁾.

According to American heart association in 2009 13,14,000 angioplasties were done in the united states, of these 13,13,000 were PCI. 8,55,000 men and 4,59,000 women. In Iraq, especially in al diwaniyah Specialized Center for Cardiac Surgery and catheter (10,000) PCI (balloon and stent) were done from 2014 to end 2019. There was a (2006) PCI (balloon and stent) were performed in the calendar year 2019⁽¹⁰⁾.

Methodology:

A quasi-experimental design (one group, pre and post test) study is conducted to find out the effectiveness of educational program on nurses knowledge toward nursing management for patients undergoing percutaneous coronary intervention in cardiac center at Al Diwaniyah city.

The study started from 7rd December 2019 to 23 February 2020. The sample of the study consists of (40) nurse works in cardiac center, which is selected throughout the use of probability sampling approach. The study instrument was constructed based on advanced references related to study problem to reach the objectives of the study, which consist of four parts: Part I: the social and demographic characteristics of nurses, Part II: general information about nurses' knowledge toward heart and coronary arteries. Part III: nurses knowledge about

myocardial infarction and PCI, part IV: nurses' knowledge about nursing management for patients undergoing PCI. Determine the stability of the questionnaire (study tool) through a prospective study and honesty through a committee of experts.

The validity and reliability with data collected method is used.

Ethical considerations

The Institutional Review Board (IRB) in college of nursing / university of Baghdad reviewed contents of program and questionnaire before conducting a study. Informed consent was taken orally before participating in the study. After that information regarding study title and objectives had been given. Two official requests were submitted through the College of Nursing / University of Baghdad to medical city directorate/ Ministry of Health (MOH) to take approval for data collection from Iraqi center for cardiac disease and Al-Karkh health directorate/ Ministry of Health (MOH) to take approval for data collection from Ibn-Albetar specialist center for cardiac surgery in Baghdad city.

Results:

Table1: Demographic Data of the Study Sample (N= 40 Nurses):

Demographic data	Rating and scoring	Frequency	Percentage	DF	X ² value
Age (years)	20-30	10	25	2	5.47
	31-40	19	47.5		
	41-50	11	27.5		
Gender	Male	19	47.5	1	0.200
	Female	21	52.5		

Educational level	Nursing high school	13	32.5	3	9.06
	Diploma degree	15	37.5		
	Bachelor's degree	7	17.5		
	Master degree or more	5	12.5		
Experience in cardiac units	1-5	12	30	3	20.53
	6-9	17	42.5		
	10-15	11	27.5		
	16 or more	0	0		
Participation in training course	Yes	33	82.5	1	33.8
	No	7	17.5		
Number of training course	1	11	33.33	2	1.09
	2	13	39.39		
	3 or more	9	27.27		
Training course place	Inside Iraq	31	93.93	1	50.9
	Outside Iraq	2	6.06		

Table 1 shows that the dominant age group for the study sample is (31-40) years old (47.5%), regarding the gender the results indicate that the female is the dominant gender for the study group (52.5%). Additionally, the results indicate that majority (37.5%) of the study sample are diploma degree. Regarding years of experience in cardiac units, show that the majority sample have (6-9)years (42.5%). Relative to the participation in training course, the results show that (82.5%) of the sample are participation in training course, in addition, (39.39%) of the study sample have (2) training course, also the place of Training course majority inside Iraq (93.93).

Table 2: Nurses' Knowledge about Nursing Management for Patients Undergoing Percutaneous Coronary Intervention(Pre, Post)PCI at Pre-and Post Test.

Items	Responses	Pre test		Mean	Resp	Post test		Mean	Level
		F	%			F	%		
Periodic examinations that catheter-mediated patients should perform	Inco	26	65	0.35	Inc	5	12.5	0.87	Pass
	Cor	14	35		Cor	35	87.5		
It is planned to make a catheter (PCI) for a patient suffering from myocardial infarction who takes a set of treatments including (digoxin, lasix, warfarin, famotidine) What is the treatment necessary to stop several days before the operation?	Inco	29	72.5	0.27	Inc	8	20	0.80	Pass
	Cor	11	27.5		Co	32	80		
The necessary nursing intervention for	Incor	21	52.5	0.47	Inc	2	5	0.95	Pass

patient with cardiac attach with 87% of oxygen saturation before the procedure is	Cor	19	47.5		Cor	38	95		
The appropriate nursing procedure for a patient suffering from shortness of breath before performing the PCI procedure, the position being:	Incor	24	60	0.40	Inc	8	20	0.80	Pass
	Cor	16	40		cor	32	80		
Preparation of the patient for catheterization is a nursing responsibility that needs	Inco	12	30	0.70	Inc	8	20	0.80	Pass
	Cor	28	70		Cor	32	80		
The goal of nursing care for patients before performing the percutaneous coronary intervention procedure is	Incor	29	72.5	0.27	Inc	10	25	0.75	Pass
	Cor	11	27.5		Cor	30	75		
One of the possible complications when administering thrombolytic therapy (actylase) before performing the procedure is:	Inco	26	65	0.37	Inc	6	15	0.85	Pass
	Cor	14	35		Cor	34	85		
Treatment The nurse must instruct the patient to leave him one day before the catheterization procedure:	Inco	24	60	0.40	Inc	8	20	0.80	Pass
	Cor	16	40		Cor	32	80		
When should the nurse check the level of creatinine in the blood of patients after PCI	Inco	33	82.5	0.17	Inc	5	12.5	0.87	Pass
	Cor	7	17.5		Cor	35	87.5		
When you detect a hematoma at the puncture site after cardiac catheterization, you should not.	Inco	28	70	0.30	Inc	7	17.5	0.82	Pass
	Cor	12	30		Cor	33	82.5		

F: Frequency, %: Percentage, C: correct, Inco: incorrect,

Table (2): Nurses' knowledge about nursing management for patients undergoing percutaneous coronary intervention(pre, post)PCI at the pre-test. The study results indicate that the study group responses at the pre-test are fail at all studied items except at the items number (5) their responses are pass, and Nurses' knowledge about nursing management for patients undergoing percutaneous coronary intervention(pre, post)PCI at post-test. The study results indicate that the responses at the post-test are (pass).

Table (3) Mean Difference (Paired t test) between Study Group Responses at Pre and Post Level of Measurements

Period of measurements	No.	Mean	SD	D	T-Test value	P value
Pre-test	40	0.417	0.14	52	17.572	0(HS)
Post-test	40	0.814	0.08			

HS : High significant association (P <0.01)

Table (3) shows that there is a high-significant difference between the study group overall responses in two periods of measurements (pre-test and post-test) at p-value less than 0.01,(with respect to the statistical mean, the study results indicate that there is an improvement in the nurses knowledge at the post-test compared with pre-test scores.

Table (4) Relationship between the Nurses Knowledge concerning Nursing Management for Patients undergoing PCI with their Age, Educational level and Training Course Place at Al -Diwaniyah Cardiac Center.

Age interval	No.	Nurses knowledge	
		Post test	
		Mean	SD
20-30	10	0.787	0.14
31-40	19	0.846	0.11
41-50	11	0.819	0.16
Total	40	DF: 156 F value : 3.30 P value : 0.039(S)	
Educational level	13	0.783	0.16
Nursing high school			
Diploma degree	15	0.802	0.14
Bachelor's degree	7	0.808	0.16
Master degree or more	5	0.874	0.19
Total	40	DF: 208 F value : 4.06 P value : 0.008(HS)	
Training course place	31	0.810	
Inside Iraq			
Outside Iraq	2	0.943	
Total	33	DF: 104 T test value : 4.664 P value : 0(HS)	

HS : High significant association ($P < 0.01$)

S : Significant association ($P < 0.05$)

Table (4): presented that there were significant relationship between the effectiveness of educational program and age of nurses, at $p \leq 0.05$ and high significant relationship between the effectiveness of educational program and level of education and Training course place in al diwaniyah cardiac center at $p (P < 0.01)$.

Discussion:

Concerning nurses' age the study result indicate that the age group majority of sample is (31-40) years, percentage (47.5%) this result is agreement with study

who find that the majority of nurses at 30-40 years⁽¹¹⁾. Regarding nurses' gender, the study findings demonstrated that most of the participants in study sample were

female, while only more than one third are male (52.5%), (65.8%).

With respect to the level of education, the study result shows that the majority is (diploma degree, 37.5%) this supported by Study in Egyptian has concluded in on 77 nurses to evaluated the nurses knowledge and practice toward prevent complication for patients with myocardial infarction in Egyptian cardiac hospital that the level of education for majority in their study were diploma degree⁽¹²⁾.

Also the experience in cardiac units appear majority (6-9) years (42.5%). Additionally Participation in training course appears majority (yes) percentage (82.5%).

Also number of training course appear majority is (2) and percentage (39.39%) and place of these course is inside Iraq appear (93.93%). The study has revealed that nurses knowledge toward nursing management for patients undergoing PCI at pre-test study is poor as show as in table (2). Regarding nurses Knowledge toward nursing management for patients undergoing PCI at post -test is improved after administration of educational program as show in table(3). These findings agree with a study conducted in Iran, (2016) in study about the effect of an educational program on nurses knowledge and performance in patients with coronary syndrome who mentioned in their study that included 70 participants that

there is a clear improvement in nurses' knowledge after the implementation of the educational program⁽¹³⁾.

The study findings revealed that there was a highly significant difference between the study group overall responses in two periods of measurements (pre-test and post-test). This finding reflects the fact that there is an improvement in the nurses' knowledge at the post-test compared with pre-test scores as shown in table (4), these findings agree with study reported that there was a highly significant difference in knowledge between pre-test and post-test scores of study group members⁽¹⁴⁾. Concerning the link between nurses' age and their knowledge about management for patients undergoing PCI. The study findings reveal that there was statistically significant difference between nurses' knowledge for the study sample in post-test and their age about nursing management for PCI patients ($p\text{-value}=0.039$) as show in table (5), this finding indicates that the educational program was effective for age. They reported that there were significant differences in nurses' knowledge in terms of socio-demographic characteristics such as age, gender, education and at $p\text{-value}$ less than 0.05.

Regarding to the link between nurses' level of education and their knowledge management for patients undergoing PCI, the study finding

displayed that there is high significant association between the level of education and nurses' knowledge at post-test ($P < 0.01$) as shown in table (5).

Also the study shows high significant association between the place of training course and nurses' knowledge in the post-test (p value $P < 0.01$).

Recommendations:

1. Nurses who work in the cardiac center need to appoint the findings of the existing find out about in enhancing the expertise of patients who undergoing PCI.
2. Need to put into effect similar studies in a larger sample measurement throughout Iraqi cities.
3. Modern instructive services for nursing team at cardiac center need to be supplied to enhance nurses' knowledge.

References

- 1-Huang, Y. J., Parry, M., Zeng, Y., Luo, Y. Yang, J., & He, G. P. (2017) Examination of a nurse-led community-based education and coaching intervention for coronary heart disease high-risk individuals in China. *Asian nursing research*, 11(3), 187-193.
- 2-American Heart Association (AHA). (2017a). Types of Blood Pressure Medications. Retrieved from <http://www.heart.org/en/health-topics/high-blood-pressure/changes-you-can-make-to-manage-high-blood-pressure/types-of-blood-pressure-medications>.
- 3-Alexandria E. et al., International prevalence of the use of peripheral intravenous catheters. *Journal of hospital Medicine*. 2015;10 (8): 530-3.
- 4-Consent guidance: patients and doctors making decisions together London: General Medical Council; c2013. Available at: www.gmc-uk.org/guidance/ethical_guidance/consent_guidance_index.asp.
- 5-Blouin A. S., & McDonagh, K. J. (2011). Framework for patient safety, part 1: Culture as an imperative. *Journal of Nursing Administration*, 41, 397-400.
- 6-Applegate, R., Sacrinty, M., Kutcher, M., Kahl, F., Gandhi, S., Santos, R., & Little, W. (2008). Trends in vascular complications after diagnostic cardiac catheterization and percutaneous coronary intervention via the femoral artery, 1998 to 2007. *JACC. Cardiovascular Interventions*, 1(3), 317-326.
- 7-Ramezankhani, A., Bagherzadeh-Khiabani, F., Khalili, D., Azizi, F., and Hadaegh, F. (2017). A new look at risk patterns related to coronary heart disease incidence using survival tree analysis: 12 Years Longitudinal Study. *Scientific reports*, 7(1), 3237.
- 8-Teirstein, P. and Lytle, B.: Interventional and surgical treatment of coronary artery

disease In Goldman, L. and Schafer, A. editors Goldman's Cecil Medicine .24h ed. Philadelphia: Elsevier, 2012, p: 448-449,455.

9-Eshah, N. F. (2011). Jordanian acute coronary syndrome patients' learning needs: Implications for cardiac rehabilitation and secondary prevention programs. *Nursing & health sciences*, 13(3), 238-245.

10-Charles P. Davis, percutaneous coronary intervention (pci) Editor by William C. Shiel Jr., Last Editorial Review: 11/29/2011, 2014 WebMD, Inc. <http://www.emedicinehealth.com>

11-Hassan, H. B., & Jissir, S. A. R. (2015). Effectiveness of an educational program on nurses knowledge about nosocomial infection: Case-control study. *kufa Journal of Nursing sciences*, 5(1), 24-32.

12- Alexander, M., Corrigan, A., Gorski, L., Hankins, J., & Perucca, R. (2010): *Infusion nursing: An evidence-based approach*, 3rd edition, St. Louis, MO: Saunders,. P.P: 178–203.

13- Qoli, A., Nasrabadi, T., and Abianeh, E. E. (2016). Effect of an Educational Program on nurses Knowledge and Performance in Patients with Coronary Syndrome. *International Journal of Medical Research & Health Sciences*, 2016, 5, 5(S):132-137.

14-Al-Hchaim, M., & Hamza, R. (2016). Effectiveness of educational program on

nurse's knowledge about management of patients with heart failure. *International Journal of Scientific and Research Publications*, 6(9), 416-24