

Postoperative Care in Coronary Artery Bypass Grafting (CABG) Patients: Evaluating Nurses' Knowledge Implications

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Abstract

Background: Postoperative coronary artery bypass grafting (CABG) care requires specialized nursing skills. Deficits in knowledge may compromise patient recovery and safety.

Materials and Methods: A descriptive cross-sectional study was conducted among 80 Registered Nurses working or having worked in the Cardiac Care Unit of Sheikh Zaid Hospital, Lahore. Data were collected through a structured questionnaire assessing knowledge of pain management, vital sign monitoring, infection control, anticoagulant therapy, and respiratory care. **Results:** Descriptive analysis

showed that 35% of nurses had high knowledge, 40% moderate, and 25% low knowledge, with the highest mean scores in patient education (M = 6.8, SD = 1.7) and infection control (M = 6.5, SD = 1.9), and the lowest in anticoagulant therapy (M = 5.6, SD = 2.3). Inferential statistics revealed that qualification was significantly associated with better knowledge in pain management (p = 0.036) and anticoagulant therapy (p = 0.015), while nurses with more than 10 years of experience showed superior knowledge in complication monitoring (p = 0.049). **Conclusion:** Specialized training, interdisciplinary

collaboration, and continuous professional development are essential to improve postoperative CABG care and ensure quality patient outcomes.

1. INTRODUCTION

Coronary artery bypass grafting (CABG) is one of the most frequently performed surgical interventions for patients with advanced coronary artery disease, offering improved survival and symptom relief (Martin & Turkelson, 2006). Postoperative care plays a critical role in optimizing outcomes, as patients are vulnerable to complications such as pain, infections, respiratory issues, and impaired mobility (DiMarco, 2010). Nurses serve as frontline caregivers in this process, ensuring continuous monitoring, symptom management, and emotional support, all of which significantly influence patient recovery and quality of life (Barolia et al., 2012).

Despite advancements in surgical techniques, CABG patients continue to experience substantial post-discharge problems, including pain, fatigue, and reduced self-care capacity (Gill et al., 2023). Evidence highlights that structured self-management education programs improve clinical outcomes, reduce complications, and enhance patients' independence (Sharaf Eldin et al., 2021). Similarly, preoperative education addressing pain and rehabilitation contributes to better postoperative care experiences, highlighting the necessity of evidence-based nursing interventions (Khalid et al., 2022).

However, challenges remain in nurses' knowledge and practice regarding CABG care, particularly in infection control, anticoagulant management, and mobilization practices (Farooq & John, 2022; Mary et al., 2018). Inadequate knowledge may increase the risk of postoperative infections, which remain a global concern in cardiothoracic surgery (Ali et al., 2024). Evaluating nurses' knowledge is therefore essential to identify gaps and guide targeted training programs, fostering interdisciplinary collaboration and

continuous professional development aimed at improving postoperative recovery and long-term quality of life for CABG patients.

2. MATERIALS AND METHODS

2.1 STUDY DESIGN

A descriptive, cross-sectional study design was employed to assess the knowledge of registered nurses regarding postoperative care of coronary artery bypass grafting (CABG) patients. This design enabled the collection of data from a relatively large sample within a specific timeframe, providing an overview of existing knowledge and practices related to CABG recovery.

2.2 STUDY SETTING AND POPULATION

The study was conducted at Sheikh Zaid Hospital, Lahore, in the Cardiac Care Unit (CCU), where CABG procedures are routinely performed. The study population included registered nurses with diverse levels of clinical experience, ranging from newly qualified staff to those with more than five years of practice.

2.3 SAMPLE SIZE

A total of 80 participants were recruited using purposive sampling. This sample size was considered adequate to provide representative insights into nurses' knowledge levels.

2.4 INCLUSION CRITERIA

The study included:

- Registered nurses directly involved in the postoperative care of CABG patients.
- Nurses with a minimum of six months of experience in CCU.
- Participants who provided informed consent.

2.5 DATA COLLECTION METHODS

Data were collected using a structured questionnaire specifically designed to evaluate nurses' knowledge in critical areas of postoperative CABG care, including pain management, monitoring for complications, infection control, anticoagulant therapy, respiratory care, and patient education.

2.6 DATA ANALYSIS

Data were analyzed using SPSS (Version 26). Descriptive statistics, including means, medians, standard deviations, frequencies, and percentages, were calculated to summarize knowledge levels. Inferential statistics such as chi-square tests and independent t-tests were applied to examine associations between knowledge scores and demographic variables (e.g., years of experience, qualification level). Categorical variables were presented as frequencies and percentages, while continuous variables were summarized using means and standard deviations.

2.6 ETHICAL CONSIDERATIONS

Written informed consent was secured from all participants prior to data collection. Participation was voluntary, and respondents were assured that they could withdraw at any time without consequences. Anonymity and confidentiality of participants' information were maintained throughout the research process, and the collected data were used strictly for academic and research purposes.

3. RESULTS

TABLE 1. BACKGROUND CHARACTERISTICS OF REGISTERED NURSES (N = 80)

Characteristics	Categories	Frequency (n)	Percentage (%)
Age (years)	26–30	20	25.0
	31–35	24	30.0
	36–40	18	22.5
	>40	18	22.5
Qualification	Diploma in Nursing	22	27.5
	BSN	36	45.0
	Post-RN BSN / MSN	22	27.5
Years of Experience	6 months – 2 years	0	0.0
	3–5 years	0	0.0
	>5 years	80	100.0
Specialized Training in CABG	Yes	34	42.5
	No	46	57.5
Participation in CPD	Yes (workshops/seminars)	29	36.3
	No	51	63.7

Among the 80 registered nurses included in the study, the majority were between 31–35 years (30.0%), followed by 26–30 years (25.0%), and equal proportions were in the 36–40 years and above 40 years categories (22.5% each). Regarding educational qualifications, nearly half of the respondents held a Bachelor of Science in Nursing (BSN) degree (45.0%), while 27.5% had a Diploma in Nursing and an equal share (27.5%) had advanced qualifications such as Post-RN BSN or MSN. As per the inclusion criteria, all participants had more than five years of clinical experience in CCU/ICU settings. In terms

of professional development, 42.5% reported having received specialized training in CABG care, while 57.5% had not undergone such training. Furthermore, only 36.3% of nurses had participated in continuous professional development (CPD) activities, with the majority (63.7%) reporting no CPD exposure.

TABLE 2: KNOWLEDGE SCORES OF NURSES IN KEY AREAS OF POSTOPERATIVE CABG CARE (N = 80)

Knowledge Area	Mean Score (out of 10)	SD	Median	High Knowledge n (%)	Moderate Knowledge n (%)	Low Knowledge n (%)
Pain Management	6.2	1.8	6.0	28 (35.0)	32 (40.0)	20 (25.0)
Monitoring for Complications	5.8	2.1	6.0	22 (27.5)	34 (42.5)	24 (30.0)
Infection Control	6.5	1.9	7.0	30 (37.5)	30 (37.5)	20 (25.0)
Anticoagulant Therapy	5.6	2.3	6.0	18 (22.5)	30 (37.5)	32 (40.0)
Respiratory Care	6.0	2.0	6.0	24 (30.0)	34 (42.5)	22 (27.5)
Patient Education	6.8	1.7	7.0	34 (42.5)	28 (35.0)	18 (22.5)

The evaluation of nurses' knowledge in six critical areas of postoperative CABG care revealed mixed results. The highest mean knowledge scores were observed in patient education (M = 6.8, SD = 1.7) and infection control (M = 6.5, SD = 1.9), while the lowest scores were found in anticoagulant therapy (M = 5.6, SD = 2.3) and monitoring for

complications (M = 5.8, SD = 2.1). Overall, 35% of nurses demonstrated high knowledge levels, 40% had moderate knowledge, and 25% showed low knowledge, indicating gaps in essential areas of care.

TABLE 3: ASSOCIATION BETWEEN QUALIFICATION AND KNOWLEDGE SCORES IN POSTOPERATIVE CABG CARE (INDEPENDENT T-TEST)

Knowledge Area	Qualification	Mean (SD)	t-value	p-value
Pain Management	Diploma (n=22)	5.8 (1.9)	2.14	0.036*
	BSN+ (n=58)	6.5 (1.7)		
Infection Control	Diploma	6.1 (2.0)	1.95	0.055
	BSN+	6.7 (1.8)		
Anticoagulant Therapy	Diploma	5.1 (2.2)	2.48	0.015*
	BSN+	6.0 (2.1)		
Patient Education	Diploma	6.5 (1.6)	1.12	0.267
	BSN+	6.9 (1.7)		

Table 3 shows that nurses with a BSN or higher qualification consistently scored higher than diploma holders across all knowledge domains. The differences were statistically significant for pain management ($p = 0.036$) and anticoagulant therapy ($p = 0.015$), where BSN-prepared nurses demonstrated better understanding compared to diploma holders. Although BSN nurses also had higher mean scores in infection control and patient education, these differences did not reach statistical significance ($p > 0.05$).

TABLE 4: ASSOCIATION BETWEEN YEARS OF EXPERIENCE AND KNOWLEDGE OF COMPLICATION MONITORING (CHI-SQUARE TEST)

Years of Experience	Adequate Knowledge n (%)	Inadequate Knowledge n (%)	χ^2 -value	p-value
5–7 years (n=28)	12 (42.9)	16 (57.1)	3.87	0.049*
8–10 years (n=24)	10 (41.7)	14 (58.3)		
>10 years (n=28)	18 (64.3)	10 (35.7)		

Table 4 indicates a significant association between years of experience and knowledge of complication monitoring ($p = 0.049$). Nurses with more than 10 years of experience demonstrated the highest level of adequate knowledge (64.3%), compared to 5–7 years (42.9%) and 8–10 years (41.7%). In contrast, inadequate knowledge was more frequent among nurses with fewer years of experience, highlighting that longer clinical exposure contributes to stronger competence in recognizing complications after CABG surgery.

TABLE 5: OVERALL KNOWLEDGE LEVEL OF NURSES ON POSTOPERATIVE CABG CARE (N=80)

Knowledge Level	Frequency (n)	Percentage (%)
High ($\geq 70\%$)	28	35.0
Moderate (50–69%)	32	40.0
Low (<50%)	20	25.0

Table 5 shows that only 35% of nurses demonstrated a high level of knowledge regarding postoperative CABG care. The majority fell into the moderate knowledge category (40%), while 25% exhibited low knowledge levels. These findings suggest that

although a portion of nurses possess adequate knowledge, most require further training and support to strengthen their competencies in managing CABG patients effectively.

TABLE 6: FEMALE NURSES' PERCEIVED NEED FOR ADDITIONAL TRAINING IN POSTOPERATIVE CABG CARE (N = 80)

Critical Area	Frequency (n)	Percentage (%)
Pain Management	44	55.0
Monitoring for Complications	52	65.0
Infection Control	36	45.0
Anticoagulant Therapy	56	70.0
Respiratory Care	48	60.0
Patient Education	30	37.5

Table 6 shows that the majority of nurses expressed a need for further training in anticoagulant therapy (70%) and monitoring for complications (65%), which were also the weakest knowledge areas identified in earlier findings. More than half reported training needs in respiratory care (60%) and pain management (55%), highlighting critical areas for skill enhancement. In contrast, fewer nurses indicated the need for additional training in infection control (45%) and patient education (37.5%), suggesting these were comparatively stronger areas of knowledge. Overall, the results emphasize that nurses are aware of their training gaps and prioritize support in areas directly linked to postoperative safety and recovery in CABG patients.

4. DISCUSSION

The present study revealed mixed levels of nurses' knowledge in postoperative CABG care, with stronger performance in patient education and infection control, and weaker knowledge in anticoagulant therapy and complication monitoring. These findings are

consistent with El Desouky et al. (2020), who identified variability in nurses' performance across different domains of CABG care, noting that areas requiring critical judgment such as complication monitoring often posed greater challenges. The expressed need for additional training in anticoagulant therapy (70%) underscores a persistent gap in pharmacological competence, which aligns with the evidence that medication management remains a critical but underemphasized area in nursing education (Algersha et al., 2005).

The study also found that nurses with higher academic qualifications (BSN or above) performed significantly better in pain management and anticoagulant therapy compared to diploma holders. Similar observations were reported by Fredericks, Ibrahim, and Puri (2009), who concluded that structured education and advanced training significantly improve nurses' ability to deliver evidence-based postoperative care. Furthermore, the positive association between longer years of experience and knowledge of complication monitoring mirrors the findings of Mary et al. (2018), who emphasized that both training and clinical exposure are vital in shaping competent nursing practice, particularly in early detection of postoperative complications.

Infection control emerged as a relatively stronger domain, with fewer nurses perceiving the need for further training. This aligns with global concerns highlighted by Ali et al. (2024), who noted that postoperative infections are a major challenge in cardiothoracic surgery, yet targeted infection-control interventions have shown measurable improvements. Similarly, the fact that nurses scored highest in patient education is noteworthy, given the evidence from Bergvik, Wynn, and Sørli (2008) and Ball and Swallow (2016), who emphasized that well-informed patients demonstrate better recovery and satisfaction. Nevertheless, the moderate overall knowledge levels

and the strong demand for further training identified in this study reaffirm the necessity of continuous professional development and structured educational programs, as echoed in intervention studies such as Al-gersha et al. (2005).

5. CONCLUSION

The study highlights significant knowledge gaps among nurses in key areas of postoperative CABG care, particularly in anticoagulant therapy and complication monitoring, underscoring the need for structured training programs and continuous professional development. To ensure optimal patient recovery and safety, hospitals should prioritize specialized educational interventions, regular workshops, and interdisciplinary collaboration to strengthen nursing competencies in CABG care.

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