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PERCEPTIONS OF NURSES AND PATIENTS REGARDING POST-CORONARY ARTERY BYPASS GRAFT

Original Research

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ABSTRACT

Background: Coronary artery bypass graft (CABG) is a critical surgical intervention for patients with coronary artery disease, requiring extensive postoperative care and education to prevent complications and ensure optimal recovery. Adequate patient education before discharge significantly influences adherence to treatment, self-care practices, and long-term health outcomes. However, discrepancies often exist between the perceived learning needs of patients and the educational priorities of healthcare providers, highlighting the necessity of evaluating these perspectives to enhance patient-centered care.

Objective: This study aimed to assess and compare the perceived learning needs of post-CABG patients and nurses to develop a structured educational approach that addresses patient-specific concerns before hospital discharge.

Methods: A cross-sectional study was conducted at Peshawar Institute of Cardiology and the Cardiac Rehabilitation Center (CRC) at Hayatabad Medical Complex. A total of 180 participants, including 90 post-CABG patients and 90 registered nurses, were enrolled using non-probability convenience sampling. Data were collected using the Modified Cardiac Patients Learning Needs Inventory (MCPLNI) questionnaire. Descriptive statistics and the chi-square test were applied using the Statistical Package for the Social Sciences (SPSS) to analyze the responses.

Results: Patients ranked chest and lower limb wound care (4.3 ± 0.516), dietary information (4.3 ± 1.328), and postoperative complications (4.3 ± 1.823) as their highest learning priorities, whereas nurses placed greater emphasis on wound care (4.2 ± 0.824), medication management (4.0 ± 0.514), and dietary guidance (4.0 ± 0.591). The domain of "Introduction to the Cardiac Unit" was perceived as moderately important by patients (3.55 ± 0.713). Differences in ranking highlight a gap between patient and nurse perspectives on educational needs.

Conclusion: The findings indicate a disparity between patient and nurse perceptions of post-CABG educational needs, emphasizing the necessity of incorporating patient preferences into discharge planning. Structured educational programs tailored to patient concerns can enhance postoperative recovery and reduce complications.

Keywords: Cardiac rehabilitation, Coronary artery bypass graft, Health education, Learning needs, Patient discharge, Postoperative care, Wound management.

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INTRODUCTION

The coronary artery bypass graft (CABG) is a well-established surgical intervention aimed at improving myocardial perfusion by circumventing blocked or narrowed coronary arteries using grafted blood vessels obtained from the chest, lower limb, or upper limb. As a palliative treatment for coronary artery disease (CAD), CABG remains a crucial procedure, particularly given the high prevalence of cardiovascular diseases (CVDs) worldwide. In the United States alone, over 120 million individuals suffer from at least one form of CVD, including hypertension, coronary artery disease, stroke, and heart failure, making it the leading cause of mortality and morbidity across both genders (1,2). The pathophysiology of CAD was first described in 1876 by Adam Hammer, who proposed that angina results from impaired coronary blood flow, while myocardial infarction occurs due to complete arterial occlusion. The historical evolution of CABG includes pivotal contributions from Alexis Carrel, who pioneered coronary artery bypass implantation in 1910, and Dr. John Gibbon, who introduced the heart-lung machine in the 1930s, thereby revolutionizing cardiac surgery. Later, Vineburg and Buller, in the 1950s, implanted the internal thoracic artery (IMA) into the heart muscle, while D. W. Gordon Murray developed arterial transplants for coronary circulation (3). The burden of CAD is substantial, with approximately 10.9% of adults aged 45 and older and 17.0% of individuals aged 65 and older affected by the disease. The economic impact is also significant, with healthcare costs related to CAD estimated at $126.2 billion in 2010, projected to rise to over $177 billion by 2040 (4). According to the American Heart Association (AHA), as of 2016, an estimated 15.5 million Americans aged 20 and older were living with coronary heart disease (5-7).

CABG is among the most frequently performed major surgical procedures, taking approximately three to four hours to complete, followed by an average recovery period of six to twelve weeks. Postoperatively, patients typically require hospitalization for five to seven days before discharge. More than 400,000 CABG procedures are conducted annually in the United States, underscoring its critical role in managing CAD (6). In Pakistan, CAD prevalence is reported at 26.9% in men and 30.0% in women, with regional variations in the frequency of CABG procedures, including centers in Peshawar (8-10). Despite the high volume of CABG surgeries, postoperative patient education remains an essential yet often overlooked aspect of recovery. Studies indicate that patients discharged after CABG prioritize learning about their condition, including procedure outcomes, anatomy and physiology, risk factor modification, medication management, and lifestyle changes. Nurses play a vital role in patient education, guiding individuals on nutrition, exercise, medication adherence, and necessary follow-up care. Ensuring that patients understand their medication regimen, avoid contraindicated drugs, and monitor blood clotting parameters is essential for preventing complications. Additionally, lifestyle modifications, such as dietary changes and smoking cessation, contribute significantly to long-term prognosis (11, 12).

Following CABG, patients commonly experience a range of physical and psychological symptoms that can hinder daily activities, sleep quality, and emotional well-being (9). Given that hospitalized patients are highly dependent on medical staff, transitioning to home care with an open incision presents a significant challenge, particularly when patients perceive a lack of information regarding their postoperative recovery. A gap in knowledge regarding symptom management, wound care, and activity limitations may lead to increased anxiety, complications, and readmission. Therefore, assessing patients' informational needs prior to discharge is essential to designing effective educational interventions that address their concerns and enhance recovery outcomes (13-15). Postoperative complications, including infections, bleeding, pericardial effusion, and pulmonary issues, can further complicate recovery. Research highlights the importance of structured patient education on medication adherence, self-care, and sleep hygiene, as these factors influence post-CABG outcomes. The first week following discharge is particularly challenging for both patients and their caregivers, necessitating comprehensive education at the time of hospital release. Without adequate knowledge, patients face increased risks of complications, emotional distress, and dissatisfaction with their medical experience. Nurses, as primary caregivers, are in a unique position to bridge this knowledge gap, ensuring that patients receive the necessary guidance for a smooth recovery. However, discrepancies between what nurses perceive as critical educational topics and the actual learning needs of patients may result in unmet needs and suboptimal recovery (11,12).This study aims to evaluate the perceived educational needs of both patients and nurses regarding post-CABG recovery in Pakistan. By identifying these needs, healthcare providers can develop tailored educational programs that facilitate patient self-care, improve adherence to medical advice, and ultimately enhance recovery outcomes. As the first study in Pakistan to explore this aspect, its findings will serve as a foundational resource for healthcare professionals managing CABG patients, contributing to improved patient care and postoperative management strategies.

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METHODS

A descriptive comparative cross-sectional study design was employed to assess the perceived learning needs of patients and nurses regarding post-coronary artery bypass graft (CABG) recovery. The study was conducted in major cardiac units of Khyber Pakhtunkhwa (KPK), where CABG procedures are performed. A three-month period was allocated for participant recruitment, data collection, and analysis to ensure comprehensive data gathering. Non-probability convenience sampling was utilized to enroll participants, allowing for the inclusion of eligible individuals based on predefined criteria. The sample size was determined using G*Power software, with an effect size of 0.40, a two-sided chi-square test at a significance level of $p<0.05$, and a statistical power of 80%. Based on these parameters, a total of 180 participants were required, comprising 90 registered nurses and 90 CABG patients (13). Inclusion criteria for nurses required registration as a professional nurse with at least one year of experience in a post-cardiac surgery unit. Patients were eligible for inclusion if they were 30 years of age or older, had undergone CABG surgery for the first time, and were currently admitted to a cardiac surgical unit. Additionally, only patients who were fully conscious and able to communicate were included. Patients who had not undergone surgery during their current hospital stay were excluded, as their informational needs might differ. Further exclusion criteria included student nurses, nurses with less than one year of experience, and patients with documented cognitive impairments or those unwilling to participate (14).

Data collection was carried out at the Peshawar Institute of Cardiology and the Cardiac Rehabilitation Center (CRC) in Hayatabad Medical Complex. A validated, structured questionnaire was used to ensure reliability and consistency in data collection. The "Modified Cardiac Patients Learning Needs Inventory (MCPLNI)" questionnaire, originally developed by Gerard and Peterson in 1994, was adopted for this study. This instrument, which demonstrated high internal consistency (Cronbach's alpha = 0.95), comprised 44 items distributed across eight thematic areas. Responses were recorded on a five-point Likert scale, ranging from 1 (not important at all) to 5 (extremely important). The degree of perceived learning needs was categorized based on the total average score, with scores of 1–2.33 classified as low, 2.34–3.66 as moderate, and 3.67–5.00 as high. A separate demographic questionnaire was also administered to collect participant information, including gender, marital status, educational qualification, occupation, and monthly income (15). Ethical approval for this study was obtained from the Institutional Review Board (IRB) and the Ethical Review Board (ERB) of Northwest College of Nursing (Approval Reference: DIR/ORIC/Ref/25/00088). Prior to participation, all eligible individuals provided written informed consent, ensuring voluntary participation and adherence to ethical research principles. Data were systematically organized and analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, including frequencies, percentages, means, and standard deviations, were used to summarize demographic characteristics and learning need priorities (16). This study was funded by the Office of Research, Innovation, and Commercialization (ORIC) at Khyber Medical University. The findings from this research are expected to contribute to the development of targeted educational interventions aimed at improving post-CABG patient education and nursing practices.

RESULTS

The study included 180 participants, consisting of 90 post-coronary artery bypass graft (CABG) patients and 90 nurses. The mean age of the patients was 65 years (±8.7), ranging from 45 to 88 years, while the mean age of nurses was 28 years (±3.68), ranging from 22 to 40 years. The majority of the patients were male (95.6%), had a primary education (36.7%), were unemployed (40%), married (67.8%), and had a monthly income between 20,000 and 35,000 PKR (43.3%). Among nurses, 66.7% were male, 53.3% were married, and all were employed in government institutions (100%), with 93.3% earning more than 35,000 PKR per month. In assessing post-CABG learning needs, both nurses and patients considered all domains of education to be of high importance, with the exception of the "Introduction to the Cardiac Unit" domain, where patients ranked it as moderate (3.55 ± 0.713). The highest-ranked learning need for both groups was related to "Chest and Leg Wound Care" (patients: 4.3 ± 0.516, nurses: 4.2 ± 0.824). Among patients, "Dietary Information" (4.3 ± 1.328) was ranked as the second most important, followed by "Complications" (4.3 ± 1.823). "Psychological Factors" was rated lower in priority (3.8 ± 1.374), ranking ninth among patients. Conversely, nurses ranked "Medication Information and Awareness" as the second most important domain (4.0 ± 0.514), followed by "Dietary Information" (4.0 ± 0.591). The lowest-ranked learning need for nurses was "Psychological Factors" (3.7 ± 0.718).Although both groups generally ranked learning needs as important, discrepancies were observed between their prioritization. Nurses assigned higher importance to structured medical knowledge, including medication and wound care, while patients prioritized broader concerns such as diet and complications. These findings highlight a gap between the perceived educational needs of patients and the information nurses emphasize, indicating the necessity for a more patient-centered approach in post-CABG education to ensure comprehensive and effective recovery guidance.

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Table 1: Demographic of the post-coronary artery bypass graft patients and nurses

Characteristics of patients	n (%)	Characteristics of nurses	n (%)
Mean age (mean, SD, range)	(65,±8.7,45-88)	Mean age (mean, SD, range)	(28,±3.68,22-40)
Gender		Gender	
Male	86(95.6)	Male	60(66.7)
Female	4(4.44)	Female	30(33.3)
Educational level		Educational level	
Primary school education	33(36.7)	Diploma	30(33.3)
Secondary and higher education	25(27.8)	Post-RN and BSN	60(66.7)
Uneducated	32(35.5)	MSN	0
Occupation		Occupation	
Government	15(16.7)	Government	90(100)
Private	25(27.8)	Private	0
Retired	14(15.5)	Retired	0
Unemployed	36(40)	Unemployed	0
Marital status		Marital status	
Single	4(4.4)	Single	42(46.7)
Married	61(67.8)	Married	48(53.3)
Divorced	2(2.2)	Divorced	0
Widowed	23(25.5)	Widowed	0
Monthly income in RS		Monthly income in RS	
<20,000	23(25.6)	<20,000	0
20,000-35,000	39(43.3)	20,000-35,000	6(6.7)
>35,000	28(31.1)	>35,000	84(93.3)

Table 2: Means score, standard deviation for each domain of the MCPLI

MCPLNI domain	Patient's perception			Nurses' perceptions		
	Total mean score	SD	Rank	Total mean score	SD	Rank
Introduction to the Cardiac Unit	3.55	±0.713	10	3.9	±0.689	9
Anatomy and physiology	3.8	±0.680	7	4.0	±0.635	4
Psychological factors	3.8	±1.374	9	3.7	±0.718	10
Risk factors	4.2	±2.022	5	3.9	±0.682	8

MCPLNI domain	Patient's perception			Nurses' perceptions		
	Total mean score	SD	Rank	Total mean score	SD	Rank
Medication information	4.2	±0.786	4	4.0	±0.514	2
Diet information	4.3	±1.328	2	4.0	±0.591	3
Physical activity	3.9	±1.280	6	3.9	±0.607	6
Complications	4.3	±1.823	3	4.0	±0.830	5
Chest and leg wound care	4.3	±0.516	1	4.2	±0.824	1
Other information	3.8	±0.889	8	3.9	±0.612	7
Total learning needs score	4.0	±0.509	High	3.9	±0.390	High

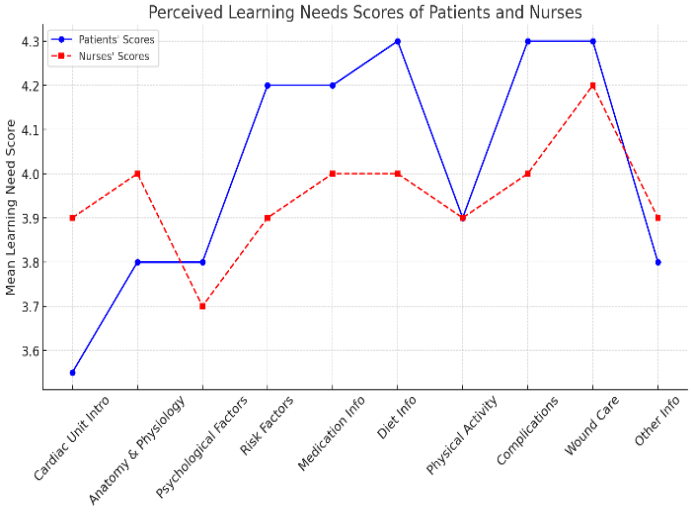

Figure 1 Perceived Learning Needs Scores of Patients and Nurses

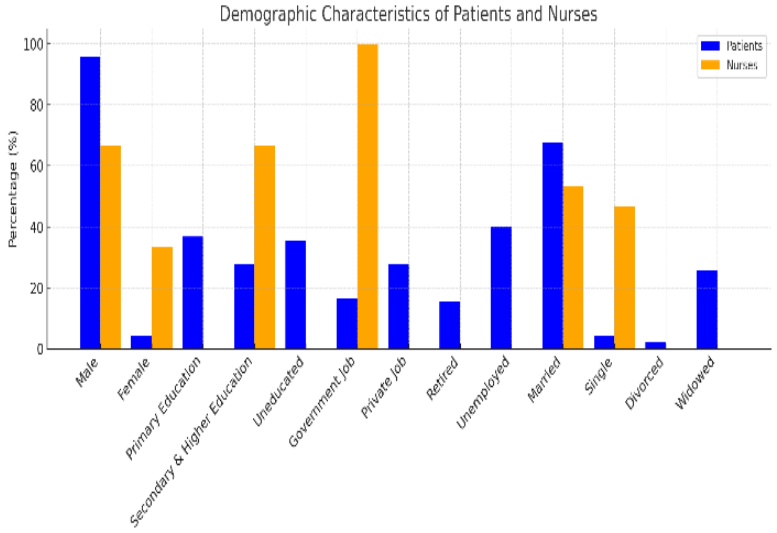

Figure 2 Demographic Characteristics of Patients and Nurses

DISCUSSION

The findings of this study align with previous research, highlighting that the most critical learning requirement for post-coronary artery bypass graft (CABG) patients was chest and lower limb wound care. Patients prioritized acquiring knowledge on symptoms of wound infections, proper wound protection, and appropriate post-surgical wound management. This outcome is expected, given the immediate physical changes experienced postoperatively, making wound care a primary concern. The emphasis on wound care reflects not only patient anxiety about potential complications but also the significant role of nurses and healthcare teams in ensuring proper postoperative healing (17). Differences in prioritization between patients and nurses were evident, particularly regarding dietary education. Nurses ranked dietary guidance as the third most essential learning need, while patients placed it as the second most important. This variation suggests that patients perceive dietary modifications as a crucial factor in their recovery, whereas nurses balance dietary education with other medical priorities. Similarly, patients ranked information on postoperative complications as the third most critical learning need, whereas nurses assigned it a lower priority. This discrepancy underscores the importance of tailored educational interventions to ensure that patients are adequately informed about potential complications and their management to prevent hospital readmission (18).

Medication management was another critical area of learning, with nurses ranking it as the second most important aspect of patient education. Patients also recognized its significance, as they often need guidance on medication schedules, administration, and purposes. Previous studies have emphasized the importance of medication education, given that patients frequently lack knowledge about the

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names, dosages, and side effects of prescribed drugs. Many patients rely heavily on physicians for medication decisions and may seek alternative healthcare providers if dissatisfied with their prescriptions. The need for structured medication education is reinforced by the complexity of post-CABG pharmacological regimens, requiring clear and concise guidance to enhance adherence and minimize medication-related complications (19). Exercise and physical activity ranked as the sixth most important learning need for both nurses and patients. This contrasts with some previous studies that considered physical activity to be of lesser importance (10). The relatively higher ranking in this study may be attributed to the fact that many participants were employed, making the ability to return to work and daily activities a major concern. While physical activity is essential for cardiac rehabilitation, patients may require further education on its benefits, appropriate intensity levels, and safe progression post-surgery (20).

Psychological factors were ranked as the least significant learning need by both groups, with patients and nurses assigning it the ninth and tenth ranks, respectively. The low prioritization of psychological well-being is consistent with prior research and may be influenced by cultural factors. In the study setting, emotional resilience is often considered a personal or familial matter rather than a primary responsibility of healthcare providers. Patients may rely on familial support rather than seeking psychological guidance from the medical team. However, neglecting psychological health can affect recovery, particularly given the potential for post-CABG depression and anxiety, warranting further exploration in future studies (18). Anatomy and physiology education were ranked higher by nurses than patients, with nurses considering it the fourth most important learning need, whereas patients ranked it as the seventh. The lower prioritization by patients suggests that they may not perceive a need to understand the detailed mechanisms of cardiac function. Many patients with lower educational backgrounds might view this knowledge as complex or unnecessary, relying instead on healthcare professionals to manage their condition. This finding aligns with other studies where patient understanding of cardiac anatomy and physiology was ranked among the least important educational domains. Simplified and practical educational strategies may be necessary to bridge this gap and enhance patient comprehension of their condition (18-20).

Patients ranked understanding of risk factors as the fifth most critical educational need, while nurses placed it lower, at eighth. This disparity suggests that patients recognize the importance of preventing future cardiac events, particularly given their post-surgical vulnerability. In contrast, nurses may focus on immediate postoperative care rather than long-term risk management. Previous studies have reported varying rankings for this category, with some placing risk factor education as the least important, further emphasizing the need for a structured approach that balances both short-term and long-term patient education (15). All learning needs were deemed highly significant by both patients and nurses, except for the "Introduction to the Cardiac Unit" domain, which was considered moderately important by patients. This finding aligns with prior studies where healthcare providers ranked this domain as the least essential. Since patients are often already familiar with the hospital environment by the time, they undergo CABG, they may perceive little need for additional information about hospital protocols or unit-specific details (19). This study presents several strengths, including its structured assessment of learning needs from both patient and nurse perspectives, allowing for a comprehensive comparison. However, limitations include its cross-sectional design, which restricts the ability to evaluate changes in learning needs over time. The use of a convenience sampling method may have introduced selection bias, and the study was conducted in only two tertiary care institutions, limiting generalizability. Future research should explore learning needs in private sector hospitals and expand the sample size to enhance the applicability of findings. Longitudinal studies assessing how educational interventions impact post-discharge outcomes could provide further insights into optimizing post-CABG patient education.

CONCLUSION

This study underscores the critical importance of assessing and addressing the learning needs of post-coronary artery bypass graft (CABG) patients to facilitate a smoother recovery process. While nurses prioritized wound care, medication management, and nutritional education, patients placed greater emphasis on understanding wound care, dietary modifications, and potential complications. These differences highlight the need for a patient-centered educational approach that aligns medical guidance with patient concerns. By identifying these learning needs, healthcare providers can develop structured and tailored educational programs that empower patients with the knowledge necessary for self-care, reducing complications, and improving overall recovery outcomes. Hospital management should consider revising patient education materials to ensure that post-CABG guidance is comprehensive, relevant, and effectively meets the needs of both patients and caregivers. This study contributes to enhancing postoperative education strategies, ultimately supporting better patient outcomes and long-term health management.

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AUTHOR CONTRIBUTIONS

Author	Contribution
Saqib Javed	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Aman Ullah	Substantial Contribution to study design, acquisition and interpretation of Data Critical Review and Manuscript Writing Has given Final Approval of the version to be published
Andaleeb Safdar	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Gulbud Din	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Imdad Ullah	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Afrooz Bibi	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published
Nasar Khan	Contributed to study concept and Data collection Has given Final Approval of the version to be published
Wasim Muhammad	Wrote the Manuscript
Tufail Ahmad	Supervised
Muhammad Kashif*	Supervised

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