



A STUDY TO ASSESS THE EFFECTIVENESS OF AN EDUCATION MODULE ON KNOWLEDGE REGARDING POST OPERATIVE HOME CARE OF PATIENTS POST OPEN HEART SURGERY IN A QUATERNARY CARE HOSPITAL

Medical Surgical Nursing

Lorena D Prakash Tutor, CoNAH(R&R)

Rashi Batra CTVS Matron, AH(R&R)

Jashanpreet Kaur J CTVS Matron, AH(R&R)

Santosh Jakhar CTVS Matron, AH(R&R)

Keka Chatterjee Principal, CoNAH(R&R)

Vineetha Narayanan CTVS Matron, AH(R&R)

ABSTRACT

Introduction: Cardiovascular diseases remain one of the leading causes of morbidity and mortality worldwide, with a substantial proportion of cases requiring surgical intervention such as open-heart surgery. Optimal recovery of these patients largely depends on the quality of post-operative home care. Patient education plays a pivotal role in bridging the gap between hospital-based care and home-based recovery. **Objectives:** Home care that maintains continuity of health care services after cardiac surgery is considered a complementary component of critical care. The study aims to assess the effectiveness of a systematically developed education module in improving patients' knowledge regarding post-operative home care after open-heart surgery and to assess the association between pre-test and post-test knowledge scores with socio-demographic variables. **Methods And Materials:** A quantitative research design was adopted with a pre-experimental one-group pre-test post-test design to measure the effectiveness of an education module. The study was conducted among 50 patients planned for open-heart surgery admitted in various CTVS wards of a quaternary hospital by using non-probability convenient sampling. A self-structured questionnaire was used for data collection. **Results:** Results on knowledge showed that the post-test mean knowledge score (20.24 ± 2.317) was higher than the mean pre-test knowledge score (14 ± 4.155), with a mean difference of 6.24. The calculated value ($t = 17.29$, $df = 49$, $p = 0.001$) was found significant, indicating that the educational module was effective in improving knowledge levels. The p-values corresponding to socio-demographic variables such as age, gender, type of surgery planned, and previous experience with post-CABG were found to be non-significant at $p < 0.05$, showing no significant association between knowledge scores and socio-demographic variables. **Discussion:** The findings clearly demonstrated a significant improvement in knowledge levels after the intervention. The mean post-test knowledge score (20.24 ± 2.317) was substantially higher than the mean pre-test knowledge score (14.44 ± 4.135), with a mean difference of 6.24. The calculated t-value ($t = 17.29$, $df = 49$, $p = 0.001$) confirmed that this difference was highly statistically significant, thereby establishing the effectiveness of the educational module. The study demonstrated that an educational module was significantly effective in improving the knowledge of patients regarding post-operative home care following open-heart surgery.

KEYWORDS

Open-heart surgery, Post-operative care, Educational module, Home-based recovery, Quaternary care hospital

INTRODUCTION

Cardiovascular disease (CVD) remains the leading cause of morbidity and mortality globally. A substantial proportion of patients with advanced coronary artery disease or valvular disorders undergo open-heart surgery, most commonly coronary artery bypass grafting (CABG) or valve replacement. These procedures are effective in prolonging survival and improving quality of life, yet recovery does not end at hospital discharge. The transition from supervised inpatient care to self-care at home is a vulnerable phase, and inadequate post-operative home care has been linked to preventable complications, hospital readmissions, and increased healthcare costs.

Despite advances in perioperative management, readmission rates following open-heart surgery remain high, ranging from 15–25% within 30 days. Common causes include wound infection, arrhythmias, fluid overload, and poor medication adherence. Evidence consistently highlights that many of these complications are a result of gaps in patient knowledge and self-care practices after discharge.

In India, where an estimated 140,000–190,000 open-heart surgeries are performed annually, standardized and culturally appropriate patient education is especially important given the diverse literacy levels and health system constraints.

The present study sought to assess the effectiveness of an education module on post-operative home care among patients undergoing open-heart surgery in a quaternary care hospital.

Specifically, it evaluated changes in patients' knowledge before and after exposure to the module, and explored associations between knowledge scores and selected socio-demographic variables.

METHODOLOGY

A quantitative research approach with a pre-experimental one-group pre-test post-test design was employed. The study was conducted in various CTVS wards of a large quaternary care hospital in Delhi.

The study included 50 adult patients (aged >18 years) planned for elective open-heart surgery, including CABG, valve replacement, and Bentall's procedure. Patients were recruited through non-probability convenient sampling. Exclusion criteria included emergency surgeries, cognitive impairment, and unwillingness to participate.

Data were collected using a bilingual self-structured knowledge questionnaire focusing on wound care, medication adherence, breathing exercises, diet, symptom monitoring, and follow-up practices.

The intervention was a structured education module, consisting of printed pamphlets and a health education video in English and Hindi. The content was validated by subject experts and delivered by trained nursing staff.

Participants completed a pre-test knowledge assessment before receiving the educational module. After the intervention, a post-test assessment was conducted using the same questionnaire to measure knowledge gain.

Ethical Considerations

Ethical approval was obtained from the Institutional Ethical Committee. Written informed consent was taken from each participant. Confidentiality and anonymity were maintained throughout the study.

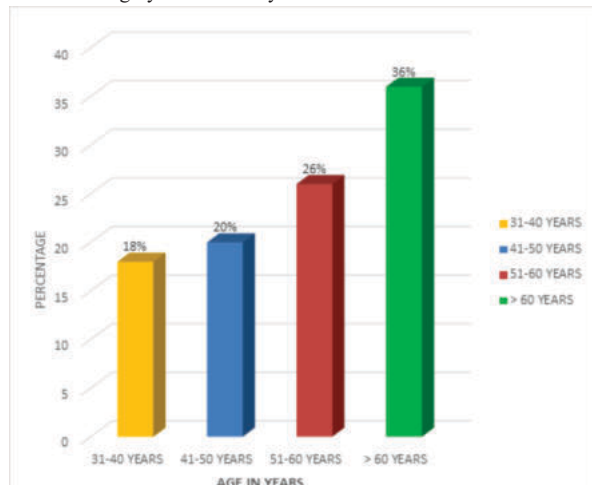
Data Analysis

Data were analyzed using descriptive and inferential statistics. A paired t-test assessed differences between pre- and post-test scores.

Associations between knowledge and demographic variables were tested using chi-square with a significance level of $p < 0.05$.

RESULTS

Of the 50 patients, the majority were aged between 41–60 years, with a slight predominance of males. Educational backgrounds varied, with participants ranging from primary school to postgraduate levels. The most common planned procedure was CABG, followed by valve replacement. Around one-third of patients reported previous exposure to cardiac surgery in their family.



Knowledge Scores

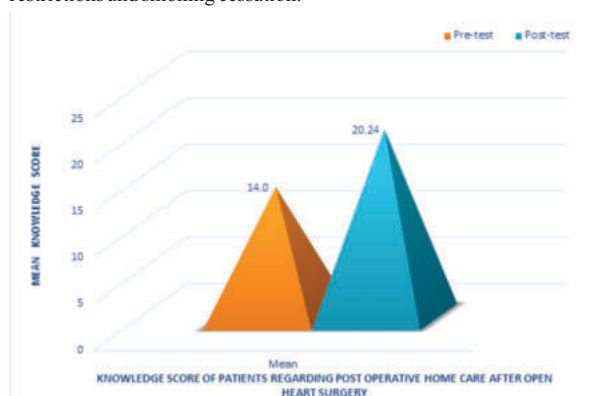
The mean pre-test knowledge score was 14.0 (± 4.16) out of a maximum possible score of 25, reflecting inadequate baseline knowledge of home care after open-heart surgery.

Following the intervention, the mean post-test score increased to 20.2 (± 2.32), yielding a mean difference of 6.24 points.

The paired t-test ($t = 17.29$, $df = 49$, $p = 0.001$) demonstrated that this improvement was highly significant.

Notable gains were observed in knowledge regarding:

Wound care and infection prevention – patients could better identify signs of infection and appropriate dressing practices.
Medication adherence – improved awareness of drug schedules and importance of anticoagulation for valve replacement.
Activity and exercise – greater understanding of safe mobilisation, breathing exercises, and use of incentive spirometry.
Diet and lifestyle modification – increased recognition of dietary restrictions and smoking cessation.



Association with Demographic Variables

No significant association was found between knowledge scores and demographic factors such as age, gender, education level, type of surgery, or previous experience with post-CABG care ($p > 0.05$). This indicates that the educational module was equally effective across subgroups.

DISCUSSION

This study demonstrated that a structured educational module significantly improved patient knowledge regarding post-operative

home care following open-heart surgery. The findings align with previous research highlighting the effectiveness of nurse-led and multimedia-based education in cardiac surgical patients.

Comparison With Literature

Similar studies in India and abroad have reported notable improvements in knowledge and practice following structured education. Ramesh and Joseph observed a 40% improvement in post-test scores after a structured teaching programme in Bengaluru. Lakshmi and Arun documented a rise from 12.4 to 22.8 in mean knowledge scores with audiovisual modules for valve surgery patients [14]. International studies echo these findings, with app-based or telehealth education significantly enhancing adherence and reducing readmissions [15,16].

The domain-specific gains in wound care, medication adherence, and physical activity observed here are consistent with global evidence that these areas are often poorly understood at baseline [17,18]. The lack of association with socio-demographic variables suggests that the module's design—simple language, bilingual content, and multimedia reinforcement—was broadly accessible.

Clinical Implications

Effective discharge education is vital to prevent complications such as sternal wound infection, arrhythmias, and fluid overload. The improvement in knowledge demonstrated in this study underscores the potential for structured modules to:

Reduce readmissions and healthcare costs by preventing avoidable complications and empowering patients and caregivers with confidence to manage recovery.

Integrating such patient education modules into routine practice will enhance the existing discharge counselling and improve continuity of care.

Strengths And Limitations

A major strength of this study is its focus on a structured, validated, and bilingual module tailored to the local context. However, limitations include the small sample size, single-centre setting, and lack of a control group. Additionally, only immediate post-test knowledge was assessed, without evaluating long-term retention or impact on clinical outcomes such as readmissions.

CONCLUSION

This study established that a structured educational module significantly improves knowledge regarding post-operative home care among open-heart surgery patients. The mean knowledge score increased by over six points, with gains across all domains of home care. Importantly, the module was effective irrespective of demographic variables, making it widely applicable.

Incorporating structured, multimedia education into discharge planning can bridge critical knowledge gaps, empower patients and caregivers, and promote safer recovery at home. Future research should explore long-term retention of knowledge, behavioural adherence, and impact on clinical outcomes such as readmission rates.

REFERENCES

- Moraes RS, et al. Patient self-care knowledge after open-heart surgery: a prospective cohort. *Int J Cardiol*. 2018;259:172-178.
- Rahman A, et al. Post-discharge practices among cardiac surgery patients in Bangladesh. *Heart Asia*. 2020;12(1):e011232.
- Li Y, et al. Recovery and self-care behaviours after open-heart surgery in China. *Eur J Cardiovasc Nurs*. 2017;16(8):715-723.
- Smith T, et al. Preventable complications after open-heart surgery: a retrospective study. *Ann Thorac Surg*. 2019;108(4):1120-1127.
- Al-Mutairi A, et al. Home care adherence following open-heart surgery. *Saudi Med J*. 2021;42(9):981-988.
- El-Sayed H, et al. Individualised discharge instructions after cardiac surgery. *Egypt J Cardiovasc Nurs*. 2016;10(2):45-53.
- Jang J, et al. Adherence to sternal precautions after open-heart surgery. *J Cardiopulm Rehabil Prev*. 2022;42(1):42-49.
- Shahmoradi M, et al. Systematic review of education methods for cardiac surgery patients. *Patient Educ Couns*. 2022;105(5):1152-1161.
- Kaur P, Kaur G. Effectiveness of video-assisted education in open-heart surgery patients. *Indian Heart J Nurs*. 2018;10(3):22-27.
- Yen M, Leasure AR. Barriers to effective self-care post cardiac surgery. *J Clin Nurs*. 2019;28(11-12):2152-2161.
- Kulkarni R, Patil S. Cardiac surgery volumes and trends in India. *Indian Heart J*. 2019;71(3):207-210.
- Thomas R, et al. Effectiveness of bilingual video education for cardiac surgery patients. *Nurs J India*. 2021;112(4):189-194.
- Ramesh C, Joseph M. Structured education and home care knowledge after open-heart surgery. *Nurs Midwifery Res J*. 2018;14(2):65-72.
- Lakshmi P, Arun K. Audio-visual education for valve replacement patients. *Int J Nurs*

- Educ. 2020;12(3):145-151.
15. Peterson C, et al. Smartphone app for CABG patient education: RCT findings. *J Thoracic Cardiovascular Surg.* 2021;162(5):1460-1468.
 16. Singh H, Patterson J. Telemedicine for post-CABG follow-up. *Can J Cardiology Nursing* 2020;30(2):55-61.
 17. Fernandes J, et al. Knowledge gaps in home-care practices after open-heart surgery. *Rev Port Cardiol.* 2020;39(4):191-198.
 18. Choudhury P, Deka A. Effectiveness of illustrated booklets for CABG patients. *Assam J Nurs Res.* 2019;11(1):12-18