OPEN ACCESS

Saudi Journal of Medical and Pharmaceutical Sciences
Abbreviated Key Title: Saudi J Med Pharm Sci
ISSN 2413-4929 (Print) |ISSN 2413-4910 (Online)
Scholars Middle East Publishers, Dubai, United Arab Emirates
Journal homepage: http://scholarsmepub.com/sjmps/

Original Research Article

Role of Preoperative Counseling in Reducing Anxiety, Pain and Hospital Stay After Coronary Artery Bypass Graft (CABG) Surgery

Dr. Md. Hasanuzzaman[1*], Dr. Mohammad Mominul Haque[2], Dr. Md. Nuruzzaman[3], Dr. Md. Hassnul Alam[4], Dr. Sohel Ahmed[5], Dr. Imrul Kaies[6], Dr. Most. Lubna Mariom[7], Dr. Mohammad Musfiqur Rahman[8]

[1]Consultant, Department of Anaesthesia, Analgesia and Intensive Care Medicine, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh
[2]Medical Officer, Department of Anaesthesia, Analgesia and Intensive Care Medicine, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh
[3]Register, Department of Anaesthesia, Evercare Hospital, Dhaka, Bangladesh
[4]Medical Officer, Department of Anaesthesia, Analgesia and Intensive Care Medicine, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh
[5]Medical Officer, Department of Anaesthesia, Analgesia and Intensive Care Medicine, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh
[6]Medical Officer, Department of Anaesthesia, Analgesia and Intensive Care Medicine, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh
[7]Consultant, Department of Anaesthesia, Analgesia and Intensive Care Medicine, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh
[8]Research Assistant, Department of Anaesthesia, Analgesia and Intensive Care Medicine, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh

DOI: 10.36348/sjmps.2020.v06i12.009 | **Received:** 10.11.2020 | **Accepted:** 05.12.2020 | **Published:** 22.12.2020

***Corresponding author:** Dr. Md. Hasanuzzaman

Abstract

Background: Anxiety and delayed recovery are common challenges after coronary artery bypass graft (CABG) surgery. Preoperative counseling may improve perioperative outcomes by reducing psychological distress and promoting recovery. This study evaluated the role of preoperative counseling in reducing anxiety, alleviating postoperative pain, stabilizing hemodynamic parameters, and shortening hospital stay in CABG patients. ***Methods:*** A randomized clinical trial was conducted at the Department of Cardiac Surgery, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, from January 2015 to June 2015. Fifty patients scheduled for elective CABG were enrolled, with 25 assigned to the counseling group and 25 to the control group (routine care). Anxiety was assessed using the State Anxiety Questionnaire, pain was assessed using the visual analog scale (VAS), hemodynamics were monitored perioperatively, and hospital stay was recorded. Data were analyzed using SPSS-19. ***Results:*** Baseline demographics were comparable between groups. Postoperative anxiety scores were significantly lower in the counseling group (41.44 ± 4.73) compared with controls (56.20 ± 3.30, $p<0.001$). VAS pain scores were consistently lower in the counseling group across postoperative days 0–4, with the greatest difference on POD 2 (2.92 vs. 3.96). Counseling also contributed to a more stable heart rate and systolic blood pressure. Mean hospital stay was significantly shorter in the counseling group (10.56 ± 0.50 vs. 12.68 ± 0.74 days, $p<0.001$). ***Conclusion:*** Preoperative counseling reduces postoperative anxiety and pain, enhances hemodynamic stability, and shortens recovery after CABG. Incorporating counseling into routine care may improve surgical outcomes.

Keywords: CABG, preoperative counseling, anxiety, hemodynamics, hospital stay.

INTRODUCTION

Coronary artery disease (CAD) is the leading cause of morbidity and mortality worldwide, responsible for a significant health and economic burden [1]. Coronary artery bypass grafting (CABG) remains one of the most common surgical procedures for patients with advanced CAD who do not respond adequately to medical therapy or percutaneous interventions [2]. Despite advances in surgical and anesthetic techniques, CABG is associated with a range of postoperative complications, including pain, anxiety, and prolonged recovery, which can adversely affect patient outcomes [3].

Anxiety is one of the most prevalent psychological disturbances experienced by patients awaiting CABG surgery. Previous studies have reported that more than half of elective CABG patients experience clinically significant preoperative anxiety [4]. This heightened anxiety activates the sympathetic nervous system and the hypothalamic-pituitary-adrenal axis, resulting in elevated heart rate, blood pressure fluctuations, and hormonal changes that increase perioperative risk [5]. Furthermore, preoperative anxiety is associated with poor wound healing, higher incidence of infection, and increased postoperative pain [6]. These adverse effects can extend hospital stay, thereby increasing healthcare costs and reducing patient satisfaction.

Pain after cardiac surgery is another important determinant of recovery. Inadequately controlled postoperative pain can impair mobilization, pulmonary function, and overall recovery [7]. Moreover, pain is often influenced by psychological states, meaning that patients with higher anxiety preoperatively tend to report greater pain intensity postoperatively [8]. Therefore, reducing preoperative anxiety has the potential to alleviate postoperative pain and improve recovery trajectories.

Preoperative counseling, often delivered as structured education or verbal guidance, has been identified as an effective non-pharmacological intervention for optimizing perioperative outcomes. Counseling sessions provide patients with information about the surgical procedure, expected sensations, pain management strategies, and coping mechanisms [9]. By improving knowledge and addressing misconceptions, preoperative counseling enhances psychological preparedness, reduces fear, and fosters a sense of control [10]. Such interventions are simple, cost-effective, and feasible to implement in routine clinical practice, making them attractive for resource-limited healthcare systems.

In Bangladesh, the number of patients undergoing CABG has increased in recent decades, yet limited evidence exists on structured preoperative counseling in this setting. Given the burden of cardiac surgery and the importance of improving outcomes, there is a pressing need to evaluate counseling interventions that can reduce postoperative complications and shorten recovery time.

This study aims to assess the role of preoperative counseling in reducing anxiety, alleviating pain, stabilizing hemodynamic parameters, and shortening hospital stay in patients undergoing CABG surgery. By focusing on both psychological and physiological outcomes, this investigation contributes to the growing evidence supporting the integration of preoperative education into standard cardiac surgical care.

METHODOLOGY & MATERIALS

This was a randomized clinical trial conducted at the Department of Cardiac Surgery, Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka. The study was carried out from January 2015 to June 2015. A total of 50 patients scheduled for elective CABG surgery were enrolled, with 25 assigned to the intervention group (preoperative counseling) and 25 to the control group (routine care).

Sample Selection

Inclusion criteria:

- Patients aged ≥30 years scheduled for elective CABG.
- Both male and female participants.
- ASA grade II and III.

Exclusion criteria:

- Emergency CABG cases.
- History of previous CABG or other open-heart surgery.
- Postoperative complications necessitating extended intensive care.
- Patients with cognitive impairment or known psychological disorders.

Data Collection Procedure

Data were collected through structured face-to-face interviews using validated tools, including the State-Anxiety Questionnaire, Visual Analogue Scale (VAS) for pain, and Verbal Rating Scale (VRS) for satisfaction. Hemodynamic parameters (heart rate, blood pressure) were monitored using standard clinical equipment. Preoperative counseling was delivered verbally by the researcher to the intervention group. Ethical approval was obtained from the institutional review board, and informed written consent was secured from all participants. Confidentiality and anonymity were strictly maintained throughout the study.

Statistical Analysis

Data were analyzed using SPSS version 19. Continuous variables were expressed as mean ± standard deviation, and categorical data as proportions. Between-group comparisons were performed using the student's t-test for continuous variables and the Chi-square test for categorical data. A p-value <0.05 was considered statistically significant.

RESULTS

A total of 50 patients were enrolled in this study, with 25 patients in the control group (routine care) and 25 in the intervention group (preoperative counseling). The baseline demographic characteristics were comparable between the two groups. Significant differences were observed in postoperative anxiety

scores, hemodynamic stability, and hospital stay between groups, favoring the counseling intervention.

Table 1: Baseline Characteristics of Study Population

Characteristics		Control (n=25)	Counseling (n=25)
Age group (years)	<40	8%	12%
	41–50	40%	36%
	51–60	28%	44%
	>60	24%	8%
Sex	Male	96%	88%
	Female	4%	12%

Table 1 shows that the majority of patients were aged between 41–60 years in both groups, with a predominance of males. No significant differences were noted between groups at baseline.

Table 2: Pre- and Postoperative Anxiety Scores

Variable	Control (n=25) Mean ± SD	Counseling (n=25) Mean ± SD	p-value
Preoperative Anxiety Score	53.08 ± 4.91	55.40 ± 5.17	0.11
Postoperative Anxiety Score	56.20 ± 3.30	41.44 ± 4.73	<0.001

Table 2 demonstrates that although preoperative anxiety scores were similar in both groups, postoperative anxiety was significantly lower in the counseling group (p <0.001).

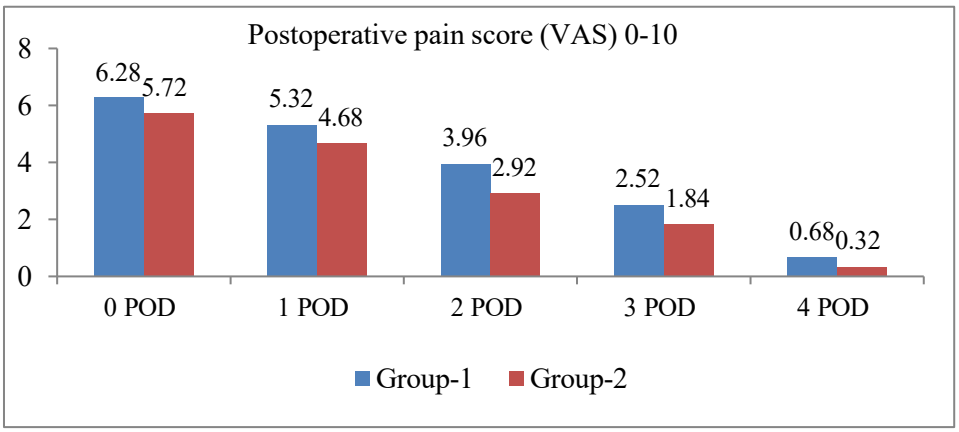

Figure 1: Postoperative Pain Scores (VAS) on POD 0–4

Figure 1 shows mean postoperative pain scores using the Visual Analogue Scale (VAS) across days 0 to 4 in both groups. On POD 0, pain scores were higher in the control group (6.28) versus the counseling group (5.72). This continued on POD 1 (5.32 vs. 4.68), POD 2 (3.96 vs. 2.92), and POD 3 (2.52 vs. 1.84). By POD 4, pain scores had declined in both groups, with the counseling group reporting lower scores (0.32 vs. 0.68).

Table 3: Mean Heart Rate and Systolic Blood Pressure (Pre- and Postoperative)

Parameter	Group	Pre-op Mean ± SD	POD 0	POD 1	POD 2	POD 3	POD 4
Heart Rate (bpm)	Control	75.44 ± 12.20	87.84 ± 15.97	89.16 ± 18.49	88.48 ± 12.42	93.04 ± 10.50	92.12 ± 13.00
	Counseling	81.12 ± 4.07	87.96 ± 20.63	88.80 ± 17.40	90.32 ± 16.0	88.12 ± 13.08	85.68 ± 12.13
Systolic BP (mmHg)	Control	115.40 ± 17.96	115.40 ± 14.09	121.96 ± 20.27	125.40 ± 20.24	117.52 ± 13.25	119.20 ± 13.20
	Counseling	125.20 ± 11.94	108.76 ± 6.03	108.28 ± 8.71	111.28 ± 12.22	109.72 ± 6.93	108.56 ± 8.74

Table 3 shows that postoperative heart rate and systolic blood pressure increased significantly in the control group, whereas the counseling group demonstrated better stability, with postoperative values closer to baseline and significantly lower compared to controls (p <0.001 for most POD comparisons).

Table 4: Length of Hospital Stay

Group	Mean ± SD (days)	p-value
Control	12.68 ± 0.74	<0.001
Counseling	10.56 ± 0.50	

Table 4 indicates that patients in the counseling group had a significantly shorter hospital stay compared to controls (p <0.001).

DISCUSSION

This randomized clinical trial demonstrated that preoperative counseling significantly reduced postoperative anxiety, pain, stabilized hemodynamic parameters, and shortened hospital stay among patients undergoing coronary artery bypass graft (CABG) surgery. The evidence generated highlights the effectiveness of counseling as a low-cost, non-pharmacological intervention with meaningful implications for both clinical outcomes and healthcare resource use.

The reduction in postoperative anxiety observed in the counseling group was consistent with prior evidence. Asilioglu and Celik reported that structured preoperative education lowered anxiety in open-heart surgery patients, and Sorlie et al. found that video-based and individualized education improved emotional well-being after CABG [11,12]. In our trial, postoperative anxiety scores were markedly lower in the counseling group, indicating that structured counseling enabled patients to feel more prepared and in control before surgery. This aligns with Koivula et al., who demonstrated that preoperative fear and anxiety in cardiac patients exacerbate psychological distress and physiological risk [13]. Although Shuldham et al. reported no long-term differences in anxiety between groups, the significant short-term benefits shown in our study are clinically meaningful during the critical postoperative recovery phase [14].

In addition to anxiety reduction, this study provided clear evidence that preoperative counseling was associated with lower postoperative pain scores. As demonstrated in Figure 1, patients in the counseling group consistently reported lower VAS scores across POD 0–4, with the difference most pronounced on POD 2 (2.92 vs. 3.96). This is consistent with Vaughn et al., who showed that higher preoperative anxiety predicted greater postoperative pain [6], and Oshodi, who reported that structured preoperative education reduces pain perception by providing coping strategies [8]. The consistent reduction in pain supports the interrelationship between psychological preparedness and the sensory experience of surgery, suggesting that counseling influences not only emotional resilience but also the perception of physical discomfort.

Improved hemodynamic stability was another key finding. The control group exhibited significant postoperative increases in heart rate and systolic blood pressure, while the counseling group-maintained values closer to preoperative baselines. Frazier et al. noted that anxiety correlates strongly with elevated heart rate and blood pressure in cardiac patients [5]. By alleviating anxiety, counseling likely blunted sympathetic nervous system hyperactivity, resulting in greater hemodynamic stability. This aligns with the findings of Koivula et al., who emphasized the impact of fear and anxiety on cardiovascular reactivity [13].

Shortened hospital stay is a particularly important outcome for both patients and healthcare systems. In this study, counseling reduced the average hospital stay by more than two days, a statistically and clinically significant difference. Similar findings were reported by Nelson, who found that structured pre-admission education shortened recovery for thoracic surgery patients [15], and Shuldham et al., who observed reduced hospitalization in CABG patients who received preoperative education [14]. Shorter hospitalization not only improves patient throughput but also reduces healthcare costs, making preoperative counseling a highly cost-effective strategy.

Furthermore, improved satisfaction with care, as noted in the original thesis data, is consistent with the work of Parry et al., who demonstrated that patients receiving structured education reported better recovery experiences and higher satisfaction [16]. Higher satisfaction likely contributes to better adherence with rehabilitation instructions, further enhancing recovery outcomes.

The findings of this study are also supported by larger reviews and meta-analyses. Devine analyzed 191 studies and concluded that psychoeducational interventions consistently improve surgical outcomes, including reductions in pain, anxiety, and complications [10]. Gonzales et al. similarly demonstrated that guided imagery improved recovery after same-day surgical procedures [17]. While Shuldham et al. raised questions about the long-term impact of preoperative education, the weight of evidence, including our findings, supports its clear short-term benefits [14].

Overall, this study shows that preoperative counseling has a multifaceted effect, reducing anxiety and pain, promoting hemodynamic stability, and shortening hospital stay. These benefits are particularly valuable in resource-limited settings such as Bangladesh, where cost-effective interventions are crucial. By requiring minimal resources and time, counseling represents a scalable intervention that can improve surgical outcomes and reduce healthcare burdens.

Limitations of the study

This study has several limitations. It was conducted at a single center with a relatively small sample size, which may limit generalizability. The short follow-up period precludes assessment of long-term psychological or functional outcomes. Additionally, counseling was delivered verbally; written or multimedia-based interventions may have produced different results.

CONCLUSION

Preoperative counseling significantly reduced postoperative anxiety, improved hemodynamic stability, and shortened hospital stay in CABG patients. These findings underscore the importance of integrating structured counseling into preoperative care as a cost-effective and patient-centered intervention. Large, multicenter trials are recommended to validate these results and assess long-term outcomes.

Acknowledgment: I would like to express my sincere gratitude for the invaluable support and cooperation provided by the staff, participants, and my co-authors/colleagues who contributed to this study.
Conflicts of interest: There are no conflicts of interest.
Ethical approval: The study was approved by the Institutional Ethics Committee.

REFERENCES

1. Eisenberg MJ, Filion KB, Azoulay A, Brox AC, Haider S, Pilote L. Outcomes and cost of coronary artery bypass graft surgery in the United States and Canada. Archives of Internal Medicine. 2005 Jul 11;165(13):1506-13.
2. American Heart Association. Heart disease and stroke statistics—2011 update: a report from the American Heart Association. Circulation. 2011;123(4):e18–209.
3. Haque MN, Hossain MS, Ferdous S, Beg AK, Ahsan NK, Chowdhury AE. Coronary Artery Bypass Grafting (CABG) Without General Anaesthesia-An Initial Experience in NICVD, Dhaka, Bangladesh. Journal of Bangladesh College of Physicians and Surgeons. 2009;27(1):22-4.
4. Detroyer E, Dobbels F, Verfaillie E, Meyfroidt G, Sergeant P, Milisen K. Is preoperative anxiety and depression associated with onset of delirium after cardiac surgery in older patients? A prospective cohort study. Journal of the American Geriatrics Society. 2008 Dec;56(12):2278-84.
5. Frazier SK, Moser DK, Riegel B, McKinley S, Blakely W, Kim KA, Garvin BJ. Critical care nurses' assessment of patients' anxiety: reliance on physiological and behavioral parameters. American journal of critical care. 2002 Jan 1;11(1):57-64.
6. Vaughn F, Wichowski H, Bosworth G. Does preoperative anxiety level predict postoperative pain?. AORN journal. 2007 Mar 1;85(3):589-604.
7. Ferguson JA. Pain following coronary artery bypass grafting: an exploration of contributing factors. Intensive and Critical care nursing. 1992 Sep 1;8(3):153-62.
8. Oshodi TO. The impact of preoperative education on postoperative pain. Part 2. British journal of nursing. 2007 Jul 12;16(13).
9. Cupples SA. Effects of timing and reinforcement of preoperative education on knowledge and recovery of patients having coronary artery bypass graft surgery. Heart & lung: the journal of critical care. 1991 Nov 1;20(6):654-60.
10. Devine EC. Effects of psychoeducational care for adult surgical patients: a meta-analysis of 191 studies. Patient education and counseling. 1992 Apr 1;19(2):129-42.
11. Asilioglu K, Celik SS. The effect of preoperative education on anxiety of open cardiac surgery patients. Patient education and counseling. 2004 Apr 1;53(1):65-70.
12. Sørlie T, Busund R, Sexton J, Sexton H, Sørlie D. Video information combined with individualized information sessions: effects upon emotional well-being following coronary artery bypass surgery—a randomized trial. Patient education and counseling. 2007 Feb 1;65(2):180-8.
13. Koivula M, Paunonen-Ilmonen M, Tarkka MT, Tarkka M, Laippala P. Fear and anxiety in patients awaiting coronary artery bypass grafting. Heart & Lung. 2001 Jul 1;30(4):302-11.
14. Shuldham CM, Fleming S, Goodman H. The impact of pre-operative education on recovery following coronary artery bypass surgery. A randomized controlled clinical trial. European heart journal. 2002 Apr 1;23(8):666-74.
15. Nelson S. Pre-admission clinics for thoracic surgery. Nursing Times. 1995 Apr 1;91(15):29-31.
16. Parry M, Watt-Watson J, Hodnett E, Tranmer J, Dennis CL, Brooks D. Cardiac home education and support trial (CHEST): a pilot study. Canadian Journal of Cardiology. 2009 Dec 1;25(12):e393-8.
17. Gonzales EA, Ledesma RJ, McAllister DJ, Perry SM, Dyer CA, Maye JP. Effects of guided imagery on postoperative outcomes in patients undergoing same-day surgical procedures: a randomized, single-blind study. AANA J. 2010;78(3):181–8.