



Knowledge and Practice of Registered Nurses about Patient Safety after Cardiac Catheterization in Punjab Institute of Cardiology Hospital in Lahore, Pakistan

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Background: Cardiac Catheterization is a critical health status which requires standardized care policies, as well as it needs qualified and skilled health provider to obtain good outcome of management. This study aimed to assess the knowledge and practice of nurses regarding patient safety after cardiac catheterization.

Material: This cross-sectional study was conducted in Punjab Institute of cardiology located in Lahore, Pakistan from 01st December 2016 to 31st March, 2017. 171 female nurses through using convenient sampling technique were included in the study. Questionnaire with multiple choice was used to collect data. Likert scale for multiple choose questionnaires regarding knowledge and practice of the nurses were used. Collected data were analyzed using SPSS version 21.

Results: Out of 171 participants, all (N = 171) were female, most nurses had job experience of 2-5 years and 6-10 years, they were represented by 34.5% and 31.0% respectively. Mean of total knowledge was found good, when compared to mean of practice which was poor. This showed that nurses have good knowledge about post cardiac catheterization complication. It was found significant value of $P < 0.0001$ by applying correlation, that showed there was a good association between knowledge and practice ($P < 0.05$).

Conclusion: There was positive association between the knowledge and practice about patient's safety after Cardiac Catheterization among Pakistanis registered nurses. Nurses those have proper knowledge and practice could help in rehabilitation of patients.

Keywords: Registered Nurses, Knowledge, Practices, Patient Safety, Cardiac Catheterization

Introduction

Cardiac Catheterization (CC) is that process which supposed as the golden standard for the diagnosis, evaluation, and treatment of cardiac diseases. Cardiac catheterization process is an extra valuable process for diagnosis and obtaining minute

information about the structure and function of the cardiac chambers, valves and coronary arteries. This process also include studies of the right or left sides of the heart and coronary arteries (Mohammed, Said & Salah 2013; Ahmed, 2015).

Many patients suffer from preventable harm during health care in hospitals (Sheikh et al., 2015). Therefore, improving patient safety is at the forefront of policy and practice (Panesar et al., 2015). Moreover, it is responsibility of cardiac nurses to take care of post cardiac catheterize procedure patients with proper standard because it is very contagious to retain infectious diseases (Sutker, 2008). There are

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ideas that most of the threats are relate to patients safety and illness and arise from health care provider and organization system factor. Professional factors such as health care professionals' awareness and skillfulness regarding patient safety have an influence on to patient safety, particularly when health care provider have a deficit level of safety knowledge and skillfulness to deliver secure care for their patients. Hence, the competencies of the cardiac nurses is imperative, little negligence's of cardiac nurses, there is a chance of getting minor and major complication such as hematoma, ecchymosis and oozing, cardiac perforation and abrupt closure etc. Therefore, nurses are playing an extremely important role in post cardiac catheterization patients management (Ahmed, 2015). Moreover, nurses need to develop standard and safe protocol of care for the patients of post cardiac catheterization and percutaneous coronary intervention that protocols should be researched and be evidence based. Hence, Patient outcomes can be improved if there is a greater quantity or quality of nursing care (Ahmed, 2015).

Moreover nurses who work in patient care after post cardiac catheterization procedure should be educated and have vast knowledge and skills to treat patients whose coming from different cardiac catheterizations procedure that require standard operating nursing care (Chen & Crozier, 2014).

Nurses in the Cardiac Catheterization Lab (CCL) play a vital part in providing quality care to their patients. Through knowledge and current evidence based practice, is the key to become an effective and efficient nurse (Incardone, 2011).

CC staff and nurses whose caring for post cardiac catheterization procedure patients should be work together to reduce complications, when possible, and treat these complications when they occur. Careful nurses' assessment and monitoring are required to reach these goals. Nurses with specialized in cardiac training must need to assess, identify and manage the blood vessels (Ahmed, 2015). Given the importance of the discussed issues, this study aimed to assess the knowledge and practice of nurses regarding patient safety after cardiac catheterization.

Methods and Material

This cross sectional study included 171 consecutive female registered nurses selected for

the period of 1st December, 2016 to 31st March 2017 from Punjab Institute of Cardiology (PIC), Lahore, Pakistan.

Nurses who working in emergency ward, CCU and cardiology ward of PIC Hospital were included while medical doctors and paramedical staff of PIC were excluded from study.

Data were collected using the structured questionnaire which was comprised of three sections. Section A was about socio demographic data, section b was a structured knowledge questionnaire which contained knowledge questions and section C was a structured practice questionnaire which contained practice questions. All questionnaires were attached to this manuscript.

The questionnaire contains thirty one questions were presented in a multiple choice response format with a single correct answer.

A score of 1 was awarded for each correct answer. Therefore, $\leq 40\%$ correct responses were considered as poor knowledge/ practice and $> 40\%$ correct responses were considered as good knowledge/practice.

Statistical Analysis

Data were analyzed by using Statistical Package for the Social Sciences (SPSS) version 21.0. Frequencies and percentages analysis were given for qualitative variables. Correlation of the knowledge and practice of the studied nurses were analyzed by using Spearman correlation coefficient. Level of significance was taken as $\leq 5\%$.

Results

All the studied nurses were women. According to qualification distribution, the present study showed that most of the nurses were B.sc nursing diploma (48.5%), and the rest were post RN BSc (22.8%) and also specialized in CCU (28.7%). The majority of theme (41%, $N = 71$) were in age range between 26 and 30 years old. Figure 1 shows the frequency rate of other age groups. The distribution of the studied nurses in terms of job experience is shown in Figure 2. As this Figure shows, the most participants (35%, $N = 59$) had job experience between 2 and 5 years. According Figure 3, the most participants were unmarried (33%, 64).

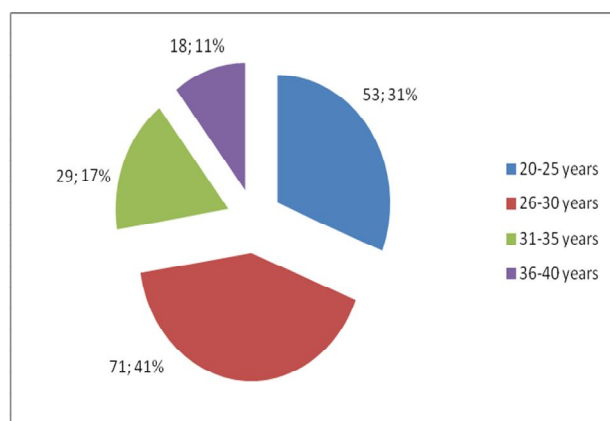


Figure 1. Demographic information of the participants with respect to age group.

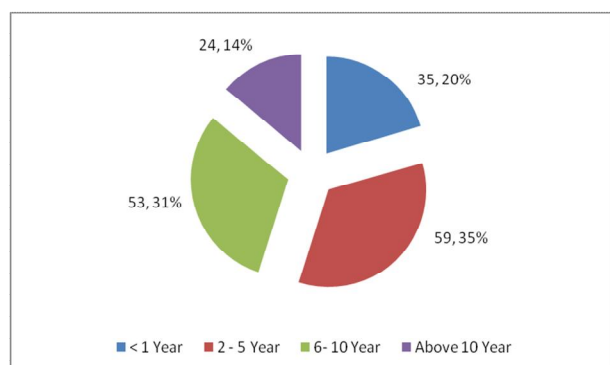


Figure 2. Distribution of the sample according to job experience.

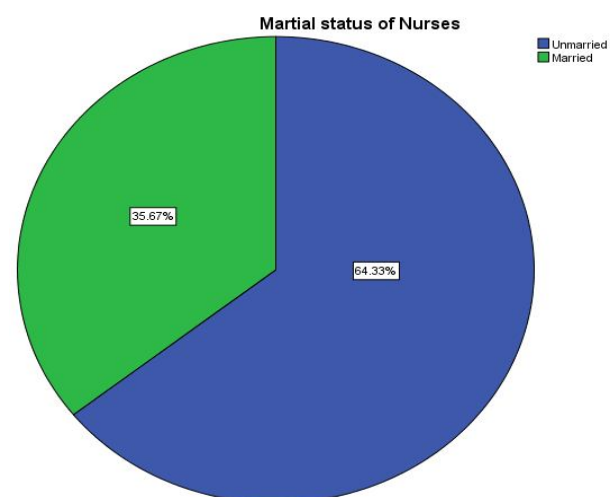


Figure 3. Graphical Distribution with respect to marital status.

The correlation between knowledge and practice is shown in Table 1. As this Table shows, there is positive correlation between knowledge and practice of the studied nurses ($P < 0.0001$). Furthermore, the correlation between

nurse's qualification and knowledge is shown in Table 2. This correlation at $P = 0.024$ is significant.

Table 1. Correlation Test applied on Knowledge and Practice.

	Value	P-value.
Correlation	0.877	< 0.0001

Table 2. Correlation Test applied on nurse's qualification and knowledge.

	Value	P-value.
Correlation	0.070	0.024

Discussion

Nursing care is important in patients' survival and prevents the patients from post cardiac catheterization complications. Thus, the competence of nurses due to their knowledge and practice regarding patient care after cardiac catheterization is very crucial. The current study assessed the nurse's knowledge and practice regarding patient's safety after cardiac catheterization.

The findings regarding age groups and job experiences of the studied nurses of this study revealed that most of nurses were in age group of 26-30 years and with less than 5 years' experience. This finding indicated that most of the nurses were juniors. The advantages of nurses in young age group are being hyperactive which is always required in such crucial /vital wards. This justification discussed in previous study (Arathy, 2011). According to findings regarding the marital status distribution, was also in the line of both previous findings regarding age group and job experience. Furthermore, this study indicated that most of nurses working in the PIC, were highly educated and qualified that is a kind of benefit for CC wards.

In current study, the studied nurse's knowledge about post cardiac catheterization complication was assessed. The results showed the most nurses had good knowledge about post cardiac catheterization complication. Similar study that was done in Al-Najaf city to determine the nurses knowledge found that nurses had good knowledge about cardiac patient care (Nahla Shaaban, 2015). Nurses' knowledge was good and sufficient about cardiac catheterization procedure. In consistent to the present study, a study conducted in cardiac unit

to determine the nurses knowledge about pacemaker implantation showed the similar results (Hadi, 2016). This study conducted to determine the nurses' knowledge about caring patient who had intra-aortic balloon pump. However, previous research reported unsatisfactory nurses knowledge regarding caring of patients with cardiac procedure (Rushdy et al., 2015). In current study nurses have a good knowledge about patient care after cardiac catheterization procedure.

Furthermore, the present study showed, the nurses' practice regarding patient care after cardiac catheterization was poor. A similar study conducted in Cairo university hospitals to determine the nurses' practice about patient caring regarding connected intra-aortic balloon pump was very unsatisfactory (Rushdy et al., 2015). In current study nurses had good practice about some post procedurals items like explain post procedure care, removal of sheath, apply firm pressure over catheter site, assess stability for pain, assess skin color or temperature and instruct the patient for self-management at home. A study conducted in Sulaimani city and found that nurses had good practice about post cardiac procedure (Aziz, 2014).

Current study assessed the knowledge and practice performance of nurses about post cardiac catheterization complication and different post cardiac catheterization care procedure provided by the cardiac nurses. The overall outcome has shown that, there was a

variation between knowledge and practice in some procedures. Overall knowledge about post cardiac catheterization complication was better as compared to practice, but practice was found good and near to knowledge only among some post procedure items like explain post procedure care, removal of sheath, apply firm pressure over catheter site, assess stability for pain, assess skin color or temperature and instruct the patient for self-management at home but the overall practice was poor. In current study it was found that nurses had good knowledge and poor practice.

Out of 28 standard items of knowledge and practice which were assessed, only 2 items were significant that is the qualification of nurses through crosstab with knowledge and also the correlation between knowledge and practice was significant. A similar study conducted in Egypt and reported similar findings of insignificant relationships between age, job experience and other variables (Nahla Shaaban, 2015). In current study there was no significant correlation existed between gender, age, job experience and marital status. There were negative correlation between practice and years of experience.

Moreover, there was a significant relationship between knowledge and practice, knowledge and qualification. This result showed that qualification has great effect on the nurse's knowledge and nurses and can develop their knowledge through the experience.

Questionnaire to assess the Knowledge and Practices among Registered Nurses about Patient Safety after Cardiac Catheterization in Punjab Institute of Cardiology Hospital

Section-A Socio Demographic Data

For each question please circle one answer that best reflects the extent to which you agree.

Organization	Designation:			
Gender	1- Male <input type="checkbox"/>	Marital Status	1- Married <input type="checkbox"/>	
	2- Female <input type="checkbox"/>		2- Unmarried <input type="checkbox"/>	
Age Group	1- 20-25ears <input type="checkbox"/>	Qualification	1- General Nursing Diploma + <input type="checkbox"/>	
	2- 26-30years <input type="checkbox"/>		Midwifery <input type="checkbox"/>	
	3- 31-35 years <input type="checkbox"/>		2- BSN/Post RN <input type="checkbox"/>	
	4- 36-40years <input type="checkbox"/>		3- MSN <input type="checkbox"/>	
			4- Specialization <input type="checkbox"/>	
Job Experience	1- < 1 Year <input type="checkbox"/>	Years Of Experience in	1- < 1Year <input type="checkbox"/>	
	2- 1-5 Years <input type="checkbox"/>	cardiac unit	2- 1-5Years <input type="checkbox"/>	
	3- 6-10 Years <input type="checkbox"/>		3- 6-10Years <input type="checkbox"/>	
	4- Above 10 Years <input type="checkbox"/>		4- Above 10Years <input type="checkbox"/>	

Section-B Structured Knowledge Questionnaire.

NOTE: Encircle the most appropriate answer.

1. What are the local complications occurring in patients after cardiac catheterization? Mark all that apply.	
1- Hematoma <input type="checkbox"/>	2- AV fistula <input type="checkbox"/>
3- Thrombus formation <input type="checkbox"/>	4- Stroke <input type="checkbox"/>
5- Renal failure <input type="checkbox"/>	6- AORTIC dissection <input type="checkbox"/>
2. How will you detect pseudo aneurysm after cardiac catheterization?	
1- Pain at the puncture site <input type="checkbox"/>	2- Severe bleeding from the puncture site <input type="checkbox"/>
3- Pulsatile swelling and bruit <input type="checkbox"/>	4- Fever <input type="checkbox"/>
3. When should you check the serum creatine level of patients after cardiac catheterization?	
1- Immediately after the procedure <input type="checkbox"/>	2- One day after the procedure <input type="checkbox"/>
3- One week after the procedure <input type="checkbox"/>	4- No need to check <input type="checkbox"/>
4. What is the complication of delayed sheath removal?	
1- Bleeding <input type="checkbox"/>	2- Thrombus formation <input type="checkbox"/>
3- Air embolism <input type="checkbox"/>	4- Tachypnea <input type="checkbox"/>
5. Development of contrast-induced nephropathy occurs	
1- One week after the procedure <input type="checkbox"/>	2- 5 days after the procedure <input type="checkbox"/>
3- 2-3 days after the procedure <input type="checkbox"/>	4- One the day of procedure <input type="checkbox"/>
6. Who is at risk for developing renal failure after cardiac catheterization?	
1- Young adult <input type="checkbox"/>	2- Hypertensive patients <input type="checkbox"/>
3- Elderly <input type="checkbox"/>	4- Dyslipidemia <input type="checkbox"/>
7. What is the sign of thrombus formation after cardiac catheterization?	
1- Absence of distal pulse <input type="checkbox"/>	2- Pain at the puncture site <input type="checkbox"/>
3- Swelling at the puncture site <input type="checkbox"/>	
8. How should the patient's affected extremity to be kept immobilized after cardiac catheterization? <input type="checkbox"/>	
1- 1-3 hour <input type="checkbox"/>	2- 4-6 hours <input type="checkbox"/>
3- 6-8 hour <input type="checkbox"/>	4- above 8 hours <input type="checkbox"/>
9. Who is at risk for developing pulmonary edema after cardiac catheterization?	
1- LV failure <input type="checkbox"/>	2- RV failure <input type="checkbox"/>
3- AORTIC Regurgitation <input type="checkbox"/>	4- Pulmonary AV fistula <input type="checkbox"/>
10. When you detect a hematoma at the puncture site after cardiac catheterization, you should not.	
1- Elevate the bruised extremity <input type="checkbox"/>	2- Apply ice <input type="checkbox"/>
3- Lower the bruised limb <input type="checkbox"/>	4- Apply pressure bandage <input type="checkbox"/>

Answer Key: 1, 3, 2, 2, 3, 3, 1, 3, 1, 3: Coded into Correct and Incorrect.

Section-C Structured Practice Questionnaire.

S. No	Items	Always	Sometimes	Never
1	Explain the post procedure care	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	Remove the sheath	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	Observe the catheter site insertion for bleeding or hematoma	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	Assess the skin color or temperature	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	Assess the vital sign for (15-30) minutes for (2) hours initially and less frequently	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	Assess for stability of pain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	Monitor the patient by ECG	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	Places the patient in a supine position a padded table in the room	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	Encourage patient to increased fluid intake	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
10	Observe for signs of hypersensitivity to the contract and other sign	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
11	Check the patient output	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
12	Observe the extremity in which catheter inserted straight for 4-6 hours after procedure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
13	Immobilizes the arm on arm board, if the antecubital vessels are used	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
14	Instruct the patient to cough it there is a chest discomfort	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
15	Pressure dressing over the insertion site when catheters withdraw	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16	Applies firm pressure over the site, if any bleeding occur	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17	Monitor intake output after 24 hours following the procedure	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18	Instruct the patient for self-management at home, before discharge	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Conclusion

This study found the knowledge of registered nurses' knowledge regarding cardiac catheterized patients' casing is good. However the study revealed that the nurses' practice was not satisfactory. There was a significant association between knowledge and practice regarding patients' care of these patients among registered nurses' of Lahore, Pakistan. However, these results should be confirmed in more future researches.

Conflict of Interest

There is no conflict of interest for this article.

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Authors ' contribution

MF, MA, HS, AG, SHA; Study Importation, Data collection and analysis, Writing the first draft of the Paper.

MF, MA, HS, AG, SHA: Study design and data analysis, editing and confirming the final draft of the paper.

MF, MA, HS, AG, SHA: Study design, confirming the final draft of the paper.

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