

Effectiveness of an Interventional Program on Nurses' Practices Toward Patients' Safety Post Coronary Angiography

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Abstract

Background: Nurses have a critical role in maintaining patients' safety during coronary angiography procedures. In the coronary care unit, patients' safety is critical in reducing complications. Everyone is entitled to high-quality healthcare that is both safe and efficient.

Objectives: to evaluate the effect of a patient's safety intervention program on the nursing staff after coronary angiography.

Methods: A quasi-experimental study was carried out in the cardiac medical ward and cardiac care unit (CCU) at Al-Nasiriyah Heart Centre, Thi-Qar Governorate, Iraq from the 4th of June to the 27th of November 2023. The program and tools for the study were made by the researcher. A purposive (non-probability) sample of fifty nurses who were divided into two groups in order to achieve the objectives of the research: the study group, which consisted of twenty-five nurses who had taken part in the nursing training program, and the control group, which also consisted of twenty-five nurses. The data collection instrument consisted of two primary sections; in the first section, a designated sheet with six items was used to determine the demographic characteristics of these nurses. In the second section, an observational tool (checklist) with eighteen items was used to determine the nurses' practices regarding patient safety after coronary. The interventional program has been designed to provide the nurse with standard practice concerning the safety of patients post coronary angiography in three sessions and application of nursing care with a sample group of patients in cardiac care.

Results: The study's findings demonstrated the beneficial effects of the nursing interventional program on nurses' post-coronary angiography patient safety practices. They were discovered during posttest procedures.

Conclusion: This outcome demonstrates that nurses' post-coronary angiography patient safety procedures were positively impacted by the interventional program.

Keyword: Coronary Angiography; Coronary Care Units; Health Care; Nursing Staff; Patient Safety.

Introduction

Coronary artery disease (CAD) is the primary cause of death in both genders (1). It is mostly caused by fatty material accumulation on arterial walls, which hardens the wall of the artery and causes atherosclerosis (2). One of the best ways to diagnose, assess, and treat heart disease issues is through coronary angiography. Even yet, cardiovascular disease mortality and morbidity have reduced (3). One of the most effective methods for assessing coronary architecture and investigating heart disease is coronary angiography, which can give more details needed to come to a decision (4). There are risks associated with this invasive surgery; however, if a competent team does it, it's safe (5). Numerous serious and mild problems might arise from it, raising the risk of death and morbidity. Major consequences include death, myocardial infarction, and stroke. Minor problems include vascular site access issues, allergic responses to contrast agents, arrhythmias, and transient ischemic attacks (6).

Moreover, patients with advanced kidney failure who were older than 70 years, mainly females, were more vulnerable to cardiovascular problems (7). According to the World Health Organisation, patients' safety is the absence of harm to patients that might have been avoided and the avoidance of unnecessary harm by medical staff (8). Cardiac nurses are responsible for monitoring patients after cardiac catheterisation operations and reducing vascular complications. They ought to be aware of the guidelines designed to protect patients' safety. Safe practices for managing high-risk patients and maintaining homeostasis should be understood by all nurses (9). In order to develop an instructional handbook based on the findings, an assessment of the level of knowledge and practices at the moment was required. This would facilitate the nurses' use of their expertise and protect their patients from complications during cardiac catheterisation (10). Because nurses' knowledge and abilities vary in a clinical setting, an insufficient hemostasis results in vascular issues that are related to patients' safety and disease and are caused by

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health care provider and organisation system variables. Patient's safety risk is impacted by the nurse's knowledge and proficiency with the topic (11). Thus, the current study was conducted to assess the effect of a patient's safety intervention program on the nursing staff after coronary angiography.

Research Hypothesis

1. There are notable variations between the pre-test and post-test results for nurses in the research group with regard to improvement in practice.
2. There were no notable variations between the pre-test and post-test results for nurses in the research group with regard to the improvement in practice.

Subjects and Methods:

Study design and setting: A quasi-experimental methodology was employed in the current study. The study was conducted at the Al-Nasiriyah Heart Centre in Thi-Qar Governorate, Iraq. Data for the study were collected between the 4th of June and the 27th of November 2023.

Data collection

A non-probability purposive sample of fifty nurses who were split into two groups, with twenty-five nurses in each group. The data were collected using two tools: one for recording demographic characteristics of participants and a second using an observational technique or observational tool (checklist) with items. The 18 nurses provided nursing care for patients having coronary angiography in medical wards and the critical care unit, and they were observed in action.

Study groups

Two groups were used in this study

1. A total of twenty-five nurses who had taken part in the nursing interventional program comprised the study group.
2. The control group consisted of 25 nurses who were not involved in the program.

Ethical consideration

The Scientific Research Ethical Committee of the University of Baghdad's College of Nursing gave the study ethical approval with number (2) on 12/3/2023. It was explained to the participants that all information gathered would be confidential and utilised exclusively for research purposes.

Statistical analysis

The data were examined using the Statistical Package for Social Sciences (SPSS) version 26. The procedures of descriptive and inferential statistical data analysis were applied, namely the inferential data analysis of the independent sample *t*-test and bivariate correlation and the descriptive data analysis of the frequencies and percentages, mean, and standard deviation at *P*-value.

Results:

The demographics participants about 52% of participants were between the ages of 22 and 25 years, with 72.72% of them were married women. In terms of educational attainment, the majority of them (52%) had a bachelor's degree with one and five years of nursing experience (76%), with 60% of them working on the cardiac ward; these results were displayed in Table (1).

Table (1): Comparison of demographic characteristics of study and control groups

No.	Characteristic	Study-group		Control-group	
		No.	%	No.	%
1	Age	22 – <26	13	52	9
		26 – <30	7	28	8
		30 – <34	4	16	2
		34 – 38	0	0	2
		38 - above	1	4	4
		Total	25	100	25
		M ± SD	27.08 ± 3.9		29.36 ± 5.8
2	Sex.	Male	7	28	9
		Female	18	72	16
		Total	25	100	25
3	Marital status.	Single	7	28	10
		Married	18	72	15
		Total	25	100	25
4	Level of education	Nursing-school	4	16	7
		Diploma in nursing	8	32	11
		Bachelor	13	52	7
		Total	25	100	25
5	Years of experience	1 – <6	19	76	12
		6 – <11	4	16	4
		11 - above	2	8	9
		Total	25	100	25
		M ± SD	4.76 ± 3.6		8.36 ± 6.1
6	Workplace	C.C.U	10	40	13
		Cardiac ward	15	60	12
		Total	25	100	25

The results of the pre-test stated that the mean scores among nurses in the study group refer to a poor level of practices for most of them, While during the post-test time, the mean scores indicated a good level of

practices. In addition, the results of most of the nurses in the control group showed means scores with a poor level of practice during pre- and post-test times Table 2).

Table (2): Overall Evaluation of Study and Control Group Nurses' Practices Regarding Patient Safety after Coronary Angiography

Level of Practice	Study Group (N= 25)								Control Group (N= 25)							
	Pre-test.				Post-test.				Pre-test				Post-test			
	No.	%	M	SD	No.	%	M	SD	No.	%	M	SD	No.	%	M	SD
Poor	22	88	17.08	4.142	0	0	43.88	4.764	18	72	18.88	3.444	18	72	20.92	4.243
Fair	3	12			4	16			7	28			7	28		
Good	0	0			21	84			0	0			0	0		
Total	25	100			25	100			25	100			25	100		

f: Frequency, %: Percentage, M: Mean of total score, SD Standard deviation Poor= 0 - 36, Fair= 36.1 - 72, Good= 72.1 - 108

The findings demonstrated that the interventional program had a significant positive impact on nurses' post-angiography practices in the study group, as demonstrated by a significant post-test difference

with a *P*-value of 0.001 Table (3). Hence, there was no significant difference in nurses' practices post-angiography with regard to pre- and post-tests in the control group.

Table (3): Efficient Nurse Practices Regarding Patient Safety Following Coronary Angiography (Pre and Post) in the Study and Control Groups

Post-angiography	Practice	M	SD	t	df	P-value	Sig.	M	SD	t	df	P-value	Sig.
	Pre-test	17.08	4.142	20.087	24	.001	H.S	18.88	3.444	3.727	24	.487	N.S
	Post-test	43.88	4.764					20.92	4.243				

M: Mean, t: *t*-test, df: Degree of freedom, *P*: Probability, Sig.: Significance, HS: High Significant, N.S: Not Significant

Discussion

Patient safety is the cornerstone of high-quality treatment and necessitates expertise in several areas. It is defined as the prevention of patient injury while providing healthcare services and it is one of the main concerns for global public health (12). One popular interventional procedure that helps diagnose individuals with acute coronary syndrome is coronary angiography (ACS). It can identify several health issues that need to be identified and addressed after the test. To provide patients with high-quality nursing care and increase their safety, the nurse in the coronary angiography unit must take into account potentially harmful consequences (13).

The distribution of nurses' sociodemographic traits was displayed in the results, which indicates that the majority of participants were in the age range of 22 to 25. These findings were consistency with those reported by

Mature female nurses made up over half of the nurses under inquiry, according to the gender and marital status findings of current study. This result aligned with (15).

Who pointed out that the majority of the nurses in the study were married women. In terms of years of nursing experience, the majority had one to five years of experience. It was observed that the majority of the personnel had less than five years of experience, which is consistent with this finding (16).

The majority of them hold a bachelore degree in nursing. This outcome is consistent with (17).

The current study's results confirmed hypothesis 1st hypotheses and demonstrated the beneficial effects of the nursing interventional program on nurses' post-coronary angiography patient's safety practices, as

evidenced by post-test results. This conclusion was reinforced by a study on "nurses' performance regarding patient safety post cardiac catheterization" that was carried out in Egypt and found that, in the post-implementation phase of educational guidelines, nurses' overall practices related to cardiac catheterization procedures improved in a highly statistically significant way (18).

In study discovered a significant difference between the nurses' pre- and post-program practices, suggesting that the nurses' prior experience was insufficient (19).

The study suggests implementing similar studies in the future on larger samples, as there is a need to establish continuous nursing education and training sessions related to patient's safety post-coronary angiography.

Limitations:

The present study experienced the following limits:

1. It was challenging to get all the nurses to attend the teaching sessions at the same time.
2. It took a lot of time for the researcher to implement the nursing care standards that were developed; more time was spent waiting for nurses to attend the teaching sessions during workload activities.
3. During working hours, the researcher put the nursing care standards into practice.
4. Limited number of coronary angiography during the sample collection period.

Conclusion:

The demonstration of the Interventional program's beneficial impact on improving nurses' post-coronary angiography patient's safety procedures.

Authors' declaration

We confirm that all the Figures and Tables in the manuscript belong to the current study. Besides, the Figures and images, which do not belong to the current study, have been given permission for re-publication attached to the manuscript. Authors sign on ethical consideration's Approval-Ethical Clearance: The project was approved by the local ethical committee in (Place where the research was conducted or samples collected and treated) according to the code number (2) on (12/ 03/ 2023).

Conflict of Interest: None

Funding: None

Authors' contributions:

Study conception & design: (Rajaa I. Abed). Literature search: (Khulood A. Maktoof). Data acquisition: (Khulood A. Maktoof). Data analysis & interpretation: (Khulood A. Maktoof & Rajaa I. Abed). Manuscript preparation: (Rajaa I. Abed). Manuscript editing & review: (Rajaa I. Abed).

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<https://doi.org/10.21608/ejhc.2023.313533>

How to Cite this Article

Rajaa I. Abed, Khulood A. Maktoof. Effectiveness of an Interventional Program on Nurses' Practices Toward Patient's Safety Post Coronary Angiography. *J Fac Med Baghdad* 2025; Available from:

<https://iqjmc.uobaghdad.edu.iq/index.php/19JFacMedBaghdad36/article/view/2396>

فاعلية البرنامج التداخلي في أداء الممرضين تجاه سلامة المرضى بعد تصوير الأوعية التاجية

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الخلفية: يُعد تصوير الشرايين التاجية إجراءً طبيًا تشخيصيًا مفيدًا لتقييم الحالة القلبية في العنور على أي تضيق في الأوعية الدموية التاجية. ومع أنه يُعتبر آمنًا بشكل عام، إلا أن هناك بعض المخاطر المرتبطة بهذا الإجراء. وتلعب الممرضات دورًا مهمًا في توفير الرعاية والمساعدة التي يحتاجها المرضى خلال تصوير الشرايين التاجية. وتحقيق سلامة المرضى وتقديم رعاية ذات جودة في هذا السياق يتطلب تحسين ممارسات الممرضات.

الأهداف: تحديد مدى فعالية البرنامج التداخلي على ممارسات الممرضات فيما يتعلق بسلامة المريض بعد تصوير الأوعية التاجية.

المنهجية: تم إجراء دراسة شبه تجريبية في (مركز الناصرية للقلب) في الردهات القلبية ووحدة العناية القلبية، لغرض تحديد تأثير البرنامج التعليمي في تعزيز ممارسات الممرضين المتعلقة بسلامة المرضى بعد تصوير الأوعية التاجية.

لتحقيق أهداف الدراسة، تم اختيار عينة هادفة (غير احتمالية) من (50) ممرض، ممن عملوا في وحدات العناية القلبية في مركز الناصرية للقلب، وفقاً لمعايير خاصة. وتم تحديد ثبات الأداة من خلال دراسة تجريبية وتم تحديد صدق الأداة من خلال لجنة من الخبراء في مجال الاختصاص.

تتألف قائمة المراجعة (أداة مراقبة) من جزئين رئيسيين بناءً على مراجعة الأدبيات. يتعلق الجزء الأول بتحديد الخصائص الديموغرافية لهؤلاء الممرضين من خلال ورقة محددة تضمنت (6) فقرات، والجزء الثاني عبارة عن أداة مراقبة (قائمة مراجعة) تتكون من (18) فقرة تعرض ممارسات الممرضين المتعلقة بسلامة المرضى بعد تصوير الأوعية التاجية وتطبق على كل فقرة ثلاث مشاهدات تتضمن (يطبق، لا يطبق).

النتائج: أظهرت نتائج الدراسة أن البرنامج التمريضي التعليمي له تأثير إيجابي على ممارسات الممرضين المتعلقة بسلامة المرضى بعد تصوير الأوعية التاجية وظهر ذلك في ممارسات الممرضين بعد الاختبار.

الكلمات المفتاحية: تصوير الأوعية التاجية، الممرضات، سلامة المرضى، الممارسات.