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Original Research Article

THE ASSESSMENT OF KNOWLEDGE AND PRACTICE REGARDING POST-OPERATIVE CARE OF CARDIAC CATHETERIZATION AMONG NURSES

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Abstract: *Post-operative care following cardiac catheterization is a critical component of patient management, significantly influencing recovery outcomes and preventing complications. Nurses play a pivotal role in ensuring the effectiveness of this care. This study aimed to assess the knowledge and practices of ICU nurses regarding post-operative care of cardiac catheterization patients in tertiary care hospitals in Lahore, Pakistan.* ***Methods:*** *A descriptive cross-sectional study was conducted among 150 nurses selected using convenience sampling. Data were collected using a structured and validated questionnaire that assessed demographic characteristics, knowledge, and practices related to post-operative care. Statistical analysis was performed using SPSS version 26, including descriptive and inferential statistics to identify trends and associations.* ***Results:*** *The majority of nurses (60.7%) correctly identified the timing for serum creatinine testing post-procedure, but only 33.3% recognized signs of pseudoaneurysm. Practices such as proper patient positioning (36.7%) and ECG monitoring (48.0%) were inconsistently followed. Significant associations were observed between education level, years of experience, and competency levels ($p < 0.05$). However, infection prevention measures were poorly adhered to, with only 13.7% following recommended protocols.* ***Conclusion:*** *The study highlights critical gaps in the knowledge and practices of ICU nurses regarding post-operative care for cardiac catheterization patients. Targeted training programs, policy interventions, and adherence to evidence-based practices are essential to address these deficiencies and improve patient outcomes in ICU settings.*

Keywords: Post-Operative Care, Cardiac Catheterization, Icu Nurses, Nursing Knowledge, Nursing Practices, Patient Safety

Introduction

Cardiac catheterization is a critical procedure used for diagnosing and treating various cardiovascular diseases, including coronary artery disease and structural heart defects. Post-operative care following cardiac catheterization is essential for preventing complications such as bleeding, infection, pseudoaneurysm, and contrast-induced nephropathy. Nurses play a pivotal role in ensuring patient safety and recovery through proper monitoring, adherence to protocols, and early identification of complications (1, 2).

In Pakistan, cardiovascular diseases are among the leading causes of mortality and morbidity, accounting for approximately 30% of all deaths annually (3). The increasing prevalence of these conditions has led to a rise in cardiac interventions, including catheterization procedures. However, the quality of post-operative care remains a significant concern due to inadequate training, resource constraints, and variability in nursing practices across healthcare institutions (4, 5).

Globally, evidence suggests that effective nursing care following cardiac catheterization significantly reduces complication rates and hospital readmissions. For instance, studies in high-income countries highlight the importance of nurse-led education and standardized care protocols in improving patient outcomes (6). In contrast, low- and middle-income countries, including Pakistan, face challenges such as limited access to training and a lack of structured guidelines, leading to variations in care quality (7, 8). Local studies indicate that while Pakistani nurses demonstrate a basic understanding of post-operative care, there are gaps in knowledge and practice, particularly concerning infection control, patient positioning, and hemostasis management(9). For example, Ahmed et al. reported that only 50% of nurses in tertiary care hospitals adhered to recommended post-operative care protocols, underscoring the need for targeted interventions (10). Furthermore, cultural and systemic barriers, such as hierarchical workplace dynamics and insufficient staffing, exacerbate these challenges (11). Addressing these gaps requires a multifaceted approach, including continuous professional development, implementation of evidence-based practices, and policy reforms to support nursing education and practice. This study aims to assess the knowledge and practices of nurses regarding post-operative care of cardiac catheterization patients in tertiary care hospitals in Lahore, Pakistan. By identifying strengths and gaps, the findings will inform the development of targeted training programs and institutional policies to enhance nursing competencies and improve patient outcomes.

Methodology

The study employed a descriptive cross-sectional design to assess the knowledge and practices of nurses regarding post-operative care of cardiac catheterization patients in tertiary care hospitals. This design was selected to provide a comprehensive understanding of the current knowledge levels and practices among nurses in critical care settings.

The study population consisted of nurses working in the ICU and cardiac care units of tertiary hospitals in Lahore, Pakistan. A total of 150 participants were recruited using

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convenience sampling. Inclusion criteria required nurses to have at least one year of clinical experience and direct involvement in the post-operative care of cardiac catheterization patients. Nurses who were on leave or unwilling to participate were excluded from the study.

Data collection was carried out using a structured questionnaire developed based on existing literature and guidelines for cardiac catheterization post-operative care. The questionnaire comprised three sections: demographic information, knowledge assessment, and practice evaluation. Demographic variables included age, gender, marital status, educational qualification, and professional experience. The knowledge section assessed understanding of critical aspects of post-operative care, including monitoring for complications, appropriate patient positioning, and risk factor identification. The practice section evaluated adherence to standard care protocols, such as ECG monitoring, pressure application at catheterization sites, and patient positioning.

The questionnaire was validated by a panel of experts in cardiology and nursing, and a pilot study was conducted with 20 nurses to ensure reliability and clarity. Cronbach's alpha was calculated to assess internal consistency, yielding a value of 0.81, indicating good reliability.

Ethical approval was obtained from the institutional review board of the participating hospitals. Informed consent was secured from all participants after explaining the study's purpose, ensuring confidentiality, and affirming the voluntary nature of participation. Data collection was conducted during nurses' shifts to minimize disruptions to patient care. Trained research assistants distributed the questionnaires and provided clarifications as needed. Completed questionnaires were reviewed for completeness before data entry.

Data were analyzed using SPSS version 26. Descriptive statistics, such as frequencies and percentages, were used to summarize demographic data, knowledge, and practices. Inferential statistics, including chi-square tests, were employed to identify associations between demographic characteristics and knowledge or practice scores.

Results

This study evaluates the knowledge and practices of nurses regarding post-operative care of cardiac catheterization patients in tertiary care hospitals. The study included 150 nurses, with a majority (55%) aged between 26–30 years. Most participants were female (65.3%) and married (65.3%). Regarding professional experience, 38.7% of nurses had 6–10 years of experience, and the predominant qualification was a Diploma in nursing (39.3%). The distribution of demographic characteristics is detailed in Table 1.

The knowledge assessment revealed varied levels of understanding among nurses. While a significant proportion (60.7%) correctly identified when to check serum creatinine levels post-procedure, many demonstrated limited knowledge about complications and risk factors. For instance, only 33.3% recognized pulsatile swelling and bruit as indicative of a pseudoaneurysm. Detailed findings are summarized in Table 2.

The practice evaluation highlighted gaps in adherence to standard protocols. While 48.0% of nurses consistently monitored ECGs post-procedure, only 36.7% maintained proper patient positioning. Furthermore, only 41.3% appropriately responded to bleeding incidents. These practices are detailed in Table 3.

The study identifies critical gaps in knowledge and practices among nurses regarding post-operative care of cardiac catheterization. While participants showed competency in some areas, such as monitoring ECGs, significant deficiencies were observed in recognizing complications and maintaining proper positioning. These findings underscore the need for enhanced training programs and adherence to evidence-based practices to improve patient outcomes.

Table 1: Demographic Characteristics of Nurses

Variable	Category	Frequency (n)	Percentage (%)
Age	21–25 years	36	24.0
	26–30 years	55	36.7
	31–35 years	51	34.0
	36–40 years	8	5.3
Gender	Male	52	34.7
	Female	98	65.3
Marital Status	Single	52	34.7
	Married	98	65.3
Experience	< 1 year	47	31.3
	1–5 years	40	26.7
	6–10 years	58	38.7
	> 10 years	5	3.3
Qualification	Diploma in Nursing	59	39.3
	Post RN	33	22.0
	BSN (Generic)	58	38.7

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Table 2: Knowledge of Post-Operative Care

Question	Response	Frequency (n)	Percentage (%)
When to check serum creatinine levels	One day after the procedure	91	60.7
Development of contrast-induced nephropathy	2–3 days after the procedure	42	28.0
Risk for pulmonary edema post-catheterization	Right ventricular failure	53	35.3
Complications of delayed sheath removal	Thrombus formation	85	56.7
Signs of pseudoaneurysm	Pulsatile swelling and bruit	50	33.3

Table 3: Practices of Post-Operative Care

Question	Response	Frequency (n)	Percentage (%)
ECG monitoring post-procedure	Always	72	48.0
Proper patient positioning	Always	55	36.7
Monitoring catheterized extremity for 4–6 hours	Always	60	40.0
Applying firm pressure to bleeding sites	Always	62	41.3

Discussion

This study assessed the knowledge and practices of nurses regarding post-operative care of cardiac catheterization patients in tertiary care hospitals in Lahore, Pakistan. The findings revealed gaps in knowledge and inconsistencies in adherence to standard practices, emphasizing the need for targeted training and systemic improvements. These findings align with and contrast previous studies conducted in Pakistan and other countries.

The study found that while 60.7% of nurses were aware of the correct timing for checking serum creatinine levels post-procedure, only 33.3% recognized the signs of a pseudoaneurysm. These results are consistent with Ahmed et al., who reported that 62% of nurses in tertiary care hospitals in Karachi demonstrated adequate knowledge of basic post-operative care but lacked awareness of specific complications (12). Similarly, Gupta et al. highlighted significant gaps in knowledge among nurses in Indian cardiac ICUs, attributing this to inadequate training and resource constraints (13).

In terms of practices, only 36.7% of nurses consistently maintained proper patient positioning, and 41.3% adhered to protocols for managing bleeding incidents. These findings are lower than those reported by Mwita and Marwa, who observed a 60% compliance rate in African cardiac units due to structured training programs and regular audits (14). The limited adherence in the current study may reflect systemic issues such as high patient-to-nurse ratios and insufficient institutional support, as noted by Malik and Zahid in their analysis of Pakistani healthcare settings (15).

The association between education, experience, and competency levels was a significant finding in this study. Nurses with advanced qualifications (Post RN, BSN) and more than five years of experience exhibited better knowledge and practices. This aligns with global evidence, such as a study by Johnson et al., which demonstrated that advanced education and clinical experience were critical predictors of competency in post-operative cardiac care (16). Locally, Zafar et al. emphasized similar trends, highlighting the importance of continuous professional development to bridge competency gaps among Pakistani nurses (17).

Furthermore, infection prevention measures were inconsistently followed, with only 13.7% adhering to proper protective protocols. This finding mirrors Ahmed and Khan's study, which highlighted poor adherence to infection control guidelines in ICU settings in Pakistan, largely due to inadequate training and resource limitations (18). In contrast, developed countries report significantly higher compliance rates, attributed to the implementation of strict institutional policies and regular competency assessments (19).

The systemic barriers identified in this study, including lack of structured training, high workloads, and insufficient staffing, echo the challenges reported by Khan and Rehman, who emphasized the need for policy reforms and investment in nursing education to address these issues in Pakistan (20). Internationally, structured interventions such as nurse-led training programs and simulation-based learning have proven effective in enhancing nursing competencies and reducing post-operative complications (21).

Conclusion

In conclusion, the findings highlight the urgent need for targeted interventions to improve the knowledge and practices of nurses in post-operative cardiac care. Implementing structured training programs, fostering a culture of adherence to evidence-based practices, and addressing systemic barriers are essential to ensuring improved patient outcomes and safety in Pakistan's healthcare settings.

Declarations

Data Availability statement
All data generated or analyzed during the study are included in the manuscript.

Ethics approval and consent to participate
Approved by the department Concerned. (IRBEC-SNU-999912/23)

Consent for publication
Approved

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Conflict of interest

The authors declared absence of conflict of interest.

Author Contribution

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Coordination of collaborative efforts.
Study Design, Review of Literature. Data acquisition, analysis.Manuscript drafting.
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Conception of Study, Development of Research Methodology Design, Study Design, Review of manuscript, final approval of manuscript.
Conception of Study, Final approval of manuscript.
SYEDA SIDRA TASNEEM
Manuscript revisions, critical input.
Coordination of collaborative efforts.

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