

Factors Affecting Nurse's Performance Regarding Post-Operative Care of Patient with Open-Heart Surgery

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Abstract

Background: There are many factors that affecting nurse's performance regarding post-operative care of patient with open-heart surgery. This factor should be detected and solved to improve quality of nursing care to improve outcome of patient. **Aim:** This study aims at assessing factor affecting nurses' performance regarding post-operative care of patient with open-heart surgery through the following: level of knowledge, practice and attitude in addition to factors affecting nurses' performance regarding post-operative care of patient with open-heart surgery. **Study design:** descriptive research design was selected to fulfill the aim of the study. **Setting:** This study was conducted in post cardiothoracic ICU at academic institute for heart surgery at Ain shames university hospital. **Subject:** A convenient sample of all available nurses (36 nurses) working in study setting (ICU unit) + (intermediate unit). **Data collection tools:** **A-Self-administered nurses' questionnaire** to assess nurses demographic data of nurses under study, level of nurses' knowledge, attitude and factors affecting nurses' performance regarding post-operative care of patient with open-heart surgery. **B- Nurses' observational checklist** to assess nurses' level of practice regarding post-operative care of patient with open-heart surgery. **Result:** The result of this study revealed that about tow third of studied nurses' got satisfactory level of knowledge regarding post-operative care of open- heart surgery patient, about tow third of nurses' under the study had positive attitude toward post-operative care of open- heart surgery patient and about more than have of nurses' under the study got total satisfactory level of practice toward post-operative care of open- heart surgery patient. **Recommendation:** In service, training program/courses must be developed based on need assessment for nurses' regarding critical management of post-operative patient with open-heart surgery.

Key Words: Factor Affecting, Open Heart Surgery, Nurses Performance.

Introduction

Open-heart surgery plays an important role in the management of wide range of cardiovascular diseases (CVD) and encompasses the care of a patient with greater acuity and complexity. Cardiac surgery, including coronary artery bypass grafting (CABG) and heart valve surgery represent the most common

classes of surgical procedure performed globally. Nearly 800.000 cardiac surgical procedures are performed annually worldwide (Abdallah, 2015).

Open-heart surgery is any type of surgery where the chest is cut or open and surgery is performed on the muscles, valves, or arteries of the heart. According to the National Heart, lung, and Blood

Institute (NHLBI), Coronary artery bypass grafting (CABG) is the most common type of heart surgery done on adults. (National Heart, Lung and Blood Institute (NHLBI), 2018).

Open-heart surgery is a major operation that requires close monitoring and immediate post-operative support. It is normal for a person to remain in the intensive care unit (ICU) for a couple of days after the procedure to receive further care. All forms of open-heart surgery come with risks for infections, organ damage and stroke. The severity of these risks depends on the individual. People with a more advanced heart condition face a higher risk of complications during and after surgery (Omdahl, Eggen, Bonner, Laizzo & Wika 2016; Thomas & Bonow 2019).

Nurse should facilitate care continuity to focus on improving patient outcomes while reducing costs to ensure that best practice standards are used and patient safety is enhanced. One example of ensuring best practices and patient safety is early extubation after open-heart surgery, which is a critical component of fast track protocols that reduces, may reduce the development of pulmonary complications in the postoperative period while decreasing overall length of stay in the hospital. Reduce pulmonary complications in patients in the cardiac surgery intensive care unit (Thomas & Bonow, 2019).

There are many factors affecting nurses' performance, as shortage of nurses' is not peculiar to developing countries as it is also a problem in developed countries. For instance, shortages of nurses' have been reported that the staff shortages are likely to grow to 30% by the year 2020. Inadequate resources, lack of space compromises

patients' rights to privacy, long working hours, Positive interaction and cooperation with patients, stabilization in the hospital and job satisfaction (NHLBI, et al., 2018).

Significant of the study

There has been growing interest in open-heart surgery as one of the most performed operation in Egypt, with a high overall survival. Moreover, it has been evident that the post-operative open-heart patients are at high risk for mainly of post-operative complication mainly respiratory ones, wound infection, bleeding especially from chest tube and renal dysfunctions. These complications have its impact on the patient and his or her family. World health organization records (WHO) cardiac deaths reached 107,232 (23, 14%) of all deaths, this ranks Egypt 23th country in the world and makes heart disease the first killer in Egypt in 2013 (World Health Organization Records, Egypt, 2014).

Nurses play a vital role in the prevention of surgical complications in patients with open-heart surgery. By managing disease processes, through education and assessment. The unique challenge for the critical care nurse is to integrate theoretical knowledge, assessment skills, and problem-solving ability to provide optimal nursing care and maintain high quality outcomes. (Barr, Fraser & Puntillo 2013).

Therefore, this study aimed to assess the nurses' performance (knowledge, practice and attitude) regarding post-operative care of patient with open-heart surgery and assessing factors affecting it for enhancing the quality of care for such group of patients and finally it will generate attention and motivation for further researchers.

Aim of the study

This study aims at assessing factor affecting nurses' performance regarding post-operative care of patient with open-heart surgery through the following:

Assessing the nurses' knowledge regarding post-operative care of patient with open-heart surgery.

Assessing the nurses' practice regarding post-operative care of patient with open-heart surgery.

Assessing the nurses' attitude regarding post-operative care of patient

Assessing factors affecting nurses' performance regarding post-operative care of patient with open-heart surgery.

Research questions:

This study is based on answering the following research question:

What is the nurses' knowledge regarding post-operative care of patient with open-heart surgery?

What is the nurses' practice regarding post-operative care of patient with open-heart surgery?

What is the nurses' attitude regarding post-operative care of patient with open-heart surgery?

What are the factors affecting nurses' performance regarding post-operative care of patient with open-heart surge?

Operational definitions:

Performance:

It means knowledge, practice and attitudes of nurses' regarding Post-operative care of patient with open-heart surgery, including immediate post-operative period in intensive care unit after open –heart surgery and intermediate.

Open- heart surgery:

It refers to post coronary artery bypass graft and valve replacement surgeries, Mitral valve regurgitation (MR), Mitral valve prolapse (MVP), Aortic stenosis (AS), Aortic regurgitations (AR), Pulmonary valve stenosis (PVS), Pulmonary regurgitation (PR), Tricuspid valve stenosis (TS) and Tricuspid regurgitation (TR) within 10 days of the surgery.

This study was portrayed under four main design as the following:

- 1- Technical Design
- 2- Operational Design
- 3- Administrative Design
- 4- Statistical Design.

Technical Design:

The technical design includes setting, subjects for the study and tools of data collection used in this study.

Research Design: A descriptive research design was selected to fulfill the aim of the study and answer the research questions.

Setting:

This study was conducted in post cardiothoracic ICU at academic Institute for heart surgery at Ain shames university hospital. The setting includes ICU and intermediate care unit, intensive care unit had 10 beds receive immediate post open-heart surgery patient from zero day after transfer from operation room till third day (if patient didn't have any complication) and intermediate care unit, its capacity 5 beds and receive patient after 3 days who need close observation and monitoring only.

Subjects:

A convenient sample included all available nurses (36 nurses) working in study setting caring of patient with open-heart surgery and agreed to participate in the study.

Tool for data collection:

Data were collected by using the following tools:

I - Self-administered nurses' questionnaire: (Appendix I)

It was developed by the investigator in Arabic language to assess nurses' knowledge regarding post-operative care of patient with open-heart surgery based on review of relevant and recent literatures.

It consisted of four parts:**Part one:**

It was concerned with assessment of demographic data of nurses under study including age, gender, level of education, marital status, year of experiences, previous training courses on

post-open heart surgery nursing care, effect of training course on nurses' performance. (8 items).

Part two:

It was concerned with assessment of level of nurses' knowledge regarding post-operative care of patient with open-heart surgery. It was developed by the researcher based on review of related literatures (**Brian Griffin & Topol, 2004; Mousa, 2014; David, Luca, Stephen & John, 2016; Rosengart & Anand, 2017**). It consisted of (63) questions, (20) of them were MCQ and (43) of them true & false statements, it include assessment of nurses' level of Knowledge regarding post-operative care of patient with open-heart surgery including; the anatomy and physiology of heart coronary artery and valves of heart (9 items), knowledge about open-heart surgery (definition, purpose, classifications, indications, complications) (12 items), pre-operative nursing care of open-heart surgery patient (15 items) and post-operative nursing care (27 items).

Scoring system: each correct answer & was given one score and zero for incorrect answer with total score of 13 grades, the level of knowledge is divided into the following categories;

$\geq 80\%$ (≥ 50 grades) was considered satisfactory.

$< 80\%$ (< 50 grades) was considered unsatisfactory.

Part three:

It was concerned with assessment of nurses' attitude regarding post-operative care of patient with open-heart

surgery. It was adapted from **Curtis and Tuzo (2016); Heulwen, Morgan and Samuel, (2016)** and modified by the researcher after reviewing the related literature (**Johan, et al., 2014**). It consisted of (17) sentences and response is grading according to Likert scale (agree-neutral & disagree).

Scoring system: Scoring for each sentence was as the following; agree responses was given one grade while disagree/neutral responses were given zero taking into consideration that agree was considered a positive response while neutral and disagree responses were considered negative response.

Part four:

It was concerned with assessment of the factors that affecting nurses' performance as reported by nurses' under study regarding post-operative care of patient with open-heart surgery. It was developed by the investigator after reviewing the related literature guided by **Ridelberg, Roback and Nilsen (2014)**. It consists of 36 factors categorized as; nurses related factors (12 items), health team member related factors (6 items), Job satisfaction related factors (5 items), work environment related factors (8 items) and patient related factor (5 items).

Scoring system: The nurse responds for each item with two options (No or Yes) as if the response is no, it means that the factor did not affect their performance and it was scored zero. If the response is yes, it means that the factor is affecting their performance and it was scored one.

II -Nurses' practice observational checklist (Appendix II)

It was concerned with assessment of nurses' practice regarding post-operative care of patient with open-heart surgery. It was adapted from **Smeltzer, Bare, Hikle and Cheever (2010); Taylor's (2011); El-doesuky (2015); Saleh, (2016)** & it was adapted and modified the investigator according to applicability of some steps in the procedure. It consists of 14 checklists to assess nurses' practice regarding post-operative care of patient with open-heart surgery including; assessment of conscious level using Glasgow coma scale (GCS) (26 steps), vital signs monitoring (24 steps), cannula insertion (38 steps) central venous pressure (CVP) measurement (25 steps), chest tube care (25 steps), ETT tube suctioning (29 steps), ETT tube care (36 steps), urinary catheter care (29 steps), urinary catheter removal (27 steps), surgical wound dressing (34 steps), mechanical ventilator caring (30 steps), weaning from mechanical ventilator care (42 steps), IV infusion by using pump (21 steps), patients teaching (26 steps).

Scoring system: each item that was not done scored zero, while one grade was given for correctly done items with total score of (412).

The level of nurses' practice was categorized as the following:

$\geq 85\%$ (≥ 350 grades) was considered satisfactory practice.

$< 85\%$ (< 350 grades) was considered unsatisfactory practice.

Operational Design:

The operational design of this study was include preparatory phase, content validity and reliability, pilot study, fieldwork and ethical consideration.

The preparatory phase:

It includes review of the current and past available literatures and theoretical knowledge of various aspects of the study using books, articles, internet, periodicals and magazines to develop tools for data collection. Permission for data collection and implementation of the study from post-cardiothoracic ICU and intermediate units at academic institute for heart surgery at Ain Shams university hospital was obtained from the hospital administrative personnel by the submission of a formal letter from the Faculty of Nursing, Ain Shams University. Meeting and discussion were held by the researcher and nurses to explain the aims, the nature and the objectives of the study.

Validity and reliability:

The developed tools were tested and evaluated for their face and content validity.

Content face validity:

The tools are tested and revised for content validity by a Jury of five experts in Medical Surgical Nursing. Specialty. Three of them were professors and two of them were assistant professors. Required minimal modification were done the experts elicited responses regarding either by agree, disagree and agree with modifications. Validity for each tool was ranged between (85.7%) to (100%). Agreement for Self-administered nurses' questionnaire was (85.7%) and 100% for Nurses' observational checklists.

Reliability:

Cronbach's alpha test was used to measure the internal consistency of the tools used in the current study. The

related test for study tool included the following values, first tool (Self-administrative nurses' questionnaire was 0,804 while, the second tool (Nurses' observational checklist) was 0,883 which indicating acceptable reliability.

*** Pilot study:**

It was carried out on 10% of the total sample of nurses under study to test the applicability, clarity and efficiency of the tools. According to the results obtained from analysis with minimal modification were done, so, the nurses' who included in the pilot study were included in the study sample.

Ethical considerations:**The ethical considerations in this study include the following;**

The research approval was obtained from scientific research ethical committee in faculty of nursing at Ain Shams University before starting the study.

The investigator was clarified the objective and aims of the study to the nurses' included in the study

Maintaining anonymity and confidentiality had guaranteed

The Nurses' was informed that they were allowed to choose to participate or not in the study and informed that they had the right to withdraw from the study at any time. Ethical values, culture and beliefs was respected.

*** Fieldwork:**

An approval was obtained from hospital directors and nursing directors.

The actual fieldwork and the process of data collection has consumed six months started from the beginning of January 2019 until the end of June 2019. The purpose of the study was simply explained to the nurses' who agree to participate in the study prior to any data collection. The investigator collected data three days per week at morning and afternoon shifts. The investigator observed each nurse during her or his performance for 14 procedure included in the study three times and its mean was taken while caring for patients with open-heart surgery by indirect observation. Self-administered nurses' questionnaire took 15 - 30 min to be fulfilled by each nurse under study.

Administrative design:

An official permission was obtained from the medical and nursing directors of Ain shames hospital in which the study was conducted, an informed and oral consent was obtained from every participant who agreed to participate in the study.

Statistical design:

Results

Part 1: percentage distribution of studied nurses' according to their demographic characteristics.

Table (1) shows that 47.2 % of nurses under study were between the age group 30 to less than 40 years with mean age 27.67 ± 5.12 years, 63.89% of them were male and 66, 67% of them were single. Also 69.4% of nurses under the study got bachelor's degree, 52.78% of them had previous experience between 5 to less than 10 years with mean years 8.15 ± 3.51 . In addition, 30.56% of studied nurses attend training courses regarding

The data were collected; coded and entered to personal computer (PC) the data were analyzed by using statistical package for social science (SPSS). Quantitative data were expressed as mean and standard deviation (SD) qualitative data were expressed as frequency and percentage. Chi-square (χ^2) test of significance was used in order to compare proportions between two qualitative parameters. Cronbachs alpha reliability tests was used to test reliability of the tools, numbers and percentages, r-test was used to test correlation between variables. The confidence interval was set at 95% and the margin of error accepted was set to 5%. So the p-value was considered significant as follow:

-p-value $> 0, 05$ was considered non-significant.

-p-value $< 0, 05$ was considered significant.

-p-value $< 0,001$ was considered as highly significant.

-Alpha Cronbanach's were (0.804, 0.883).
post open-heart surgery nursing care and 100% of them were accepting its effect on their performance.

Part (2 Percentage distribution of studied nurses according to their level of knowledge, practice and attitude regarding post-operative care of patient with open heart surgery

The above figure illustrates that 72.2% of studied nurses got total satisfactory level of knowledge regarding post -operative care of patient with open-heart surgery while, 27.8% of them got unsatisfactory level of knowledge regarding that topic.

This figure shows that 77.8 % of nurses under the study had positive attitude toward post-operative care of patient with open- heart surgery while 22.2% of them had negative attitude regarding post -operative care of patient with open- heart surgery.

This figure demonstrates that 63.9 % of nurses under the study got total satisfactory level of practice regarding post -operative care of patient with open-heart surgery while, 36.1 % of them got total unsatisfactory level regarding post-operative care of patient with open- heart surgery.

Part 3: Distribution of studied nurses' according to factors affecting nurses' performance

Table (2) illustrate frequency and percentage distribution of factors affecting nurse's performance regarding post -operative care of patient with open-heart surgery as reported by the nurses under study.

Regarding nurses' related factors affecting their performance, the result showed that 88.9% of studied nurses' reports that nurses' sufficient experiences regarding medication administration, daily work pressure adjustment, staff coordination and self-confidence are factors affecting their performance.

Regarding health team members related factors, 80.6% of studied nurses' reports that clear and written detailed doctor order in addition to accurate prescription of drug based on patient history are important factors affecting their performance.

Regarding job satisfaction related factor, 91.7%, 86.1% and 80.6 % of studied nurses' reports that, important nurses' role of open-heart care unit nurses, work satisfaction and innovative suggestion regarding nursing care are common factors.

The results showed also that presence of convenient place to store medications and availability of updated nursing care are common work environments related factors reported by 80.6% and 75% of studied nurses. **Regarding Patient related factors**, it was shown that 86.1% and 80.6% of nurses under study reported that over question of patient about his or her condition, positive interaction and cooperation with the patient are common factors affecting their performance.

This table shows that there were highly statistically significant relations between nurses' related factors, health team members' related factors and studied nurses' total knowledge, practice, and attitude at $p < 0.001$.

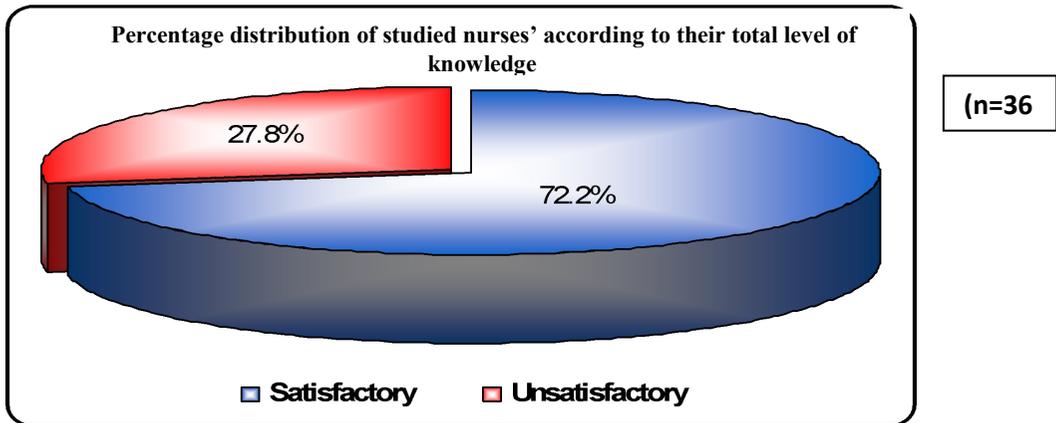
However, there was no statistically significant relation between work environment related factors among nurses under study and their total level of knowledge, practice and attitude ($p > 0.05$).

As shown from table (4) there was highly statistically significant positive correlation between total level of knowledge among studied nurses' and their total level of practice and attitude ($p < 0.001$). Also, highly statistically significant correlations were found between studied nurses' total level of practice and attitude ($r = 0.433$) ($p < 0.001$).

Table 1: Frequency and percentage distribution of the studied nurses' according to their demographic characteristics (n=36)

| Demographic data | No. | % |
|---|-------------|----------|
| Age (years) | | |
| 20 - < 30 | 11 | 30.56 |
| 30 - < 40 | 17 | 47.22 |
| ≥ 40 | 8 | 22.22 |
| Mean ± SD | 27.67±5.12 | |
| Gender | | |
| Male | 23 | 63.89 |
| Female | 13 | 36.11 |
| Marital status | | |
| Married | 12 | 33.33 |
| Single | 24 | 66.67 |
| level of education | | |
| Technical health Institute | 7 | 19.4 |
| Nursing Diploma | 4 | 11.2 |
| Bachelor | 25 | 69.4 |
| Years of Experience | | |
| 1 - < 5 | 13 | 36.11 |
| 5 - < 10 | 19 | 52.78 |
| ≥ 10 | 4 | 11.11 |
| Mean ± SD | 8.15 ± 3.51 | |
| Previous training courses on post open heart- surgery nursing care | | |
| Yes | 11 | 30.56 |
| No | 25 | 69.44 |
| Effect of training course on nurse's performance as their report. | | |
| Yes | 11 | 100.00 |

Figure (1): Percentage distribution of the studied nurses' according to their total satisfactory level of knowledge regarding post-operative care of patient with open-heart surgery (n=36).



Satisfactory level $\geq 80\%$

unsatisfactory level $< 80\%$

Figure (2): Percentage distribution of the studied nurses' According their total attitude level regarding post-operative care of patient with open-heart surgery (n=36).

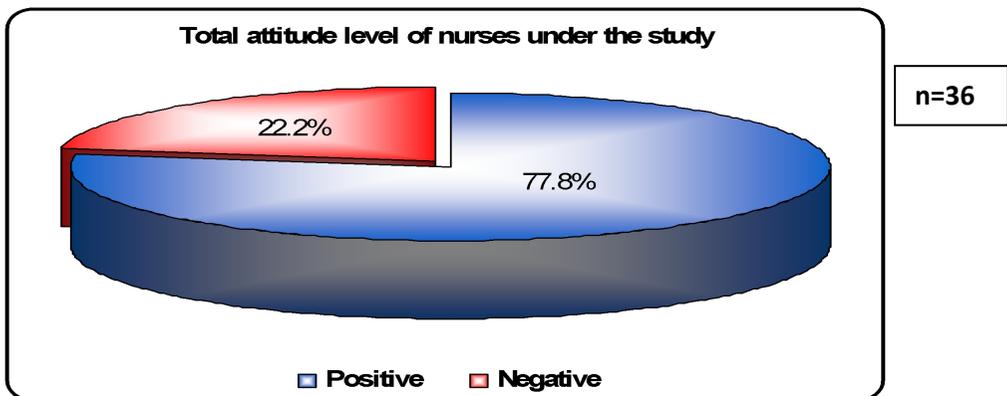
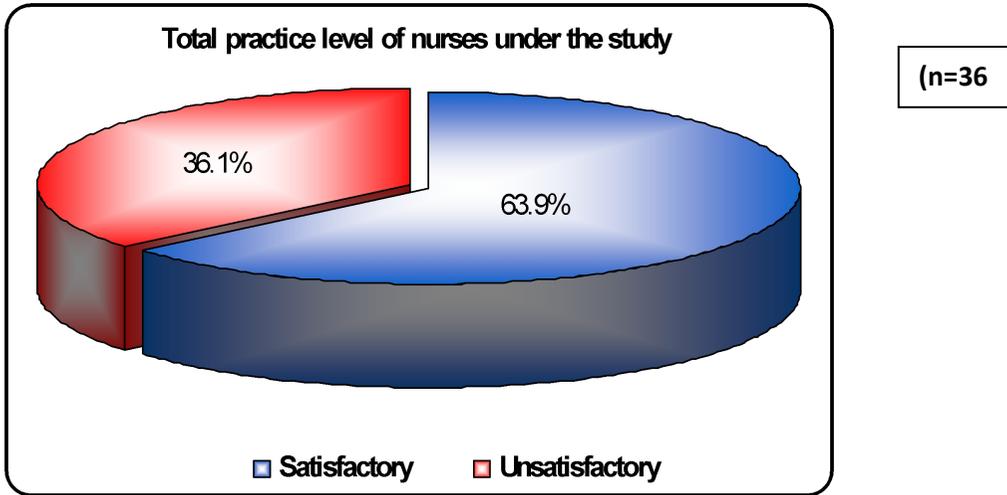


Figure (3): percentage distribution of the studied nurses according to their total satisfactory level of practice regarding post -operative care of patient with open- heart surgery (n=36).



Satisfactory level $\geq 85\%$

unsatisfactory level $< 85\%$

Table 2: Frequency and percentage distribution of factors affecting nurse's performance regarding post-operative care of patient with open-heart surgery as reported by the nurses under study (n=36)

| Items | Yes | | No | |
|--|-----------|-------------|-----------|-------------|
| | N | % | N | % |
| Nurses related factors | | | | |
| There is a clear job description for each member of the nursing staff within the Open Heart Surgery Unit | 25 | 69.4 | 11 | 30.6 |
| Nursing information and experience are available to provide the best care for an open heart patient | 29 | 80.6 | 7 | 19.4 |
| The nurse has sufficient experience on how to administer the medication | 32 | 88.9 | 4 | 11.1 |
| Adjustment of daily work pressure. | 32 | 88.9 | 4 | 11.1 |
| There are coordination mechanisms among the staff within the Open Heart Surgery Unit | 32 | 88.9 | 4 | 11.1 |
| Continuous supervision and observation is available during nursing care for the post open-heart surgery patient | 30 | 83.3 | 6 | 16.7 |
| There is a procedural manual for all nursing's procedures that are performed within the intensive care unit | 21 | 58.3 | 15 | 41.7 |
| Continuing training courses and programs are conducted to develop the experiences and skills of the nursing staff within the intensive care unit | 22 | 61.1 | 14 | 38.9 |
| There is cooperation between the patient and the nurse | 31 | 86.1 | 5 | 13.9 |
| Self-confidence is available to the nurse | 32 | 88.9 | 4 | 11.1 |
| The number of tasks assigned by the nurse within the intensive care unit | 4 | 11.1 | 32 | 88.9 |
| There is ongoing training on how better nursing care can be performed for an open heart surgery patient | 27 | 75.0 | 9 | 25.0 |
| Total | 27 | 75.0 | 9 | 25.0 |
| Health team members related factors | | | | |
| doctor's orders are clear and written in detail and there is no ambiguity | 29 | 80.6 | 7 | 19.4 |
| Oral order is available to administer the medicine | 6 | 16.7 | 30 | 83.3 |
| The accuracy factor is available in patient history before prescribing the drug | 29 | 80.6 | 7 | 19.4 |
| Common abbreviations are used for the names of drugs given to an open-heart surgery patient | 9 | 25.0 | 27 | 75.0 |
| There is a similarity in some of the names of medicines that given in intensive care unit | 7 | 19.4 | 29 | 80.6 |
| The medicine is filled, and an inappropriate cover is placed | 16 | 44.4 | 20 | 55.6 |
| Total | 16 | 44.4 | 20 | 55.6 |
| Job satisfaction related factors | | | | |
| The nurse Satisfaction of her work within the Open-Heart Surgery Unit is important. | 31 | 86.1 | 5 | 13.9 |
| Important of nurse's role in the open-heart care unit | 33 | 91.7 | 3 | 8.3 |
| The salary is suitable for the working pressure within the work environment | 22 | 61.1 | 14 | 38.9 |
| There is a management bonus for the nursing staff within the Open-Heart Surgery Unit | 22 | 61.1 | 14 | 38.9 |
| Nursing care in the intensive care unit helps you make innovative suggestions that improve nursing care | 29 | 80.6 | 7 | 19.4 |
| Total | 26 | 72.2 | 10 | 27.8 |

Table (2) (continued): Frequency and percentage distribution of factors affecting nurse's performance regarding post-operative care of patient with open-heart surgery as reported by the nurses under study.

| Items | Yes | | No | |
|---|-----------|-------------|-----------|-------------|
| | N | % | N | % |
| Work environment related factor | | | | |
| Appropriate equipment's and facilities are available in the workplace to provide appropriate nursing care | 25 | 69.4 | 11 | 30.6 |
| Noise that reduce concentration during nursing care | 14 | 38.9 | 22 | 61.1 |
| There is a small number of nurses compared to the number of patients | 13 | 36.1 | 23 | 63.9 |
| There is a convenient place to store medication | 29 | 80.6 | 7 | 19.4 |
| There is a special room for preparing the medication | 19 | 52.8 | 17 | 47.2 |
| Stability are available in the hospital system | 24 | 66.7 | 12 | 33.3 |
| Update nursing care are available | 27 | 75.0 | 9 | 25.0 |
| Courses are organized periodically to update nursing information to provide a unique nursing service | 23 | 63.9 | 13 | 36.1 |
| Total | 22 | 61.1 | 14 | 38.9 |
| Patients related factor | | | | |
| Over questions about patient health condition | 31 | 86.1 | 5 | 13.9 |
| concentrate during the patient's excessive crying from pain intensity | 28 | 77.8 | 8 | 22.2 |
| Positive interaction and cooperation with patients | 29 | 80.6 | 7 | 19.4 |
| The patient's severe fear of the hospital is a barrier for giving nursing care | 4 | 11.1 | 32 | 88.9 |
| Frequent demands of the patient is an inconvenience to you | 4 | 11.1 | 32 | 88.9 |
| Total | 21 | 58.3 | 15 | 41.7 |

Table (3): Relation between studied nurses' total level of knowledge, attitude, practice and factors affecting their performance.

| Factors | Total knowledge | | Total attitude | | Total practice | |
|---------------------------------------|-----------------|----------|----------------|----------|----------------|----------|
| | Test r | P-value | Test r | p-value | Test r | p-value |
| Nurses' related factor | 0.378 | <0.001** | 0.460 | <0.001** | 0.378 | <0.001** |
| Health team members related to factor | 0.443 | <0.001** | 0.543 | <0.001** | 0.443 | <0.001** |
| Job satisfaction related factor | 0.490 | <0.001** | 0.247 | 0.040* | 0.490 | <0.001** |
| Work environment related factor | 0.167 | 0.168 | 0.152 | 0.209 | 0.167 | 0.168 |
| Patients related factor | 0.303 | 0.011* | 0.806 | <0.001** | 0.303 | 0.011* |

p- Value > 0.05 non-significant P-value ≤ 0.001 highly significant P- value ≤ 0.05 significant

Table (4) Correlation between studied nurses' total level of knowledge, attitude and practice.

| Items | P-value | Total level of knowledge | Total level of attitude | Total level of practice |
|-------------------------|---------|--------------------------|-------------------------|-------------------------|
| Total level of attitude | r- | 0.298 | | 0.433 |
| | p-value | <0.001** | | <0.001** |
| Total level of practice | r- | 0.356 | 0.433 | |
| | p-value | <0.001** | <0.001** | |

p- Value > 0.05 non-significant P-value ≤ 0.001 highly significant P- value ≤ 0.05 significant

Discussion

The discussion of the finding covered four main parts:

Part (1): concerned with studied nurses' demographic characteristics.

Part (2): It revealed percentage distribution of studied nurses' according to their level of knowledge, attitude and practice regarding post-operative care of patient with open- heart surgery.

Part (3): It concerned with percentage distribution of studied nurses' according to their factors affecting nurses' performance regarding post -operative care of patient with open-heart surgery.

Part (4): It concerned with the relation between demographic characteristics of nurses' under study and their total level of knowledge, attitude and practice and relation between factors affecting nurses' performance regarding patient with open-heart surgery and their total level of knowledge, attitude and practice in addition to correlation between total level of studied nurses' knowledge, attitude and practice.

Part 1: studied nurses' demographic characteristics.

This study revealed that about half of nurses under study were at the age group (30 - < 40 years). This could be explained in the light of nature of ICU as area of specialty necessitates a young qualified nurse to work to achieve high quality of nursing care offered and ability to tolerate the working load. This result agreed with **El Feqi (2013)** who conducted a study titled "assessment of nurse's performance caring for patients connected with oxygen therapy" and stated that half of nurses in intensive care unit (ICU) their age group was (30 - < 40 years) years old.

The present study showed that, more than half of studied nurses were male. This result may be due to male nurses' impacts on career advancement and because male nurses' move towards areas such as operating room, emergency room and ICU. This explanation was supported by **Zamanzadeh, Valizadeh, Negarandeh, Monadi and Azadi (2013)** who conducted a study titled, "Factors influencing men entering the nursing profession and understanding the challenges faced by them Iranian and developed countries perspectives" and explained that male nurses were more common than female due to support from men typically found that practicing in

certain areas as critical care, can provide better pay and felt more stable occupation.

This result is in the same line with **Elauoty (2013)** who conducted a study titled "assessment of nurses' performance regarding medication administration safely in ICUs" and found that most of their studied group was male. However, it is inconsistent with **Santos, Camelo, Santos, Leal la and Silva (2016)** Who conducted a study about nurses' performance titled "professional competencies and organization strategies" and found that two thirds of nurses' were female and explained that It may be related to nursing schools graduate large number of females than males.

As regards marital status, the present study findings showed that two thirds of nurses under study were single which may be due to nature of work in ICU and working under stress and hard work. This finding was agreed with **Malk (2013)** who conducted a study titled "nurses' perception of stressors associated with CABG" and found that the majority of nurses were single.

Regarding, educational level, the present study indicated that, more than two thirds of nurses under the study were bachelor's degree. it may be due to nature of specialized unit as cardiothoracic intensive care unit that recruits highly qualified nurses for better care provision. This explains their good knowledge regarding caring of post open -heart surgery patient. This finding was supported by **Hessaen (2011)** who conducted a study titled "assessment of nursing staff knowledge and practice regarding coronary artery bypass graft" and found that, most of nurses' had bachelor's degree.

Concerning years of experience, the present study revealed that, more than half of nurses under study had five to less than 10 years of experience in ICU. This could be explained in the light of nature that good caring is crucially dependent on experienced nursing care, with constant bedside observation to ensure monitoring and immediate detection of any problems so that they can be rapidly assessed and treated.

This study finding was supported by **Al oyce, Leshabari and Brysiewicz (2014)** who conducted a study titled "Assessment of knowledge and skills of triage among nurses' working in emergency centers in Dar El Salam, Tanzania" and found that, majority of nurses had (5 - < 10) years of experiences. **Also, Gafer (2015)** who conducted a study about assessment of nurses' performance regarding medication administration for patient with acute myocardial infarction found that half of nurses had experience more than 10 years.

Regarding previous training courses on post open-heart surgery nursing care, the present study found that more than two thirds of the nurses under study did not attend training courses regarding caring of patient post open - heart surgery. This may be due to lack of in service educational program inside the hospital regarding this topic, this study finding was supported by **Lisa and Soltis (2015)** who conducted a study titled "Role of the Clinical Nurse Specialist in Improving Patient Outcomes After Cardiac Surgery" and found that the majority of nurses' had no training program regarding caring of patient post open-heart surgery.

Part (2): percentage distribution of studied nurses according to their level of knowledge, attitude and

practice regarding post-operative care of patient with open- heart surgery.

Regarding nurses' level of knowledge about caring patient post open-heart surgery. Concerning the nurses' total satisfactory level of knowledge regarding post-operative care of patient with open- heart surgery, the result revealed that more than the two thirds of nurses' under study got satisfactory level of knowledge which may be due to better qualification and increased years of experience among nurses under study. This result was supported by **Yousef (2013)** who conduct a study titled "Nurses' knowledge and practice regarding post-operative care for patient with open heart surgery in the first 24 hours at Sudan heart center" and found that the majority of studied nurses has good knowledge regarding open heart surgery and added that it may be related to high level of qualifications and years of experience among studied nurses.

Regarding total attitude level among nurses under study, the results shows that more than three fourths of nurses under the study had positive attitude toward post-operative care of patient with open- heart surgery while less than one fourth of them had negative attitude regarding post-operative care of patient with open- heart surgery. This finding may be due to the fact that better qualification and more years of experience among studied nurses might lead to better attitude toward provided care. This is supported by **Asichale, Belayneh, Enyew, and Hailekiros (2019)** in a study titled " Knowledge and Attitudes of Ethiopian Nursing Staff Regarding Post-Operative Pain Management" a positive attitude toward pain management.

The present study depicted that more than half of nurses under studies got total satisfactory level of practice regarding post-operative care of patient with open-heart surgery. This may be due to close supervision from senior staff, enough years of experience and better qualifications among studied nurses.

This finding is corresponding with **Yousef (2013)** who conduct a study titled "Nurses' knowledge and practice regarding post- operative care for patient with open heart surgery at Sudan heart center" and found that more than two thirds of nurses' under study got satisfactory level of total practice of participants regarding post- operative care for patient with open heart surgery while the above finding is in contrast with **Maglanque (2017)** who conduct the study titled "cardiac nurses' knowledge, assessment practices and management of post- operative patient care" and found that the nurse's practice was poor in general.

Part (3): Factors affecting nurses' performance regarding post -operative care of patient with open-heart surgery as reported by the nurses under study.

Regarding nurses' related factors, the present study revealed that most of nurses under study reported that nurses' sufficient experiences, daily work pressure, staff coordination and self-confidence are factors affecting their performance. Nurses employed in the hospital, especially in the ICU, struggle with different issues such as, job workload, self-confidence and staff coordination which may affect their performance, this finding is in agreement with **khalf (2017)** in a study titled " factors affecting nurses performance for patients with acute respiratory failure on

mechanical ventilator" that two thirds of studied nurses reported that nurses' sufficient experiences, daily work pressure, self-confidence of nurses' staff coordination and assigned nursing task are affecting their performance.

Regarding health team members related to factors, the present study revealed that most of nurses under study reported that clear and written detailed doctor order in addition to accurate prescription of drug based on patient history are important factors affecting their performance. This is in agreement with **Fitz Gerald (2009)** in a study titled "Medication errors: the importance of an accurate drug history" who reported that, two thirds of studied nurses reported that the importance of medication histories for accurate drug prescription which increase competency of care.

Regarding job satisfaction related factors, the present study revealed that most of nurses under study reported that important nurses' role of open-heart care unit, nurse's satisfaction and innovative suggestion to improve nursing care are common factors. this may be supported by **Kousar, Hussain, Afzal, Gilani and Azhar (2018)** in a study titled "Impact of Job Satisfaction on Nurses' Performance" who reported that majority of nurses under study who were satisfied with their job has good performance.

Regarding work environment related factors, the current study revealed that more than three quarters of nurses under study reported that presence of convenient place to store medications and availability of updated nursing care are the most common factors that affect their performance. Also, the current study revealed that most of nurses under study reported that over question of patient about his or her condition, positive

interaction and cooperation with the patient are common factors affecting their performance. This is supported by **Serdar (2017)** in a study titled "factors affecting nurses' performance" that found three quarters of nurses under the study consider patient questions about his or her health condition, Positive interaction and cooperation with patients can affect positively on the nurse performance and patient outcome.

Part (4): The relation between studied nurses' demographic characteristics and their total level of knowledge, attitude and practice regarding post-operative care of patient with open-heart surgery and relation between factors affecting nurses' performance regarding patient with open-heart surgery and their total level of knowledge, attitude and practice in addition to correlation between total level of studied nurses' knowledge, attitude and practice.

Regarding relation between studied nurses' total level of knowledge, attitude, practice and factors affecting their performance, it shows that there was highly statistically significant relation between nurses' related factors and health team members related factors and studied nurses' total knowledge, practice, and attitude.

Concerning the correlations between studied nurses' total level of knowledge, attitude and practice. The result of the present study indicated that there was highly statistically significant positive correlation between total level of knowledge among studied nurses' and their total level of practice and attitude. This may be due high percentage of nurses under study had got satisfactory level of knowledge that is reflected positively on their practice and attitude.

This finding was supported by **Abd El Aziz, Sleem and Shehab (2017)** who conduct a study titled "assessment of Nurses' performance in providing care of patient undergoing Nasogastric tube in Suez Canal university hospitals" and revealed that there was positive correlation between nurse's knowledge, attitude and practice. While this is in disagreement with **Khalf (2017)** who found that there was no statistically correlation between nurses' knowledge, practice, and attitude.

Conclusion

Based on the findings of the current study, it can be concluded that about half of studied nurses was between age group thirty to less than forty with mean age group of twenty-seven years, about two thirds of them were male and single, more than two thirds of studied nurses got total satisfactory level of knowledge regarding post-operative care of patient with open heart surgery, more than half of them got total satisfactory level of practice while, more than three fourths of them had positive attitude toward post-operative care of patient with open heart surgery. The results also revealed that most common factors affecting performance of nurses under study as reported by the most of them are nurses' sufficient experiences, daily work pressure, staff cooperation, nurses' self-confidences, clear and detailed doctor order, accurate drug prescription, nurses' job satisfaction, importance of nurses' role, innovative nursing care, convenience of medication store place, patient over questions, and positive interaction and cooperation with patient.

Recommendations

The result of this study projected the following recommendations:

1-In service training program/courses must be developed based on need assessment for nurses' regarding critical management post-operative care of patient with open-heart surgery and evaluating its effect on nurses' performance.

2-Availability of standardized nursing care protocol is recommended to guide the nurses in caring of post-operative patients with open-heart surgery.

3-Continuous supervision for the nurses in critical care unit caring of post-operative patients with open-heart surgery in all shifts and give continuous advice.

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