

Evaluation of Knowledge for Nursing Staff Concerning Central Venous Catheter Care in AL-Nasiriyah Cardiac Center

تقويم معارف الملاك التمريضي بشأن العناية بالقسطرة الوريدية المركزية في مركز الناصرية للقلب

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الخلاصة:

خلفية البحث: القسطرة الوريدية المركزية (CVCs) عبارة عن قسطرة طويلة مرنة يتم إدخالها في الأوردة المركزية وقد يتم وضعها في الوريد تحت الترقوة أو الوريد الوداجي الداخلي أو الأوردة الفخذية أو في أوردة الذراع.

الاهداف: تقويم المعارف لدى الملاك التمريضي بشأن العناية بالقسطرة الوريدية المركزية في مركز الناصرية للقلب.

المنهجية: تصميم وصفي مقطعي لتحقيق أهداف الدراسة، بدأت الدراسة من 26 / ايلول / 2020 إلى 1 / حزيران / 2021، على عينة تتكون من (30 ممرض) يعملون في وحدة العناية المركزة و الردهات الجراحية في مركز الناصرية للقلب.

النتائج: أظهرت نتائج هذه الدراسة أن مستوى معارف الملاك التمريضي بشأن العناية بالقسطرة الوريدية المركزية في مدينة الناصرية كانت منخفضة بمتوسط الدرجة (0.26).

الاستنتاج: ان معرفة الممرضين بشأن العناية بالقسطرة الوريدية المركزية كانت غير كافية.

التوصيات: أوصى الباحثان بإمكانية مشاركة جميع ممرضي وحدة العناية المركزة والردهات الجراحية في برنامج تعليمي خاص حول العناية بالقسطرة الوريدية المركزية وتشجيعهم على المشاركة في البرامج التعليمية من أجل تحسين معارفهم بشأن العناية بالقسطرة الوريدية المركزية.

الكلمات المفتاحية: معارف الممرضين، العناية بالقسطرة الوريدية المركزية.

ABSTRACT:

Background: Central Venous Catheters (CVCs) are flexible long catheter that inserted in central veins may placement in subclavian, internal jugular and femoral vein or veins in arm.

Aims of the study: to evaluate of knowledge for nursing staff concerning central venous catheter care in al-Nasiriyah cardiac center.

Methodology: A descriptive cross-sectional design was carried out at AL-Nasiriyah Cardiac Center during the period from 26th September, 2020 to 1st June, 2021 on a total study sample (30 nurses) who are working in intensive care unit (ICU) and surgical wards in AL-Nasiriyah Cardiac Center.

Results: The results of this study showed that nurses' knowledge concerning central venous catheter care domain were low at mean score (0.26).

Conclusion: The knowledge of nurses about central venous catheter care was deficit.

Recommendations: The researchers recommended that all ICU and surgical ward nurses need to participate in education program on CVCs care and encourage them to participate in educational programs in order to improve their knowledge.

Keywords: Nurses' knowledge, Central venous catheter care.

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INTRODUCTION

Central venous catheters (CVCs) are long, flexible tubes that inserted in large veins of the neck (the internal jugular vein), the chest (the subclavian vein), the groin (the femoral vein) or the veins of the arms (Basilic, brachial, and cephalic veins) for patients who need regular access to the bloodstream ⁽¹⁾.

Central venous catheters are wide, and long catheter that is inserted into a broad vein. There are several different types of CVCs obtainable, due to illness condition; medical staff may select short-term or long-term CVCs for patients to implement care in clinical setting ⁽²⁾.

In critically-ill patients, CVCs are widely used for the administration of fluids, medications, blood products, total parenteral nutrition (TPN), it also beneficial in the installation of a Tran's venous pacing electrode and hemodynamic status monitoring ⁽³⁾.

CVCs have lumens that are single or multiple. The selection of the number of lumens depending on the status of a patient and the medication recommended ⁽⁴⁾.

CVCs are widely used in ICU. The probable risks of CVCs include the following: mechanical complications such as arterial puncture, pneumothorax, and hem thorax

mediastina hematoma adjacent nerves injury, beside infectious complications or (site infections), for example thrombophlebitis and endocarditis ⁽⁵⁾.

Central line-associated blood stream infections (CLABSI) are most common hospital acquired infections with record mortality of (12-25%). The use of antibiotics and a strict aseptic procedure will minimize the rate of infection considerably ⁽⁶⁾.

Care is a portion of nurses' work. Which is the application of evidence-based practice to patient conditions in a specific environment, and it is becoming more prevalent in nursing field ⁽⁷⁾. Nurses perform an important part in preventing central line-associated blood stream infections (CLABSI), because they are accountable for the routine care and maintenance of central catheters ⁽⁸⁾. Nurses play a significant role in the prevention of the development of catheter infections ⁽⁹⁾. When care team or nurse provides standardized, meticulous care to CVCs, the risk of infection is substantially reduced from about (25 % to 30 %) ⁽¹⁰⁾.

The best way for nurses to help reduce the risk of bloodstream infection linked to a CVC is by using hand hygiene. Proper hand hygiene may require either the use of a waterless alcohol-based product or using an antibacterial soap with water and proper rinsing before performing CVCs care ⁽¹¹⁾. After the catheter is implanted, the nurse is responsible for CVCs care. Proper care provided by the nurse also effects on the rate of development of infections and other catheter-related complications ⁽¹²⁾.

AIMS OF THE STUDY

The study aims to evaluate of knowledge for nursing staff concerning central venous catheter care in al-Nasiriyah cardiac center.

METHODOLOGY

A quantitative descriptive cross-sectional study design is used to obtain the study's goals about evaluating central venous catheter care knowledge at the ICU and surgical wards at AL-Nasiriyah Cardiac Center. The study time-frame was (26th September, 2020 to 1st June, 2021) on total study samples of (30 nurses) who were working in ICU and surgical wards.

- Study instrument

The researchers constructed a self-administered questionnaire, and which consisted of two parts; First consists of (7) items involving demographic data (age, gender, educational level, years of experience in nursing, years of experience in AL-Nasiriyah cardiac center, training courses). The second part consists from (3) domains. It is consisted of self-administered questionnaire that included three domains; the first domain was about nurses' knowledge regarding central venous catheter. It was include of (6) items, the second domain nurses knowledge regarding types of central venous catheter consist of (6) items, and the third domain nurses knowledge regarding central venous catheter care contains of (15) items.

The content validity was determined by assessment of multiple choice questions through a panel of (12) experts which had more than 4 years of professional experience in nursing and medical fields, for examining the study instrument concerning central venous catheter care.

Reliability of the questionnaire was used to determine the accuracy of the questionnaire, since the results showed a good level of stability for the studying phenomena, at the level of items of questionnaire, all those were calculated by using the major statistical: Alpha Cronbach ($r = 0.87$).

- Scoring

The number of correct answers was utilized to identify the level of knowledge to every nurse, rating score from answers (1) to correct and (0) to incorrect, every nurses took (20-30) minutes to complete the questionnaire.

- The Statistical Data Analysis

Statistical Package for Social Sciences (SPSS) and the Microsoft Excel (2010) were used to analyze the data. Descriptive Data Analysis was used to analyze the results of the study.

RESULTS:

Table (1): Study Sample Demographic Data (N= 30)

Demographic Data	Rating and Intervals	Frequency	Percent
Age (years)	≤ 25	14	46.7
	26-30	12	40.0
	31-35	3	10.0
	36-40	1	3.3
	Total	30	100.0
Gender	Male	14	46.7
	Female	16	53.3
	Total	30	100.0
Educational Level	Secondary School Nursing	3	10.0
	Nursing institute	15	50.0
	College of Nursing	12	40.0
	Total	30	100.0
Years of experience in nursing	1-5 years	24	80.0
	6-10 years	5	16.7
	≥ 16 years	1	3.3
	Total	30	100.0
Years of Experience in the Cardiac Center	1-5 years	28	93.3
	6-10 years	2	6.7
	Total	30	100.0
Participate in training courses	Yes	26	86.7
	No	4	13.3
	Total	30	100.0

Table 1 shows study sample demographic data. The study results display the dominant age group of nurses were (46.7%) at age group (≤ 25) years old. Concerning gender the table indicate that (53.3%) of nurses were female. Regarding to levels of education, the table results display the majority of nurses (50.0%) were nursing institute. According to years of experience in nursing field the results illustrates that the greater number of nurses were (80.0%) were ranging of their nurses have (1- 5) years of experience in nursing. In regards to years of experience in cardiac center, the results indicate that the majority of nurses (93.3%) of the nurses have (1-5) years of experience in cardiac center. Additionally, majority of study samples (86.7%) don't have participate in training courses related to central venous catheter care.

Table (2): Overall Assessment of the Nurses' Knowledge about Central Venous Catheter Care

Main studied domains	Levels	Freq.	%	Means	Assessment
Overall Nurses' Knowledge	Deficit (0 - 0.33): 1	28	93.3	0.26	Deficit knowledge
	Moderate (0.34 – 0.67): 2	2	6.7		
	Total	30	100.0		

Table 2 shows that the overall assessments of the nurses' knowledge to main studied domains of central venous catheter care were deficit level of knowledge.

Table (3): Nurses' Responses for Knowledge Concerning three domain of central venous catheter care

Domains of knowledge	Question	Nurses responses				
		Correct		Incorrect		Mean
		F	%	F	%	
First Domain: Nurses' knowledge about central venous catheters	1. The central venous catheter is	25	83.3	5	16.7	0.83 G
	2-The benefits of using a central venous catheter, all except	1	3.3	29	96.7	0.03 D
	3. One of these options is not a complication of the central venous catheter	7	23.3	23	76.6	0.23 D
	4. Indication for insertion of central venous catheter	23	76.6	7	23.3	0.77 G
	5. One of the most important ways of transmitting infection to the central venous catheter	5	16.7	25	83.3	0.17 D
	6. Among the signs and symptoms of a bloodstream infection	21	70.0	9	30.0	0.70 G
Second domain: Nurses' knowledge about types of central venous catheters	1. A type of central venous catheter that stays in the patient's body for (3-10) days	7	23.3	23	76.6	0.23 D
	2. One of the types of central venous catheters that contain fibrous restrictions (darcon) are	5	16.7	25	83.3	0.17 D
	3. Distinguished central venous catheters Tunneled from non-Tunneled	9	30.0	21	70.0	0.30 G
	4. Any type of central venous catheter can be inserted by nurse	10	3.33	20	66.7	0.33 D
	5. It is preferable to use implanted ports in a material	3	10.0	27	90.0	0.10 D
	6. One of the types of intravenous catheters that can be used for long periods of time	10	3.33	20	66.7	0.33 D
Third Domain: nurses' knowledge about central venous catheter care	1. One of them not essential elements for central venous catheter care	4	13.3	26	86.7	0.13 D
	2. The transparent dressing is changed every	12	40.0	18	60.0	0.40 M
	3. The nurse should change the gauze pad every time	7	23.3	23	76.7	0.23 D
	4. When are signs and symptoms of infection monitored?	3	10.0	27	90.0	0.10 D
	5. Which types of sterilization should be used on the skin surface	5	16.7	25	83.3	0.17 D
	6. The catheter cap is changed every	8	26.7	22	73.3	0.27 D
	7. The dressing of the central venous catheter is changed	15	50.0	15	50.0	0.50 M

	8. Friction massage (back and forth) technique is used when sterilizing the skin for a period of time	8	26.7	22	73.3	0.27 D
	9. A administrative set should be changed every	2	6.7	28	93.3	0.07 D
	10. A size of syringe that used when washing the catheter or giving medication and drawing blood	4	13.3	26	86.7	0.13 D
	11. The volume of saline solution that must be push before and after the blood is drawn	2	6.7	28	93.3	0.07 D
	12. The catheter is washed with..... of saline solutions before and after giving medications	6	20.0	24	80.0	0.20 D
	13. When the catheter is removed, the nurse must be place the patient in a position	0	0	30	100	0.00 D
	14. When is the injection surface sterilized or cleaned?	6	20.0	24	80.0	0.20 D
	15. The lines of the central venous catheter should be flushed at all except for	1	3.3	29	96.7	0.03 D

F: Frequencies, %: Percent; Level of Evaluation: D= Deficit (0 - 0.33): 1; M= Moderate (0.34 – 0.67): 2; G=Good (0.68 – 1.00): 3

Table 3 shows that the assessment of the nurses' knowledge to main studied domains (Nurses' knowledge about central venous catheters, Nurses' knowledge about types of central venous catheters, nurses 'knowledge about central venous catheter care were deficit level of knowledge).

DISCUSSION

The table (1) showed the demographic characteristics of this study. The results of the study regarding the age of nurses revealed that the majority of participants (46.7%) were (\leq 25) years old. These results of the current study were supported by a study conducted by Sakshi, et al., (2019) that was displayed about (63%) of the nurses were in the age group (21-30) years old⁽¹³⁾.

The results revealed that the highest percentages of the nurses participants in the study sample were female (53.3%) while were the male (46.7%). This finding from the current study was agrees with a study conducted by Xu et al., (2020) which showed that the majority of the study sample were females (95.2%)⁽¹⁴⁾. The high percentage of females nurses in study duo to central admission in universities and institutes where the admission is for every five student, their distribution is as follows: (4) females and (1) male. Therefore, notice the large number of female nurses in the specialized centers.

With regard to educational levels, the findings of the study showed that most of the study participants graduated from nursing institute (50.0%). A study by Deshmukh et al., (2012) is completely in agreement with the results of the current study which acknowledged that most of the participants (56.67%) were graduates from nursing institute⁽¹⁵⁾. This finding may reveal the fact that the government sector employing nurses with diploma degree in nursing.

According to years of experience in nursing field the results illustrates that the greater number of nurses were (47.5.0%) were ranging of their nurses have less than 5 years of

experience in nursing. These findings agreed with study done by Aydoğdu et al., (2020), which revealed that the highest percentage (29.7 %) of study sample have (2-5) years of experience in nursing ⁽¹²⁾.

Regarding years of experience in cardiac center, the maximum of participants in the study found (70.0%) were ranging in their years of experience less than 5 years. This is result supported by study done by Ahmed et al., (2019) who reported that most the sample of the study had less than 5 years of experience in ICU ⁽¹⁶⁾. While regarding to the training courses about central venous catheter care, the findings of the study explain that all of the nurses (86.7 %) don't have training courses, This result agrees with study done by Ahmed et al., (2019) who presented (48%) of nurses had no participation in training courses ⁽¹⁶⁾.

The results of the study illustrated that the knowledge of nurses about central venous catheter care was deficit as shown in the table (2and 3):

The results of the study were partly in line with a similar study by Xu et al., (2020), who explained that (57%) had inadequate knowledge ⁽¹⁴⁾.

These results agree with study done by Ahmed et al., (2019) who mentioned that more than one half (54%) of nurses have fair level of knowledge ⁽¹⁶⁾.

Also agree with Barbosa et al., (2017) who presented that lack of nurses knowledge about central venous catheter care ⁽¹⁷⁾. This indicates that nurses did not receive enough training in the care of central venous catheters. Furthermore, one potential reason for these results is that there are less motivated to develop their knowledge about central venous catheter care, and this is may be due to a lack of training course.

CONCLUSIONS

Nurses' knowledge of central venous catheter care was deficit, which considering inadequate the critical and unique nature of the ICU and surgical wards.

RECOMMENDATIONS

All ICU and surgical ward nurses need to participate in education program and encourage them to improve their knowledge about CVCs care at Al-Nasiriyah cardiac center, Activating the Training and Development Center for action educational courses about central venous catheter care in the cardiac center, especially nurses working in ICU and surgical ward, Similar studies with a larger sample size are needed in all Iraqi cities.

- Ethical Considerations

After formal permission was taken from AL-Nasiriyah Cardiac Center administration, and verbal and written permission was taken from nurses who works in ICU and surgical wards. And an assurance that the information gathered from the questionnaire would be kept private and that no one would be able to identify it. After reviewing the research objectives and specifics, every nurse has the option to approve or decline participation in the study.

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