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Nurses knowledge toward post open heart surgeries complications in Nasiriyah heart center

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Abstract---Introduction: One of the leading causes of death in the world is cardiovascular disease; it is treated with surgery, medication, and by establishing healthy habits. In postoperative cardiac surgery, involving the respiratory systems, cardiovascular, kidneys, and central nervous system complications represent an important and possibly fatal cause of morbidity and mortality. To improve educational preparation and quality of healthcare, it is important to understand how knowledge is used in everyday nursing practice. An effective nurse and appropriate interventions must anticipate the possibility of complications can be initiated to ensure a positive outcome in a timely manner. Objectives: To assess nurses' knowledge toward post open heart surgeries complications and studying the relationship between nurses' knowledge and certain demographical and employment variables. Methodology: A cross-sectional study, the researchers conducted a study to assessment of knowledge about post open heart surgeries complications for nurses of Nasiriyah heart center at Nasiriyah district in Thiqr governorate from September 2021 to august 2022.The study conducted on nurse's staff of Nasiriyah Heart Center at Thiqr Province in Nasiriyah District to assess nurses` knowledge about post open heart surgeries complications. In which selected (82) nurses by A purposive sample technique. After completion of the pilot study and verification of the reliability of the questionnaire and validity by sent to (16) experts in various field and universities to evaluate the contents of the questionnaire. Data is collected by distributing the Arabic version of the questionnaire that was created and through the individual interview of the Nasiriyah Heart Center nurses who work in ICU and Surgical department. The data of the study were analyzed by using of descriptive (mean,

standard deviation, percentage) and inferential statistical analysis (chi square). Results: the population of study ages were between (23 – 48) years. (46) Males and (36) females. Regarding the nurse's qualifications (51.2%) was diploma level of education in nursing science. And was (41.5%) with bachelor degree in nursing science, Also one nurse with master degree and (6.1%) with high school qualifications. For the marital status of nurses (68.3%) married and (29.3%) single. And (80.5%) of the nurses was \leq 5 years of services in nursing, (13.4%) was 6 to10 years, (3.7%) was 11 to 15 years, (4.2%) within rang 16 to 20 years. Study revealed that (3.7%) from nurses had good knowledge and (96.3%) had poor knowledge about post open heart surgeries complications. Conclusion: The study concludes that the overall knowledge of the nurses about post open heart surgeries complications in Nasiriyah Heart Center was poor. In which all domains of post open heart surgeries complications have poor knowledge. And found that place of work (ICU nurses, Surgical Department nurses) for nurses was influencing on knowledge of nurses about post open heart surgeries complications. Recommendation: The study recommends that establishing a follow up system in ICU and surgical department to detect continuation and effectiveness of open-heart surgery complications knowledge issue among nurses' staff. Further studies can be conducted with large sample size to evaluate nurse's knowledge about post open heart surgeries complications.

Keywords---open heart, surgeries complications, nurse's knowledge.

Introduction

Cardiovascular or heart disorders are one important of the top causes of dying about the universe, and they can be treated with procedures, drugs, and healthy habits. Surgical treatment is the most difficult and has been increasing in popularity over time, despite its high death rate and high frequency of comorbidities (Lisboa et al.,2020). According to (WHO) the cardiovascular or heart disorders are the causes leading for death about worldwide (CVDs). 17.9 million humans it killed by CVDs in worldwide at 2019, accounting to 32 percent for all fatalities. Strokes in addition to heart attacks were causes for 85 percent of these deaths in world. Cardiovascular illnesses, which account for one-third of all fatalities globally, are the main cause of morbidity and mortality (WHO,2021). Cardiovascular surgery has many postoperative consequences, the most common of which are respiratory and neurologically in addition to cardiovascular. Cardiovascular issues are high prone to occur after an acute infarction of myocardial or congestive with heart failure. Stroke, on the other hand, is a neurologic condition that can happen during the first 24 hours after surgery. Atelectasis in addition pneumonia and abrupt respiratory failure, respiratory distress syndrome in acute condition (ARDS), additional pleural effusion are pulmonary complications (Marmelo et al.,2020).

After cardiac surgery, postoperative complications have a significant impact on outcomes that last well beyond the recovery period. Stroke, pneumonia, and kidney failure are all linked to a lower chance of long-term survival (Pahwa et al.,2021). Understanding how information is used in everyday nursing practice is essential for increasing educational preparation and health-care quality (Skår,2010). Variations in post-surgeries death rates have been linked to diversity in registered nurse team levels. There is a bigger incidence of nurse's care that is required but not supplied when nurse staffing levels are inadequate. The absence of nurse's care perhaps a significant foreteller of mortality for clients following surgeries. Missed care of nursing, which is strongly linked to nurse staffing, is linked to a higher risk of patients with death at hospital after routine surgical methods. The data back up the theory that the link between registered nurse staffing and patient mortality is mediated by nursing care gaps. Missed care could be utilized as an early signal of a bigger risk of poor client's outcomes (Ball et al.,2018).

The postoperative care of a heart surgery patient is difficult because changes can happen quickly. In postoperative treatment, the patient's preoperative status as well as intraoperative events should be considered. It is vital for the nurse to foresee future problems in order to administer appropriate treatments in a timely manner and guarantee that the patient has a positive outcome (Wang.2018). Employees' professional development was influenced by corporate culture, the company's commitment to its employees' personal and professional development was seen as a sign of respect (Lee,2011).

Method

A study aims at: to measure nurses' knowledge concerning post open-heart surgery complications. As well as to find the relationship between the nursing staff' knowledge with certain demographical characteristics and employment component. Design of the study: A quantitative research conducted as descriptive type by cross-sectional study design which applied on nurse's staff of Nasiriyah Heart Center at Thiqr Province in Nasiriyah District to assess nurses` knowledge about post open heart surgeries complications. Sample of the study: A simple random sample technique of (468) students which was selected from (12) intermediate schools distributed throughout the Educational Directorates at Al-Numaniya district in Wasit Governorate, which was selected randomly (39-40) students distributed on classes (1, 2, 3) from each school.

Study instrument

The questionnaire was advanced and created after a strict review of literature and regarding studies to use for the study purpose, to assess knowledge of nurses' about early and late post open heart surgeries complications, which included the following parts: First part included sociodemographic characteristics of the nurses in which involve items of age, gender, qualification, marital Status. Second part is concerned with employment status of the nurses in which involve items of years of services in nursing, Years of Services in Cardiac Intensive Care Unit, Years of Services in Surgical Department, and ask the nurses about participated in courses related to complications after open heart surgeries, read to learn and

develop yourself about knowledge in work field. Third part is concerned with nurse's knowledge about post open heart surgeries complications (52) items and divided into (6) sections which includes: statements about cardio vascular complications: Which composed of (20) items. Statements about pulmonary complications: Which composed of (17) items. Statements about gastrointestinal complications: Which composed of (3) items. Statements about neurological complications: Which composed of (5) items. Statements about wound infection: Which composed of (3) items. Statements about renal complications: Which composed of (4) items.

Validity and Reliability

The content validity of the instrument was established through a panel of (16) experts, the reliability of the items was based on the internal consistency of the checklist was assessed by calculating Cronbach s' Alpha which as= 0.79.

Statistical analysis

Data are analyzed through the application of descriptive statistical data analysis approach that includes, frequencies, percentages, standard deviation. And inferential statistical data analysis approach that include Chi-squared test used to assess the relationship between overall knowledge about post open heart surgeries complications and categorical variables from the other side.

Result

Table 1
Socio-demographic characteristics of nurses (N = 8)

Variables	No.	%	
Age (year)	≤ 25	33	40.2%
	26-30	34	41.5%
	31-35	8	9.8%
	≥36	7	8.5%
Gender	Male	46	56.1%
	Female	36	43.9%
Qualifications	High school	5	6.1%
	Diploma	42	51.2%
	Bachelor	34	41.5%
	Master	1	1.2%
Marital Status	Married	24	29.3%
	Single	56	68.3%
	Divorced	2	2.4%
Years of Services in Nursing	≤ 5	66	80.5%
	6-10	11	13.4%
	11-15	3	3.7%
	16-20	2	2.4%
Years of Services in ICU	1-2	27	51.9%
	3-4	14	26.9%
	5-6	9	17.3%

	7-8	2	3.8%
Years of Services in Surgical Department	1-2	22	42.3%
	3-4	7	13.5%
	5-6	1	1.9%
Courses participation about post open heart surgeries complications	Yes	39	47.6%
	No	43	52.4%
Read about post open heart surgeries complications	Yes	45	54.9%
	No	37	45.1%
Place of Work	ICU	52	63.4
	Surgical unit	30	36.6

The aforementioned characteristics of the studied group are summarized in this table (Table 1), in which there were (82) nurses enrolled in this study, their ages were between (23 – 48) years. (46) Males and (36) females. Regarding the nurse's qualifications (51.2%) was diploma level of education in nursing science. And was (41.5%) with bachelor degree in nursing science, Also one nurse with master degree and (6.1%) with high school qualifications. For the marital status of nurses (68.3%) married and (29.3%) single. And (80.5%) of the nurses was ≤ 5 years of services in nursing, (13.4%) was between 6 and 10 years, (3.7%) was ranged 11 to 15 years, (4.2%) within rang 16 to 20 years. As for the years of service in the intensive care unit, (51.9%) of the nurses had a service ranging from 1-2 years and (26.9%) had a service of 3-4 years and (17.3%) have 5-6 years of services, (3.8%) with 7-8 years out of 52 nurses from the ICU . While the nurse's staff in the surgical department, (42.3%) of them had years of service of 1-2 years, and (13.5%) of them had years of service of 3-4, and (1.9%) of nurses have 5-6 years of services out of 30 nurses working in the surgical department. As for participating in training courses on complications after open heart surgeries, it was (47.6%) of the nurses who work in the surgical department and intensive care unit have participated and the rest did not. And (54.9%) of them were interested in learning and reading about post open heart surgeries complications.

Table 2
Mean overall knowledge scores of the nurses for different domains about post open heart surgeries complications

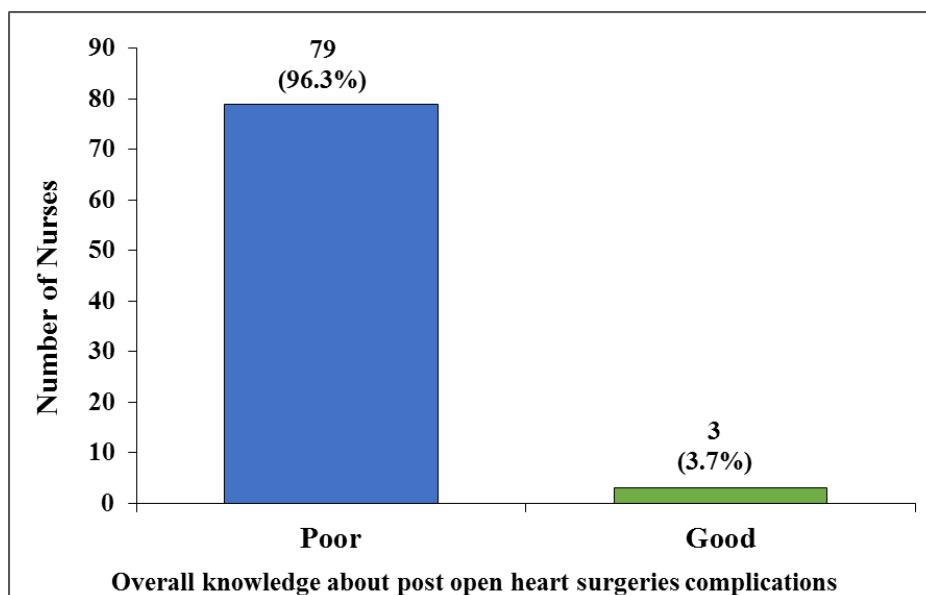
Domains	Mean score	Assessment
Cardiovascular Complications	1.3396	Poor
Pulmonary Complications	1.3300	Poor
Gastrointestinal Complications	1.3049	Poor
Neurological Complications	1.3488	Poor
Wound Infection	1.3862	Poor
Renal Complications	1.3628	Poor
Overall knowledge	1.3398	Poor

This table (Table 2) shows summary of the mean knowledge scores and assessment of nurses knowledge about the different domains of post open heart surgeries complications; as it shown in this table, poor knowledge score was reported for the domain about wound infection with a mean overall knowledge score of (1.3862) followed by domain about renal complications (1.3628), and

domain about neurological complications with a mean of (1.3488), and domain about cardiovascular complications with a mean of (1.3396) followed by domain of gastrointestinal complications with main of (1.3049), the knowledge scores. In all items were within poor level giving an overall poor knowledge for all domains about post open heart surgeries complications with (1.3398) mean score. From other point of view, according to the overall mean scores of knowledge in this figure (Figure 4.2) revealed that distribution of the nurses was 79 (96.3%) had poor knowledge and 3 (3.7%) from the nurses had good knowledge.

Table 3

Relationship of overall knowledge about post open heart surgeries complications with age, gender, marital status and qualifications of the nurses



Variables		Overall knowledge				Chi squar e (χ^2)	P. value	Sig
		Good (No=3)		Poor (No=79)				
		No	%	No	%			
Age (year)	≤ 25	2	66.7	31	39.2	3.871	0.276	Insignificant
	26-30	0	0	34	43			
	31-35	1	33.3	7	8.9			
Gender	≥36	0	0	7	8.9	0.655	0.418	Insignificant
	Female	2	66.7	34	43			
	Male	1	33.3	45	57			
Qualifications	High school	0	0	5	6.3	0.423	0.936	Insignificant
	Diploma	2	66.7	40	50.6			

	Bachelor	1	33.3	33	41.8			
	Master	0	0	1	1.3			
Marital Status	Married	2	66.7	22	27.8	2.121	0.346	Insignificant
	Single	1	33.3	55	69.6			
	Divorced	0	0	2	2.5			

This table shows a poor overall knowledge of the nurses was insignificantly associated with age, gender and qualifications, marital status in all comparisons (p. value > 0.05).

Table 4
Relationship of overall knowledge about post open heart surgeries complications with employment status (N = 82)

Variables	Overall knowledge				Chi square (χ^2)	P. value	Sig
	Good (N=3)		Poor (N=79)				
	No.	%	No.	%			
Years of Services in Nursing	2	66.7	64	81	46.670	0.939	Insignificant
	1	33.3	10	12.7			
	0	0	3	3.8			
	0	0	2	2.5			
Years of Services in ICU	2	66.7	25	51.0	47.570	0.611	Insignificant
	1	33.3	13	26.5			
	0	0	9	18.4			
	0	0	2	4.10			
Years of Services in Surgical Department	0	0	22	73.3	18.721	0.767	Insignificant
	0	0	7	23.3			
	0	0	1	3.3			
Courses participation about post open heart surgeries complications	1	33.3	38	48.1	30.016	0.092	Insignificant
	2	66.7	41	51.9			
Read to learn and develop about post open heart surgeries complications	1	33.3	44	55.7	15.866	0.777	Insignificant
	2	66.7	35	44.3			
Place of Work	3	100	49	62	44.696	0.002	Significant
	0	0	30	38			

This table shows a poor overall knowledge of the nurses about post open heart surgeries complications was high significantly associated with place of work between ICU and Surgical Unit of the nurses (p. value < 0.05).

Discussion

Part I: Socio-demographic Characteristics of Nurses

Throughout the course analysis of data, the socio-demographic characteristics for the study sample enrolled in this study, their ages were between (23 – 48) years and not equally distributed on these age groups. Male and females were almost equally distributed, in which 56.1% male and 43.9% female of nurses. (Table 1). These results agreed with the results obtained by study of (Fleih Hassan, 2015) who had studied knowledge of nurses for safety of patient following cardiac catheterization to adult clients, in which (48%) of his study sample were males and (52%) were female, also majority of the respondents were between the ages of 20 and >41 years, in which he showed that the percentage distribution of the nurses in their various teaching level were this study had (28%) nursing school, (30%) diploma and (30%) with bachelor degree and (2%) post graduated. As well as, the results of the present study showed almost Three-quarters of the nurses (68.3%) were having single marital status and the remaining (29.3%) were married, (2.4%) divorced (Table 1), this finding is supported by the study of (Jarelnape, 2021) who they studied the knowledge of nurses' regarding the discharge plan of patients after cardiac surgery, that appear (83%) were single marital status and (15%) were married, (2%) were divorced ⁽⁹⁾⁽¹⁰⁾.

The present study showed that majority of the nurse's experience in nursing as general was ≤5 years with percentage (80.5), (Table 1), that indicate the nurses do not have good enough experience in nursing in general. These results are supported by the study of (Hussein & Rada, 2016) in that they studied of efficiency for education program to knowledge of nurse's about prevent of post-thoracic surgery complications, in which their finding indicated that most of the study sample were (80%) <5 years for study group, (92%) for control group ⁽¹¹⁾. Concerning years of service in ICU results of present study indicated the majority of nurses were have ranging (1-2) years of experience represented by (51.9%) and (26.9%) of nurses ranging (3-4) years (Table 1). This result concurrent with the study of (Hussein & Rada, 2016) in that who studied educational program effectiveness for nurse's knowledge about prevent of post-thoracic surgery complications, where they found that most of nurses were ≤5 by (84%) in group of study and (100%) in group of control. And in (Elateif, 2017) (Hussein & Rada, 2016) in that who studied Effect of Training Program Regarding Care of Patients Undergoing Open Heart Surgery on Nurses' Performance Approach where they found that (66.7%) of nurses have ranging (1-2) years of experience, and so that in (Altohamy & Musa, 2018) study in that they studied state of Nurses knowledge regarding acute kidney injury in patient post cardiac surgery at Alshaab teaching hospital is ranging (1-2) years of service by (43.3%) and (43.3%) ranging (months-1 years) and so that in experience of surgical department ⁽¹²⁾⁽¹³⁾.

Regarding to courses participation about post open heart surgeries complications, the present study found that about half of nurses were participate in courses

about post open heart surgeries by (47.6%) and (52.4%) not participate out total of the study sample and (54.9%) were Read about post open heart surgeries complications, (45%) not read (Table 1). This result concurs with the study of (Jarelnape, 2021) study in that they studied state of knowledge for nurses toward the discharge plan to patients after cardiac surgery. They found most of their study sample were (63%) is participate in training course and (38%) not participate in training course ⁽¹⁰⁾. As for the workplace, all nurses staff that work in the intensive care unit and the surgical department were taken because the patient who exits open-heart surgeries goes through these departments. Their knowledge level was measured regarding early and late complications after open-heart surgeries because these complications, although classified into early and late, may occur at many points along the path to recovery ⁽¹⁴⁾.

Part II: Overall Knowledge about Post Open Heart Surgeries Complications for Nurses

The Nurses' distribution consequently to their overall mean of knowledge scores, revealed that (96.3%) had poor knowledge and (3.7%) had good knowledge (Figure 1), (Table 2) .There is no research within the previous studies that evaluates nurses' knowledge about postoperative complications of open heart surgery, but there is only one research that assessed nurses' knowledge about acute kidney injury after open heart surgery(Altohamy & Musa, 2018), and its results were similar to the domain of renal complications, where the level of knowledge was poor and In a Iraqi study on knowledge of nurses regarding valvular replacement surgery complications prevention in heart center of Nasiriyah at surgical department, (71.4%) of nurses had a poor level for knowledge, while (28.6%) had a good knowledge level ⁽¹⁵⁾. There is more than one explanation for the reason for the nurses' poor knowledge of post open-heart surgery complications. It may be the result of a lack of university education during the study, or the nurses' lack of interest in knowledge, research and development of their capabilities, or a weakness in training and development within health institutions, and it may be the result of a lack of precise specializations in Nursing and this thing is not approved in Iraq, where nurses are assigned to work in various departments and units in all specialties without prior preparation or training related to work, in addition to the continuous change in the places of work of the nursing staff.

The present study showed statistically insignificant association for the overall knowledge with the variables of age, gender, qualifications and marital status. These results are supported by a similar Iraqi study on nurses' concerning with knowledge about planning of discharging to post open heart surgeries patients (Mohammad Ali Fadil Al-fatlawi & Abbas Ahmed, 2016) and other Iraqi study titled "Nurses Knowledge About Patient Safety After Cardiac Catheterization for Adult Patients In ibn Al - Biter Specialist Center Cardiac Surgery" (Fleih Hassan, 2015) ⁽¹⁶⁾ ⁽¹⁷⁾. And another study that was conducted in Sudan on knowledge for nurses toward the discharge plan to patients after cardiac surgery showed the existence of a relationship between the variable of knowledge with the variable of qualifications and the absence of a relationship with the variable of age and gender (Jarelnape, 2021) ⁽⁹⁾. A recent Iraqi study on knowledge for nurse's about complications prevention regarding to surgeries of valvular replacement in heart

center of Nasiriyah at surgical department revealed a relationship between variable knowledge with gender and qualification (Nurse, 2019) ⁽¹⁵⁾.

The statistical results of univariate analysis (Chi-Square) showed poor overall knowledge of the nurses was significantly associated with work place variable in ICU nurses and Surgical Department nurses (p. value < 0.05), (Table 4). that may be due to attributed by nurses working in the intensive care unit are close to patients during and after surgery, and the possibility of following up and seeing the surgery directly from inside the surgery room, as well as direct follow-up of patients throughout their stay in the intensive care unit and monitoring all changes and signs on the patient directly. The results also showed the absence of relationship between the variable of knowledge with years of service in nursing and service in the intensive care unit and the surgical department, This result of present study is supported by similar study conducted in the Iraq, by (Nurse, 2019) for "knowledge of nurses regarding prevention of complications related to valvular replacement surgery" and other study conducted in Iraq (Fleih Hassan, 2015) to assess for nurses knowledge in specialist center for surgeries of the heart (ibn al - biter) toward safety of clients after cardiac catheterization to adult clients. As well as another Iraqi study to "assessment of knowledge for nurses' about discharge planning in cardiac center at Baghdad city to patients' with open heart surgery" (Mohammad Ali Fadil Al-fatlawi & Abbas Ahmed, 2016) ⁽¹⁵⁾ ⁽¹⁶⁾. As well as the absence of a relationship with the variable of participation in training courses, reading and learning about complications after open heart surgery, this result of present study is supported by similar studies conducted in the Iraq, by (Nurse, 2019) and (Fleih Hassan, 2015),(Mohammad Ali Fadil Al-fatlawi & Abbas Ahmed, 2016) and other study conducted in Sudan for assessment of knowledge for nurses toward patient safety post cardiac catheterization for adult patients (Fleih Hassan, 2015) ⁽¹⁶⁾ ⁽¹⁰⁾.

Conclusions

The study concluded that the overall knowledge of the nurses about post open heart surgeries complications in Nasiriyah Heart Center was poor, All the domains of nurse's knowledge toward post open heart surgeries complications had poor knowledge. Place of work (ICU nurses, Surgical Department nurses) for nurses was influencing on knowledge of nurses about post open heart surgeries complications.

Recommendations

Managers of specialized centers for cardiac surgery can using the findings of this study, identify the strengths and weaknesses of nurse's knowledge about post open heart surgeries complications and to adopt necessary measures in enhancing quality of nurse's knowledge, maintaining an educational booklets, pamphlets, and boosters that contain all instructions and information about post open heart surgery complications in the ICU and surgical department, Replication of the study on larger probability sample must be considered to allow greater generalization of the results.

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