

Effect of Training Nurses in ICU in Immediate Care Post Cardiac Surgery

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Abstract

The specialty of cardiovascular surgical nursing has advanced patient care significantly both before and after surgery, and it is now a well-established field. The primary goal of cardiovascular surgical nursing is to optimize the patient's recovery and prevent complications. Immediate nursing care for post-operative cardiac patients in a state of controlled shock due to fluid shift and varying vascular tone. **Aim of the Study:** Assessment of nurse's knowledge and performance after the training program of nursing care immediately after a patient arrives from cardiac surgery. **Methods:** This pre and post-intervention study was conducted at cardiac centers in Sudan Alshaab and Ahmed Gasim Cardiac Center. The aim of the study was to evaluate the impact on nurses' performance after training program post open-heart surgery. In the initial phase of the study, all 98 nurses working in the intensive care units at Alshaab and Ahmed Gasim cardiac centers were designated as the study group and evaluated before the intervention. Subsequently, the same group was reassessed after the intervention (phase 2), allowing for a comparison of the pre- and post-intervention results. The assessment involved the use of a specifically designed questionnaire and an observation checklist developed in accordance with the standards recommended by the American Nurses Association (phase 3). **Result:** Descriptive analysis was performed using the Chi-square test, the difference in the performance between the study group before intervention and after the intervention was assessed by the mean of chi-square significantly was taken as $p < 0.05$.

Keywords

Effect, Training, Immediate, Nursing Care, Intensive Unit

1. Introduction

Immediate nursing care for post-operative cardiac patients in a state of con-

trolled shock, resulting from fluid shift and varying vascular tone, primarily focuses on neurological recovery and systemic stability.

Upon arrival at the ICU, responses are closely monitored. The patient receives 100% oxygen via the endotracheal tube, which is assisted by a mechanical ventilator. A comprehensive patient assessment is conducted to manage ABC (airway, breathing, circulation) in order to ensure sufficient cardiac index, leisure perfusion, and continuous monitoring of ECG, arterial blood pressure (ABP), arterial and central venous pressure (CVP) measurements. Additionally, the cardiothoracic tube is assessed for signs of bleeding, and fluid administration is carefully maintained, while monitoring intake and output. Regular blood samples are obtained for arterial blood gas and serum electrolytes.

The effect of training on nurses' performance regarding vascular procedures in immediate care appears clearly in a p-value of 0.005 their knowledge changed to very good scores in post-intervention $\chi^2 = 196$ (p-value = 0.000). Arterial blood gases are a sample taken from an arterial line closed sterile system connected to the monitor to observe arterial pressure on the monitor and analyze regularly blood gases which assess oxygen.

2. Study Instrument

Data was collected using a close-ended, self-administrative interview guidance questionnaire that involved (45) questions. The answers were evaluated by the score (poor for 25% of correct answers, good for 50% of correct answers, and very good for 70% of correct answers, and excellent for more than 80% correct answers). The pre-test of the questionnaire was conducted at Alshaab and Ahmed Gasim cardiac centers, where investigators and well-trained monitors administered the questionnaire [1].

The evaluation of the practice is done by observation checklist to evaluate nurse's performance with well-trained monitors.

3. Phases of the Study

3.1. Preparatory Phase

Consent to conduct the study was taken from the responsible authorities of the hospital after an explanation of the aim of the study.

3.2. Phase 1 (Monitoring and Supervision Procedure)

A pilot study was carried out on 6 nurses working in the cardiac ward at Alshaab & Ahmed Gasim cardiac centers before starting the actual data collection to identify the applicability and feasibility of tools in providing the required data. Every nurse in the ICU was interviewed to assess their learning needs regarding knowledge related to nursing management post-cardiothoracic surgery.

Every nurse in the study group was observed during routine application in the ICU (intensive care unit) during every procedure to obtain data using a specific design checklist according to the American Nurses Association Competency

Test data was analyzed using the SPSS and the results of learning needs were identified by tool 1.

The learning program needs assessment sheet was developed by the investigator based on the review of literature revised to the international training program for critical cardiac care nurses (American Nurses Association). Refer to cardiac nurse supervisors in the hospital and follow their observations on nurse's practice and apply them in the learning program content. Verbal consent was obtained from nurses to participate in the study after an explanation of the purpose of the study [1] [2] [3] [4] [5].

3.3. Phase 2 (Training)

The training program followed the study explanation and involved a team of professional experts in teaching and training.

The curriculum was developed by the investigator based on the recent standardized references in critical cardiac nursing (American Nurses Association) to promote nurses' 1) knowledge and 2) practice, It included Three parts regarding knowledge (lectures, tutorials, seminars).

It includes essential knowledge regarding the intensive cardiac care unit.

The practical part of the training program was carried out in the form of stations on different skills in the continuous professional development center (CPDC).

The skill lab and intensive cardiac unit stations include activities regarding tool 2 (procedures should be done post-operative patient endorsement in post-intervention).

3.4. Phase 3 (Evaluation)

Nurses in the study group were interviewed regarding immediate care in cardiac surgery and Knowledge after intervention (training).

Monitors were dedicated to filling in the same observation checklist that was used by the investigator in phase 1 (tool 2) during the morning and afternoon on shift after the intervention (training).

Material and supplies were prepared sufficiently by the hospital authority throughout data collection in both hospitals.

The study group was assessed three months after intervention to identify the impact of training on nurses using observation (checklist).

Data was analyzed following the same process that was used in Phase 1.

Data was categorized coded, and summarized in a master sheet then the result was presented in tables and graphs (computer).

4. Results

Descriptive analysis was conducted using the Chi-square test, and the difference in performance between the study group before and after the intervention was assessed by calculating the mean of the Chi-square, with significance set at $p < 0.05$.

5. Conclusions

The knowledge of most of the nurses was improved after the training program, especially to define, the causes, risk factors, symptoms, and complications of the disease.

Most of the nurses in the hospital had a more positive attitude regarding the effect of nursing knowledge on their performance.

The skills of nurses were improved after the training program, especially about devices (ventilators) of procedures (underwater seal drain) regarding nursing management.

Table 1 shows that a large percentage of nurses (67%) had good knowledge regarding this procedure and upgrade, 85% had very good scores in post-intervention while 2% had excellent cores. This means the training program is effective $\chi^2 = 196$ (p-value = 0.000).

6. Discussion

Cardiac patients require vigilant care, as nurses must stay alert and possess the ability to process and analyze patient data in order to make timely and informed decisions. This study's primary aim is to aid nurses in attaining this objective. Initially, an intervention was carried out among 98 nurses, the total number of nurses in the two cardiac centers of Alshaab and Ahmed Gasim, to enhance their knowledge and performance in managing issues related to open-heart surgery

Table 1. The impact of training on nurses' performance concerning vascular procedures in immediate care is evident. When the p-value is less than 0.005, their knowledge significantly improves, with post-intervention scores reaching "very good" levels ($\chi^2 = 196$, p-value = 0.000). Nurses effectively monitor arterial pressure and regularly analyze blood gases by sampling from an arterial line connected to a closed sterile system and a monitor, allowing them to assess oxygen levels.

Post percent (%)				Pre percent (%)				
Excellent	Very Good	Good	Poor	Excellent	Very Good	Good	Poor	
57.1	14.3	28.6	0.0	0.0	14.3	57.1	28.6	Peripheral pulses
14.3	0.0	85.7	0.0	0.0	0.0	14.3	85.7	Ultrasonic Doppler use
71.4	14.3	14.3	0.0	0.0	28.6	71.4	0.0	Start IV's
71.4	28.6	0.0	0.0	0.0	57.1	42.9	0.0	Central line maintenance
85.7	14.3	0.0	0.0	0.0	85.7	14.3	0.0	Infusion pumps
57.1	42.9	0.0	0.0	0.0	57.1	42.9	0.0	Administration of blood/blood product

Mean less than 5, p-value than 0.005.

Table 2. The effect of training on nurses' performance regarding urinary system procedures [4].

Pre percent (%)				Post percent (%)				
Excellent	Very Good	Good	Poor	Excellent	Very Good	Good	Poor	
28.6	42.9	28.6	0.0	0.0	71.5	28.5	0.0	Foley catheter insertion
28.6	28.6	42.9	0.0	0.0	57.1	42.9	0.0	Gu irrigation
0.0	14.3	0.0	85.7	0.0	32.5	0.0	67.5	Peritoneal dialysis
14.3	14.3	14.3	57.1	0.0	0.0	42.9	57.1	hem dialysis
28.6	71.4	0.0	0.0	0.0	14.5	84.5	0.0	Electrolyte imbalance/replacement

Table 3. Effect of training on nurses' performance regarding activities of living.

	Pre percent (%)				Post percent (%)			
	Poor	Good	Very Good	Excellent	Poor	Good	Very Good	Excellent
Safe environment	0.0	85.7	14.3	0.0	0.0	0.0	14.3	85.7
Communication and understanding	85.7	14.3	0.0	0.0	0.0	0.0	14.3	85.7
Eating and drinking	15.9	84.1	0.0	0.0	0.0	0.0	0.0	100.0
Personal hygiene	14.5	71.3	0.0	14.2	0.0	0.0	0.0	100.0
Mobilization	0.0	85.2	57.2	0.0	0.0	0.0	0.0	100.0
Physiotherapy	0.0	42.7	57.2	0.0	0.0	0.0	0.0	100.0
Daily sanitary	0.0	51.2	48.8	0.0	0.0	0.0	0.0	100.0
Reassurance	42.7	14.5	42.7	0.0	0.0	0.0	0.0	100.0
Condolences	85.5	14.5	0.0	0.0	0.0	0.0	28.6	71.4

patients. This includes improving their understanding of the nursing role and timely decision-making to prevent post-operative complications.

Table 2 shows that most of the nurses (69%) had good knowledge in the intervention phase, it also explained that (85%) of nurses improved. **Table 3** shows effect of training on nurses' performance regarding activities of living highly promotion in practice from poor score to excellent score in their activities which is a positive sign for the training program.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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