

## Effect of Educational Guidelines on Nurses' Performance regarding Caring of Patients with An Intra-Aortic Balloon Pump

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### Abstract

**Background:** Intra-aortic balloon pump (IABP) is the simplest, most cost-effective, easy to implant, and explant in the coronary catheterization laboratory by an interventional cardiologist and can effectively be managed in an intensive care unit. **Aim:** To evaluate the effect of educational guidelines on nurses' performance regarding caring for patients with an intra-aortic balloon pump. **Method:** A quasi-experimental, pre and post-test intervention research design was implemented to conduct the current study. The study was conducted in the Cardio-Thoracic unit at Benha University. In addition, open-heart units at Nasser Institute Hospitals, Egypt. A convenience sample of all available nurses (64) (23 at Benha University & 41 at Nasser Institute Hospitals). **Tools:** Two tools were used to collect data: (I) A Pre-designed Questionnaire Sheet consisted of two parts (II) Nurses' Observational checklist for intra-aortic balloon pump care. **Results:** Showed the studied nurses' total knowledge about caring for patients with an intra-aortic balloon pump, 62.5% of nurses had an unsatisfactory level of total knowledge to be satisfactory during immediate and two months post guidelines implementation among 89.1% & 81.2%, respectively, while 67.2% of nurses had an incompetent level of total practice to be competent during immediate and two months post guidelines implementation among 92.2% & 79.7%, respectively and there was a highly statistically significant positive correlation between total knowledge and total practice at the post and follow up guidelines implementation. **Conclusion:** there was a statistically significant improvement in nursing performance regarding caring for patients with an intra-aortic balloon pump immediately after & 2 months post-guidelines implementation compared to pre-guidelines implementation. **Recommendations:** Improve the Practices of intensive care unit nurses through continuing educational sessions about intra-aortic balloon pumps to update their knowledge and practice.

**Keywords:** Educational guidelines, Intra-aortic balloon pump, Nurses' performance.

### Introduction

The care of critically ill patients can be very challenging due to altered ventricular filling, poor myocardial perfusion, abnormal cardiac rhythm, and severe valvular lesions; all contribute to a complex interaction. Critically ill patients require continuous assessment of their cardiovascular system to diagnose and manage their complex medical conditions. As the complexity of the patient's status increases,

invasive devices may be utilized to provide a more advanced assessment and to guide therapeutic interventions (Shaik et al., 2021).

One of these devices is Intra-aortic balloon pumping, considered the first hemodynamic support device. It was developed in the 1960s to help improve the myocardial oxygen supply/demand ratio and circulatory support. It remains the most widely used mechanical

cardiac support device because of its simplicity, ease of insertion, and long clinical track record. As well, IABP is a mechanical device that increases myocardial oxygen perfusion while at the same time increasing cardiac output. Increased cardiac output increases coronary blood flow and myocardial oxygen delivery (**Baldetti et al., 2021**).

The primary purpose of IABP is the support the failing heart by simultaneously increasing myocardial oxygen supply and decreasing myocardial oxygen demand while at the same time increasing cardiac output. Increasing cardiac output increases coronary blood flow, and myocardial oxygen delivery increases. It remains the most widely used mechanical cardiac support device due to its simplicity, ease of insertion, and long clinical track record (**Asber et al.,2020**).

Nursing care for patients connected with IABP involves care of the pump and assessing patients from a cardiovascular and hemodynamic perspective. The management of the pumping console and its timing functions are performed by the critical care nurse caring for the patient (**Ali & Ali, 2020**). Multiple factors may affect

The IABP's efficacy includes positioning the balloon within the aorta, the balloon displacement volume, inflation/deflation timing, signal quality, the patient's cardiac function, and hemodynamic variables, including circulating blood volume, blood pressure, and vascular resistance. The critical care nurse must be aware of these factors to adequately assess for and ensure optimal IABP performance (**Neelavathi et al., 2021**).

Critical care nurses have a vital role after catheter insertion involves checking the insertion site every hour for bleeding or hematoma formation and documenting findings. In addition, the full blood count and anticoagulation screen are observed for a decrease in hemoglobin and platelet count or

evidence that the patient is receiving too high a dose of anticoagulant. The insertion site dressing should be transparent, enabling visual inspection of the site. Change of dressing is per clinical need and hospital guidelines; an aseptic technique must be employed to minimize the risk of infection (**Ahmad et al., 2021**).

The frequency of monitoring depends on the patient's clinical condition and as acuity determines. Indications of bleeding may manifest as oozing, bruising, or hematoma formation at the insertion site or by swelling in the thigh area. The pump should be checked hourly for correct settings such as timing, balloon inflating to its maximum capacity, and the trigger at the correct setting (**Kao et al.,2021**).

#### **Significant of the study:**

Exceeding 23 million populations worldwide affects heart failure and fatal diseases. According to the American College of Cardiology, heart failure treatment and medical devices have been a major improvement in the last several decades. American heart association, 260,000 patients suffer from advanced cardiac heart failure. The latest guidelines for cardiac transplantation gold standard therapy for heart failure / myocardial infarction patients. Mechanical circulatory support devices have been used to continue organ function. Intra-aortic balloon pumps are mostly used for temporary circulatory support in cardiac patients; today, more than 160000 patients worldwide receive this therapy annually (**Ghafoor et al., 2022**).

#### **Aim of the study:**

The present study aimed to evaluate the effect of educational guidelines on nurses' performance regarding caring for patients with an intra-aortic balloon pump

#### **Research hypotheses:**

The following research hypotheses were formulated to fulfill the aim of the study:

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H1: Nurses' level of knowledge score regarding an intra-aortic balloon pump could be improved after implementing educational guidelines than before.

H2: Nurses' level of practice score related to caring for a patient with an intra-aortic balloon pump could be improved after implementing educational guidelines than before.

H3: There could be a significant correlation between nurses' knowledge and their practice for an intra-aortic balloon pump patient.

## **Subjects and Method**

### **Research design:**

A quasi-experimental design was used to conduct the current study.

### **Study setting:**

The study was conducted in the Cardio-Thoracic unit at Benha University Hospital. In addition, open-heart units at Nasser Institute Hospitals, Egypt.

**Sample type:** Convenience sample

### **Sample size:**

All available nurses (64) (23 nurses at Benha University & 41 nurses at Nasser Institute Hospitals) who were caring for patients with intra-aortic Balloon pumps regardless of their age, gender, qualifications, and years of experience.

### **Tools of data collection:**

Two main tools were used for data collection developed by the researcher based on a related literature review: **Rasaria & Sawant (2019) & Neelavathi, (2018)**

**Tool I: Structured interview Questionnaire Sheet:** It was designed from two parts:

**Part one: Demographic data related to nurses,** such as gender, age, level of education, years of experience, residence, and previous training.

**Part two: Nurses' Knowledge assessment (pre, immediate after, and after two**

**months):** It consisted of 30 close end questions divided into four domains as heart anatomy domain which included five questions as The heart is composed of three main layers, Left ventricle is from the heart four chambers, intra-aortic balloon pump domain which included 11 close end questions as quick intra-aortic balloon pump deflation will decrease, the correct position for intra-aortic balloon catheter in, ) intra-aortic balloon pump is defined, nursing care domain which included nine close end questions as pre-procedure nursing care, necessary equipment that are prepared during intra-aortic balloon, weaning & removal of intra-aortic balloon domains which included five close-ended questions as after catheter removal, the nurse should, the nurse should be done after weaning.

### **Scoring system**

The nurses' correct answers were given (1) score, and incorrect or don't know were given (0) scores. The total score was summed, and if less than < 80 % was considered unsatisfactory, the scores equal or more than  $\geq$  80 were considered satisfactory knowledge.

**Tool II: Nurses Observational checklist for intra-aortic balloon pump care (pre, immediate after, and after 2 months):- this tool adapted from Saskatoon health region (2018), (McGlone & Salder, 2017) & (Urden et al., 2014)** and modified by the researcher to assess nurses' practice, which included five domains, as pre procedure care domain which included ten items as perform hand hygiene and wear ppe in appropriate way, identify the patient through ask patient about name & identification bracelet, perform assessment to patient's cardiovascular system & hemodynamic status, care of the patient during intra-aortic balloon pump therapy domain which included ten items as maintain

prophylactic anticoagulation, monitor for balloon rupture and vascular complications, care of the patient after intra-aortic balloon pump therapy domain which included five items as change dressing at insertion site q 24 h or according to hospital policy with strict aseptic technique, assisting with weaning of iab catheter domain which included two items as monitoring heart rate & blood flow stability, assisting with removal of IAB catheter domain which included 16 items as monitoring blood flow at pump removal site, document in nursing flowsheet.

**Scoring system:**

Each item was evaluated as "done," which was taken "one score," and "not done" was taken "zero scores." These scores were summed up and converted into a percentage score. It was classified into two categories:

- Competent practices: if score  $\geq$  85%.
- Incompetent practices: if score  $<$  85%.

**Validity and Reliability:**

It was ascertained by a group of experts in Critical Care and Medical-Surgical Nursing (5) to assess the adherence of a measure to existing theory and knowledge of the concept being measured (construct) and the extent to which the measurement covers all aspects of the concept being measured (content). Reliability is checking the consistency of results across time, different observers, and parts of the test itself; it was measured through the coronach alpha test.

<b>Tool</b>	<b>Cronbach score</b>	<b>Estimated</b>
Knowledge	0.810	Good reliability
Practice	0.876	Good reliability

**Ethical Considerations:**

The ethical research Committee of Faculty of Nursing, Banha University, approved the

study. Approval to carry out this study was obtained from the dean of the faculty of nursing and the directors of Banha University Hospital. The researcher clarified the study's aim and objectives to nurses included in the study before starting. Verbal approval was obtained from the nurses before inclusion in the study. They ensured that all the gathered data was confidential and used for research only. The researcher assures anonymity and confidentiality of the subjects' data included in the study. The researcher was assuring no harm to the subjects included in the study. The nurses were informed that they could withdraw from the study at anytime.

**A Pilot Study:**

The pilot study was carried out on seven nurses at the previously mentioned settings who represent 10% of the estimated sample size, to test the applicability of the constructed tools and the clarity of the included questions related to nurses' knowledge and practice. The pilot also estimated the time needed for each subject to complete the questionnaire. According to the results of the pilot, neither corrections nor omissions of items were performed, so the nurses were included in the pilot study, sharing in the study sample.

**Fieldwork:**

**Assessment of nurses (Pre):**

The researcher explained the study's aim and the tools' components to the studied nurses. The researcher distributed a structured interview questionnaire to the studied nurses to assess their knowledge (**Tool I**), and the researcher used an observational checklist to observe their practices dependent on a previously designed checklist regarding caring for patients with an intra-aortic balloon pump (**Tool II**). The educational program was prepared and designed according to the nurse's needs and the pretest.

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### **Intervention and evaluation phase:**

The researcher divided the studied nurses into five groups, each trained in three one-hour sessions in the form of lectures, seminars, on-the-job training and demonstration using pamphlets, and two practice sessions. The nurses were informed about their allocated group via an invitation letter. They were also notified about the time and place of training. In the hospital conference hall, researcher-led theoretical sessions and the two practice sessions were applied in the unit over ten continuous weeks on Saturday, Wednesday, and Thursday. This one-hour session was held every week from 10 a.m. to 11 a.m.

### **The Training Program:**

The researchers developed the training program for nurses after reviewing the literature to caring for patients with an intra-aortic balloon pump

### **The training program's content:**

1st session: Anatomy and physiology of heart: concept, definition, heart valves, heart function, blood vessels, heart chambers, heart disease, pathological heart disease, congenital heart disease.

2<sup>nd</sup> session: Intra-aortic balloon pump: component of intra-aortic balloon pump, indications, physiology of intra-aortic balloon pump, function of intra-aortic balloon pump.

3rd session: Intra-aortic balloon pump: advantage of intra-aortic balloon pump, benefits of intra-aortic balloon pump, barriers using of intra-aortic balloon pump, complications of intra-aortic balloon pump

Two practical sessions: Skills of nurses related to using intra-aortic balloon pump as nurse role before the operation, during operation and post-operation, weaning from intra-aortic balloon pump, and instruction post discharge from hospitals.

**Evaluation phase for nurses (immediately after and after two months):**

In the last session, the researcher summarizes the training program, asks nurses for any questions and feedback, and opens the discussion. Then ask nurses to complete the post-test questionnaire and assess the observation checklist using the same one used at preintervention, then reevaluate the nurses after two months (**Tool I & II**).

Researchers depended on multi-education methods such as group discussion, brain storming and reflective thinking and different illustrative methods such as PowerPoint, photos, and videos.

### **Statistical Analysis**

The collected data were coded and entered into the statistical package for social sciences (SPSS) (SPSS Inc; version 24; IBM Corp., Armonk, NY, USA). After completing the entry, the data was explored to detect any errors. Then, it was analyzed by the same program for presenting frequency tables with percentages. Qualitative data was presented as a number and percent. Furthermore, quantitative data was described as mean or standard deviation, as appropriate. The chi-square test was used to examine the difference between qualitative variables, and the paired t-tests for comparing the mean scores between two periods within the same group. Correlation coefficients measure the strength of a relationship between two variables. The results were considered statistically significant at  $P \leq 0.05$  and highly significant at  $P < 0.01^{**}$ .

### **Results:**

**Table (1):** Shows that 85.9% were females., and 35.9% were between the age of 20 to less than 30, with a mean age of  $36.9 \pm 3.85$ . As regards their qualifications, 50.0% of nurses graduated from a technical institute. 57.8% of them reside in rural areas. Their Nursing Experience Years was 11 to 15 years among 31.2%. In addition, their Cardio-Thoracic Unit



Experience Years was 2 to less than five years among 39.1%.

**Table(2):** Clears that there was a highly statistically significant difference ( $p<0.001^{**}$ ) between pre with immediate and two months post guidelines implementation. The total mean score immediately post-guidelines was  $27.95\pm 5.07$  to be  $24.45\pm 3.43$  after two months of implementation but still significantly higher than pre-guidelines implementation, which was  $16.65\pm 1.84$ .

**Figure (1):** Illustrates the difference between the studied nurses regarding their total knowledge about caring for patients with an intra-aortic balloon pump, where 62.5% of nurses had an unsatisfactory level of total knowledge to be satisfactory during immediately and two months post guidelines implementation among (89.1% & 81.2%, respectively).

**Table(3):** Clears that there was a highly statistically significant difference ( $p<0.001^{**}$ ) between pre with immediate and two months post guidelines implementation. The total mean score immediately post-guidelines was  $45.96 \pm 35.41$  to be  $42.89\pm 35.5$  after two

months of implementation but still significantly higher than pre-guidelines implementation, which was  $25.66\pm 35$ .

**Figure (2):** Illustrates the difference between the studied nurses regarding their total knowledge about caring for patients with an intra-aortic balloon pump, where 67.2% of nurses had an incompetent level of total practice to be competent during immediate and two months post guidelines implementation among (92.2% & 79.7%, respectively).

**Table(4):** Represents no significant statistical correlation between the total knowledge of the studied nurses and their total practice at pre guidelines implementation with ( $r=0.061$ ,  $p=0.643$  n.s). At the same time, it clarifies a highly statistically significant positive correlation between total knowledge and total practice of the studied nurses at post-guidelines implementation with ( $r=0.634$ ,  $p<0.002^{**}$ ). In addition, illustrates a highly statistically significant positive correlation between total knowledge and total practice of the studied nurses at follow-up guidelines implementation with ( $r=0.498$ ,  $p<0.001^{**}$ ).

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**Table (1): Distribution of the studied nurses regarding socio-demographic characteristics (N=64).**

<b>Personal information</b>	<b>N</b>	<b>%</b>
<b>Gender</b>		
Male	9	14.1
Female	55	85.9
<b>Age</b>		
20 - < 30 years	23	35.9
30 - < 40 years	18	28.1
40 - < 50 years	16	25.0
50 - 60 year	7	11.0
<b>Mean ± SD</b>	36.9 ± 3.85	
<b>Educational Level</b>		
Nursing Diploma	17	26.6
Technical Institute	32	50.0
Bachelor of Nursing	11	17.2
Postgraduate (n=4)		
Diploma	2	3.2
Master	1	1.5
Doctorate	1	1.5
<b>Residence</b>		
Urban	27	42.2
Rural	37	57.8
<b>Nursing Experience Years</b>		
1 - 5 years	16	25.0
6 - 10 years	19	29.7
11 – 15 years	20	31.2
16 – 20 years	9	14.1
<b>Cardio-Thoracic Unit Experience Years</b>		
< 2 years	6	9.4
2 - < 5 years	25	39.1
5 - < 10 years	21	32.8
> 10 years	12	18.7

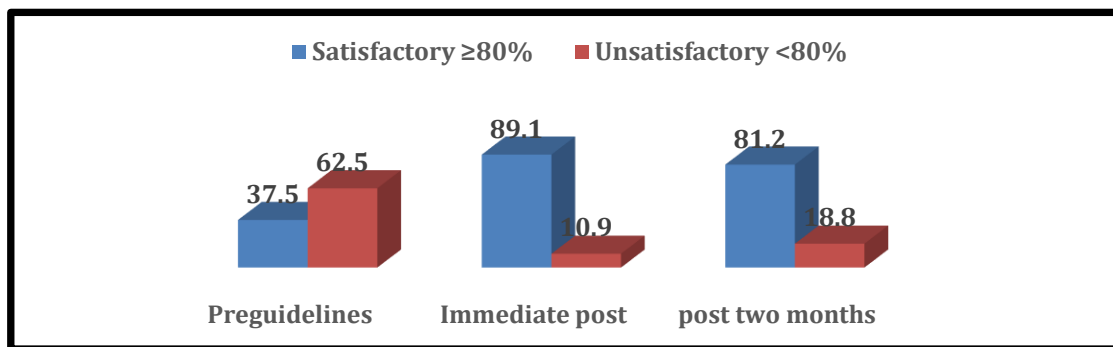
**Table (2): Difference between the mean score of total knowledge among the studied nurses throughout different study phases (n=64).**

Total knowledge	Pre-guidelines (n=64)	Immediate Post guidelines (n=64)	Two months Post guidelines (n=64)	t-test P value (1)	t-test P value (2)
	Mean ± SD	Mean ± SD	Mean ± SD		
Basic knowledge related to heart anatomy & intra-aortic balloon pump	6.90±1.33	14.75±1.76	11.45±6.43	<b>-47.21</b> <0.001**	<b>-27.36</b> <0.001* *
Knowledge related to nursing care (pre, during, and after insertion)	6.30±3.81	8.50±0.70	8.40±0.84	<b>-4.61</b> <0.001**	<b>-4.40</b> <0.001* *
Knowledge related to nursing care during weaning & removal of intra-aortic balloon	3.45±2.19	4.70±0.42	4.60±0.56	<b>-4.56</b> <0.001**	<b>-4.20</b> <0.001* *
Total	16.65±1.84	27.95±5.07	24.45±3.43	<b>-49.13</b> <0.001**	<b>-33.91</b> <0.001* *

**\*\*Highly significant at p <0.001.**

(1) Difference between knowledge Pre guidelines and immediately post guidelines

(2) Difference between knowledge Pre guidelines and two months post guidelines



**Figure (1). The difference between the studied nurses regarding their total knowledge about caring for patients with an intra-aortic balloon pump (n=64).**



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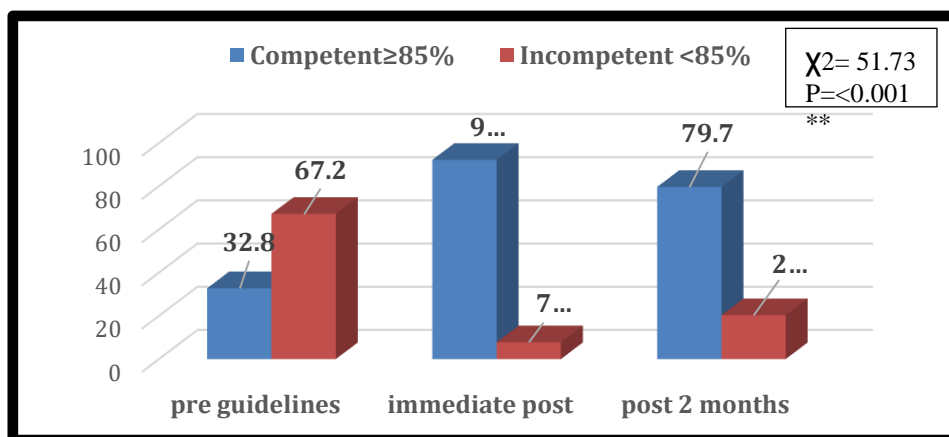
**Table (3): Difference between the mean score of total practice skills regarding caring for patients with an Intra-aortic balloon pump (n=64).**

Total practice	Pre-guidelines (n=64)	Immediate Post guidelines (n=64)	Two months Post guidelines (n=64)	t-test P value (1)	t-test P value (2)
	Mean ± SD	Mean ± SD	Mean ± SD		
Pre-procedure care	4.00±7.07	8.45±6.43	7.45±6.50	<b>-5.03</b> <0.001**	<b>-3.90</b> <0.001**
Perform a physical assessment of the patient every 15-60 minutes	4.10±5.51	5.50±4.98	8.40±0.84	<b>-2.03</b> 0.046*	<b>-6.24</b> <0.001**
Care of the Patient during Intra-Aortic Balloon Pump Therapy	5.15±6.85	8.44±6.44	7.39±6.51	<b>-3.84</b> <0.001**	<b>-2.61</b> 0.011*
Care of the Patient after Intra-Aortic Balloon Pump Therapy	2.67±3.29	4.13±2.92	3.88±2.99	<b>-3.55</b> <0.001**	<b>-2.94</b> 0.004*
Assisting with weaning of IAB Catheter	1.04±1.21	1.74±0.75	1.38±0.87	<b>-4.62</b> <0.001**	<b>-2.24</b> 0.028*
Assisting with the Removal of the IAB Catheter	8.20±11.03	14.45±10.67	11.39±10.76	<b>-4.53</b> <0.001**	<b>-2.31</b> 0.023*
Total	25.66±35.83	45.96±35.41	42.89±35.50	<b>-4.53</b> <0.001**	<b>-3.84</b> <0.001**

\*Significant at p <0.05 \*\*Highly significant at p <0.001.

(1) Difference between practice Pre guidelines and immediately post guidelines

(2) Difference between practice Pre guidelines and two months post guidelines



**Figure (2): Difference between the studied nurses regarding their total practice skills about caring for patients with an Intra-aortic balloon pump (n=64).**

**Table (4): Correlation Matrix between study variables pre-guidelines implementation (n=64).**

		Practice pre	Practice post	Practice follow up
Knowledge pre	r. p	0.061 0.643 <sup>n.s</sup>		
Knowledge post	r. p		0.634 0.002**	
Knowledge follows up	r. p			0.498 0.001**

**\*\*Highly significant at  $p < 0.01$ . Not significant at  $p > 0.05$ . r Pearson correlation**

**Discussion:**

Intra-aortic balloon pump supports the heart, which increases oxygen perfusion and supports heart circulation in the time crisis of oxygen. As mechanical devices may be considered life-saving devices, nurses should have no proper knowledge and use the standardized guidelines to reduce complications and length of stay in the hospital, as it becomes the nurse's responsibility to provide care (**Rhee & Rodriguez, 2022**).

Regarding the age of the studied nurses, the current study showed that more than one-third were between ages 20 to less than 30, with a mean age of  $36.9 \pm 3.85$ . From the researcher's point of view, young age might be due to the majority of nurses' work power that providing direct care for the patient in the nursing field in our study are young. In contrast, higher age category 'senior nurses' perform administrative roles. On the other hand, this finding disagrees with a study by **Mohamed et al. (2020)**, who conducted a study about the " Assessment of nurses' knowledge and practices regarding care for patients with cardiogenic shock" and reported that the majority of ICU nursing staff were 26-30 years.

Regarding gender and qualifications of the studied nurse, half of the studied nurses graduated from a technical institute. More than half of them reside in rural areas. This finding is in the same line with a study by **Rasaria & Sawant (2019 A)**, who conducted a study about "The role of nurses in patients with intra-aortic

balloon pump: involvement, understanding, and management of patient's comfort " and revealed that the majority of the studied sample were female, more than half of them were having institute of nursing education.

Related to nursing experience, the result of the present study illustrated that less than one-third of the studied nurses had experience from 11 to 15 years. In addition, about two-fifths of them were 2 to less than five years working at Cardio-Thoracic Unit. In contrast with the study by **Abdelhalim et al. (2019)**, who conducted a study about " Nurses' Performance Regarding ICU Devices Alarms (intra-aortic balloon pump) and presented those two-thirds of studied nurses had experience equal and more than 15 years old.

The present study illustrated that the majority of the studied nurses didn't attend any training courses related to intra-aortic balloon pumps; this result might be related to the inability of some nurses to attend training courses due to lacking nurses' number; also, they may feel that attending courses has little or no value for them and not affecting their salary. This was finding harmony with the study by **Rushdy et al. (2015)**, who conducted a study about " Nurses' knowledge and practice regarding care of patients connected to intra-aortic balloon pump at Cairo University hospitals " and reported that most of the studied nurses didn't get training courses about caring

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for the patient with an intra-aortic balloon pump.

Regarding the mean score of total knowledge related to nursing care, the current study's result displayed a highly statistically significant difference between pre with immediate and two months post guidelines implementation. This may be related to the studied nurses being able to learn and get correct information about Intra-aortic balloon pumps as a practice of their daily work. Also, it might be related to the fact that less than half of the studied nurses who were less than 30 years old might have good readiness for learning new things. This finding is in the same line with the study by **Thapa & Neupane (2018)**, who conducted a study about "Intra- Aortic Ballon Pump Implantation Therapy" and reported that improvement level of knowledge about nurses caring for a patient with Intra-Aortic Balloon Pump (IABP) after the program and that there was a highly statistically significant difference between pre with immediate and two months post teaching program.

Regarding the mean score of total practice skills among studied nurses caring for patients with an Intra-aortic balloon pump, the present study displayed a statistically significant difference between pre with immediate and two months post guidelines implementation. This finding is consistent with the study by **AlyMahgoub, & Hafez (2017)** entitled "Effect of Implementing Intra-Aortic Balloon Pump Teaching Program on Critical Care Nurse's Knowledge and Practice " and showed that the improvement nurses' practice for Care of the Patient after Intra-Aortic Balloon Pump after implementing designed teaching program and there was a highly statistically significant difference between pre with immediate and post guidelines implementation.

Regarding assisting with the removal of IAB catheter, the current study's result showed a statistically significant difference between pre with immediate and two months post guidelines implementation. This outcome matched the study by Ferreira et al. (2018), who conducted a study about the "Effect of a perioperative intra-aortic balloon pump in high-risk cardiac surgery patients." It displayed a highly statistically significant difference ( $p < 0.001^{**}$ ) between pre and post guidelines implementation.

Regarding total practice skills about caring for patients about Intra-aortic balloon pumps, the present study illustrated that more than two-thirds of the studied nurses had incompetent levels of total practice, to be the majority of them competent during immediate and two months post guidelines implementation. This result might be due to the effect of explaining the correct steps of Intra-aortic balloon pump nursing procedures in the educational program with colored pictures illustrating each step, using data show, and implementing these steps on the patient for all study groups. This finding is in harmony with the study by **Neelavathi (2018)**, who conducted a study about the "Effectiveness of capacity building program regarding the care of patients with Intra Aortic Balloon Pump (IABP) upon the level of knowledge and practice among Nurses" and showed that the majority of the studied nurses had statistically significant improvement in their practice post the program implementation, while this improvement lowered slightly post three months at follow up, which supported the study hypothesis.

Concerning the correlation matrix between total knowledge and total practice regarding intra-aortic balloon pumps, the present study illustrated a highly statistically significant positive correlation between total knowledge and total practice of the studied nurses at follow-up

guidelines' implementation. This may be related to the lack of nurses' knowledge scores effects on their practice regarding care for patients with intra-aortic balloon pump care. So, we can conclude that the lack of nurse knowledge negatively affects their practice regarding care for patients with intra-aortic balloon pump care and their outcomes. All new nurses require training programs in the coronary care unit and continuing nursing education regarding care for patients with intra-aortic balloon pump care. This result is in the same line with the study done by **Huang & Hsu (2017)**, who conducted a study about "Clinical teaching program: standardized operating procedure for intra-aortic balloon pump " and showed that there were no statistically significant correlations between total scores of nurses' knowledge, and practice regarding care of patients undergoing intra-aortic balloon pump.

#### **Conclusion**

Less than two-thirds of nurses had unsatisfactory level pre-educational guidelines of total knowledge and improved to be satisfactory during immediate and two months post guidelines implementation among most of them. Also, more than two-thirds of them had an incompetent level of total practice. They improved to be competent during immediate and two months post guidelines implementation among the majority and more than three-quarters of them, respectively.

#### **Recommendations:**

1. Improve Practices of intensive care unit nurses through continuing educational sessions about intra-aortic balloon pumps to update their knowledge and practice.
2. Encourage and help nurses to attend national and international conferences, workshops, and training courses affiliated with the Ministry of Health related to nursing care for patients with an Intra-Aortic Balloon Pump.
3. Strict observation of nurses during work and continuous evaluation of their performance.
4. Management of patients with an Intra-Aortic Balloon Pump should be included in the curriculum of all nursing sectors and institutes as a minor specialty.
5. Further study should be conducted to evaluate the effect of implementing nursing guidelines regarding caring for patients with an Intra-Aortic Balloon Pump on nurses' performance.
6. To generalize the findings, this study could be replicated to a larger sample of cardiac critical care nurses in different settings.

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## تأثير إرشادات تعليمية على أداء التمريض فيما يتعلق برعاية مرضى مضخة بالون الأورطي عبد الرحمن صلاح محمد حسن- أمل سعيد طه- رشا فتحي محمد

تعد مضخة بالون الأورطي هي الأداة الأبسط والأكثر فعالية من حيث التكلفة وحيث أنها سهلة الإدخال والإزالة في جرة قسطرة الشريان التاجي من قبل أخصائي أمراض القلب لذلك هدفت الدراسة إلى تقييم تأثير إرشادات تعليمية على أداء التمريض فيما يتعلق برعاية المرضى بمضخة بالون الأورطي. أظهرت نتائج الدراسة أن هناك تحسناً إحصائياً ملحوظاً في إجمالي معلومات وممارسات التمريض بعد تنفيذ الإرشادات الخاصة بمضخة بالون الأورطي. مع اختلاف إحصائي عالي هام قبل وبعد مباشرة ومتابعة بعد شهرين من تنفيذ الإرشادات. فيما يتعلق بالعلاقة بين البيانات الشخصية، كانت هناك علاقة ذات دلالة إحصائية عالية بين إجمالي معلومات وممارسات التمريض الخاضعات للدراسة حول رعاية المرضى المتصلين بمضخة بالون الأورطي خلال مراحل تنفيذ الإرشادات (قبل وبعد مباشرة متابعة بعد شهرين) وأعمارهم، مؤهلاتهم، سنوات الخبرة في وحدة القلب والصدر. بالإضافة إلى ذلك، تم العثور على علاقة ذات دلالة إحصائية مع سنوات الخبرة في التمريض والدورات التدريبية التي تم حضورها. فيما يتعلق بالارتباط بين إجمالي المعلومات والممارسات حيث كان هناك ارتباط إيجابي ذو دلالة إحصائية عالية بين إجمالي المعلومات والممارسات بعد تنفيذ الإرشادات مباشرة وبعد شهرين. وأوصت الدراسة بتوفير إرشادات موحدة لتصحيح الممارسات السيئة لتمريض وحدة العناية المركزة.