

# IMPACT OF PREOPERATIVE COUNSELING ON ANXIETY IN PATIENTS UNDERGOING CARDIAC BYPASS SURGERY

*Original Article*

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## ABSTRACT

**Background:** Preoperative anxiety is common among patients undergoing coronary artery bypass grafting (CABG) and can negatively affect perioperative outcomes. Psychological preparation, including structured counseling, has emerged as a promising strategy to reduce anxiety, yet limited high-quality evidence exists in the cardiac surgical population.

**Objective:** To assess the impact of structured preoperative counseling on reducing anxiety levels in patients scheduled for elective CABG surgery.

**Methods:** This randomized controlled trial was conducted over 12 months at a tertiary care hospital in Lahore. A total of 128 patients scheduled for first-time elective CABG were enrolled and randomized into intervention (n=64) and control (n=64) groups. The intervention group received a 45-minute structured counseling session by a clinical psychologist in addition to standard preoperative care, while the control group received routine care only. Anxiety levels were measured before and after the intervention using the State-Trait Anxiety Inventory (STAI-S). Data were analyzed using paired and independent t-tests. A p-value <0.05 was considered statistically significant.

**Results:** Baseline anxiety scores were comparable between groups (intervention:  $51.8 \pm 7.1$ ; control:  $50.9 \pm 6.8$ ). Post-intervention, the intervention group showed a significant reduction in anxiety ( $38.6 \pm 6.4$ ;  $p < 0.001$ ), whereas the control group had a minimal, non-significant change ( $49.2 \pm 6.9$ ;  $p = 0.065$ ). Between-group comparison of post-intervention scores was also statistically significant ( $p < 0.001$ ).

**Conclusion:** Structured preoperative counseling significantly reduced anxiety levels in patients undergoing CABG. Incorporating psychological interventions into routine surgical preparation may enhance overall patient care and surgical outcomes.

**Keywords:** Anxiety, Cardiac Surgery, Coronary Artery Bypass, Counseling, Patient Education, Preoperative Care, Psychological Intervention

## INTRODUCTION

Coronary artery bypass grafting (CABG) remains one of the most frequently performed and life-extending surgical procedures worldwide for patients with advanced coronary artery disease. Despite its clinical efficacy, the prospect of undergoing such an invasive intervention is often accompanied by considerable psychological distress, particularly anxiety (1). Preoperative anxiety in patients scheduled for cardiac surgery is not merely a matter of emotional discomfort—it has been consistently associated with adverse perioperative outcomes, including elevated blood pressure, increased anesthetic requirements, longer hospital stays, and delayed recovery. Given these associations, strategies that can mitigate anxiety before surgery are not only desirable but may be essential to optimizing patient outcomes (2,3). Anxiety before cardiac surgery stems from multiple sources: fear of the surgical procedure itself, concerns about postoperative pain, apprehension about potential complications, and uncertainties regarding survival and lifestyle after surgery. For many patients, especially those with limited understanding of what the surgery entails, the hospital environment and medical jargon can exacerbate feelings of helplessness and fear. This emotional burden is compounded by the high-stakes nature of cardiac surgery, which often evokes existential concerns and amplifies psychological vulnerability (4,5).

In this context, preoperative counseling has emerged as a potentially valuable intervention. Counseling offers a structured opportunity to inform patients about their condition, the surgical procedure, and the expected recovery process, while also addressing their fears, questions, and emotional reactions (6). Through patient-centered communication, counseling may foster a sense of control, reduce uncertainty, and enhance trust in the medical team. Theoretically, these outcomes could translate into reduced anxiety levels, improved physiological stability during surgery, and more favorable recovery trajectories (7). Although numerous studies have explored the physiological and clinical aspects of CABG, there remains a noticeable gap in the literature regarding the psychological preparation of patients. While some investigations have noted the benefits of patient education on postoperative satisfaction or knowledge retention, few have rigorously examined whether structured preoperative counseling can systematically reduce anxiety in this high-risk population (8). Moreover, many existing studies are observational or involve heterogeneous interventions, making it difficult to draw firm conclusions about efficacy. Recent systematic reviews have underscored the need for high-quality randomized controlled trials (RCTs) to clarify the role of preoperative psychological interventions in cardiac surgery (9,10). The literature suggests that targeted psychological strategies, particularly when delivered in a structured and empathetic manner, may hold promise in improving patient experience and outcomes (11). However, evidence remains limited by variability in study design, small sample sizes, and inconsistent measurement of anxiety outcomes. In addition, many studies conflate general preoperative education with focused psychological counseling, which may dilute the impact of the latter (12,13).

In light of these limitations, the current study aims to provide robust evidence on this subject by evaluating the impact of structured preoperative counseling on anxiety levels in patients scheduled for coronary artery bypass grafting. By employing a randomized controlled trial design, this research seeks to isolate the specific contribution of counseling to anxiety reduction, controlling for potential confounding factors and ensuring the reliability of findings. The structured counseling intervention in this study is designed not only to provide factual information about the surgery but also to address emotional concerns, offer coping strategies, and establish psychological readiness. The objective of this study is therefore to determine whether a structured preoperative counseling session, delivered in addition to standard medical care, significantly reduces anxiety levels in patients awaiting CABG surgery. This investigation aims to contribute meaningful evidence to the field of perioperative care, supporting more holistic approaches to patient preparation and ultimately enhancing the quality of surgical outcomes through psychological well-being.

## METHODS

This randomized controlled trial was conducted over a 12-month period at a tertiary care hospital in Lahore, with the primary objective of evaluating the effectiveness of structured preoperative counseling in reducing anxiety levels among patients scheduled for elective coronary artery bypass grafting (CABG). The study employed a parallel-group design with equal allocation to the intervention and control arms. A total of 128 patients were enrolled, based on a sample size calculated to detect a medium effect size (Cohen's  $d = 0.5$ ) with 80% power and a 5% level of significance, assuming a two-tailed test and accounting for a potential 10% dropout rate. This sample size was determined using G\*Power software, which confirmed that 64 patients per group would provide adequate statistical power to detect clinically meaningful differences in anxiety outcomes. Participants were recruited from the cardiothoracic surgery outpatient department after being scheduled for CABG surgery. Eligibility criteria included adults aged 40 to 75 years, both male and female, who were planned for elective, first-time isolated CABG. Patients were required to be literate in Urdu or English to ensure comprehension

of study materials and psychological instruments. Exclusion criteria comprised those with diagnosed psychiatric disorders, current use of anxiolytic or antidepressant medications, prior cardiac surgeries, emergency procedures, or any coexisting serious systemic illness such as end-stage renal disease or advanced malignancy that could independently influence psychological status (14,15).

Patients meeting the eligibility criteria were approached during their pre-admission surgical visit. Informed consent was obtained after providing a detailed explanation of the study's purpose, procedures, potential risks, and benefits. Confidentiality and the voluntary nature of participation were emphasized, and participants were assured they could withdraw at any time without affecting their medical care. Ethical clearance for the study was obtained from the Institutional Review Board of the hospital and the study adhered strictly to the principles of the Declaration of Helsinki. Upon consent, participants were randomly assigned to either the intervention group receiving structured preoperative counseling or the control group receiving routine preoperative care. Randomization was achieved using a computer-generated random number sequence, and group assignments were concealed in sealed opaque envelopes opened only after enrollment. The structured counseling intervention was delivered by a trained clinical psychologist one day before surgery and lasted approximately 45 minutes. It consisted of standardized informational and psychological content, including detailed explanations of the surgical procedure, anesthesia, postoperative recovery process, common fears and misconceptions, relaxation techniques, and coping strategies. Emphasis was placed on building rapport, allowing patient expression, and responding empathetically to concerns.

In contrast, the control group received routine institutional preoperative instructions, which typically included basic procedural information delivered by nursing staff without a structured psychological component. To ensure fidelity of the intervention, all counseling sessions were conducted according to a predefined protocol, and a random sample of sessions was reviewed by a senior psychologist for quality assurance. The primary outcome of interest was the level of preoperative anxiety, assessed using the State-Trait Anxiety Inventory (STAI), a validated and widely used psychological instrument. The STAI distinguishes between state anxiety (temporary, situational anxiety) and trait anxiety (a person's general tendency toward anxiety), with the state anxiety subscale (STAI-S) used in this study to capture immediate emotional status on the evening before surgery. Participants completed the STAI-S prior to randomization (baseline) and again after the intervention or standard care (within 2–4 hours post-session) (16,17). Scores range from 20 to 80, with higher scores indicating greater anxiety. Data were analyzed using SPSS Version 26. Continuous variables were reported as mean  $\pm$  standard deviation, and categorical variables as frequencies and percentages. The normality of anxiety scores was confirmed using the Shapiro-Wilk test. Between-group comparisons of post-intervention anxiety scores were conducted using independent-samples t-tests, while paired-samples t-tests assessed within-group changes from baseline. A p-value of  $<0.05$  was considered statistically significant. Additional subgroup analyses were planned to explore the potential moderating effects of age, gender, and baseline trait anxiety on the intervention's effectiveness. Every effort was made to maintain methodological rigor, minimize bias, and ensure that the findings of this trial contribute robust evidence regarding the utility of preoperative psychological interventions in cardiac surgical settings. The use of a validated measurement tool, clearly defined intervention protocol, and appropriate statistical methods underscore the reliability and replicability of the research.

## RESULTS

The results of this randomized controlled trial are presented in a structured sequence, beginning with participant demographics, followed by outcome measures aligned with the study's objective. A total of 128 participants were enrolled and evenly distributed between the intervention and control groups, with no statistically significant differences observed in baseline demographic variables. The mean age was comparable between groups, and gender distribution, educational background, and comorbid conditions such as hypertension and diabetes mellitus were proportionately balanced. Anxiety levels, measured using the State subscale of the State-Trait Anxiety Inventory (STAI-S), demonstrated significant differences between the two groups post-intervention. Baseline STAI-S scores were similar between the intervention ( $51.8 \pm 7.1$ ) and control groups ( $50.9 \pm 6.8$ ), indicating no pre-existing disparity in anxiety levels. After the intervention, the mean STAI-S score in the intervention group decreased markedly to  $38.6 \pm 6.4$ , while the control group showed a minor reduction to  $49.2 \pm 6.9$ . The within-group change in the intervention arm was statistically significant ( $p < 0.001$ ), while the change in the control group did not reach statistical significance ( $p = 0.065$ ). Between-group comparison of post-intervention anxiety scores also yielded a highly significant result ( $p < 0.001$ ), with the intervention group exhibiting a substantially greater reduction in anxiety than the control group. The mean change in STAI-S score from baseline was  $-13.2$  in the intervention group compared to  $-1.7$  in the control group, further reinforcing the effect of structured preoperative counseling. A subgroup analysis by gender showed that both male and female participants in the intervention group experienced meaningful anxiety reductions, with females demonstrating a slightly higher mean

reduction (-14.0) compared to males (-12.7). In contrast, the control group showed minimal changes in both genders (-2.0 in females and -1.5 in males), suggesting the counseling intervention was effective across sex demographics.

**Table 1: Demographic Characteristics of Participants**

Characteristic	Intervention Group (n=64)	Control Group (n=64)
Age (years)	59.4 ± 8.2	58.7 ± 7.9
Gender		
Male	39 (60.9%)	36 (56.3%)
Female	25 (39.1%)	28 (43.8%)
Education (≥High School) (%)	54 (84.4%)	50 (78.1%)
Hypertension (%)	41 (64.1%)	39 (60.9%)
Diabetes Mellitus (%)	36 (56.3%)	33 (51.6%)

**Table 2: STAI-S Scores Pre and Post Intervention**

Group	Baseline STAI-S (Mean ± SD)	Post-Intervention STAI-S (Mean ± SD)	Mean Change	p-value (within group)
Intervention	51.8 ± 7.1	38.6 ± 6.4	-13.2	<0.001
Control	50.9 ± 6.8	49.2 ± 6.9	-1.7	0.065

**Table 3: Between Group Comparison (Post-Intervention)**

Measure	Intervention Group (Mean ± SD)	Control Group (Mean ± SD)	p-value (between group)
Post-Intervention STAI-S Score	38.6 ± 6.4	49.2 ± 6.9	<0.001

**Table 4: Subgroup Analysis by Gender**

Gender	Mean STAI-S Reduction (Intervention)	Mean STAI-S Reduction (Control)
Male	-12.7	-1.5
Female	-14.0	-2.0

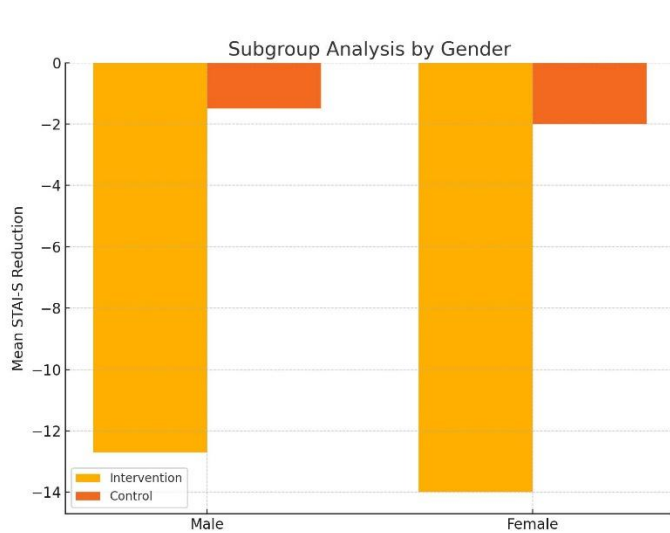


Figure 2 Subgroup Analysis by Gender

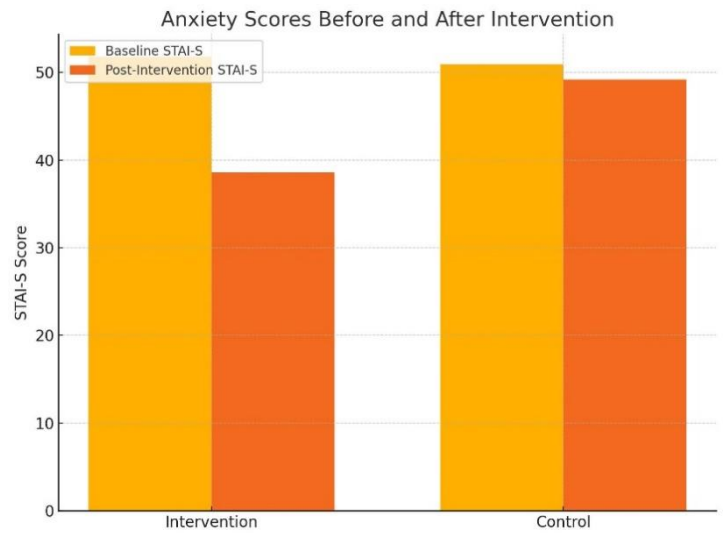


Figure 2 Anxiety Scores Before and After Intervention

## DISCUSSION

The findings of this randomized controlled trial strongly suggest that structured preoperative counseling significantly reduces anxiety levels in patients scheduled for coronary artery bypass grafting (CABG). These results align with a growing body of literature emphasizing the importance of psychological preparation in surgical care, particularly for high-risk procedures such as cardiac surgery. The observed reduction in state anxiety scores among patients who received structured counseling reinforces the clinical relevance of integrating psychological support into routine preoperative protocols. This study demonstrated a mean reduction of 13.2 points in the STAI-S score in the intervention group, which contrasts sharply with the modest 1.7-point decrease in the control group. These findings corroborate those reported by a study which noted significantly lower anxiety scores and improved physiological parameters in CABG patients following comprehensive preoperative counseling and personal support interventions (18,19). Similarly, a study demonstrated that patients receiving detailed preoperative explanations experienced a marked decrease in anxiety as measured on numerical rating scales (20). Our results also mirror those of a study which found that structured counseling using visual aids significantly outperformed verbal counseling alone in reducing anxiety levels across elective surgical patients (21). The consistency of evidence across different surgical populations—gynecologic, maxillofacial, and cardiac—highlights the generalizability of counseling as a means to mitigate surgical anxiety (22,23).

This study's strengths include its randomized controlled design, use of a validated anxiety measurement tool (STAI-S), and rigorous adherence to protocol fidelity. The uniform delivery of the counseling session by trained psychologists helped ensure consistency in the intervention, and the double measurement of anxiety before and after the session offered a reliable assessment of immediate psychological changes. Furthermore, subgroup analysis confirmed that the intervention's effect was consistent across gender lines, adding to its clinical relevance. However, several limitations merit acknowledgment. First, the study was conducted in a single tertiary care center, potentially limiting generalizability. While the sample size was statistically adequate, larger multicentric trials would enhance external validity. Additionally, the study assessed only short-term anxiety reduction; long-term psychological outcomes, including postoperative recovery and satisfaction, were not evaluated. It is also worth noting that while the STAI-S is a validated tool, it captures only one dimension of anxiety, and incorporating multidimensional assessments like the Hospital Anxiety and Depression Scale (HADS) or the Edmonton Symptom Assessment System (ESAS) could have provided a broader psychological profile. Moreover, cultural and language factors could influence counseling effectiveness. Although all participants were literate in Urdu or English, subtle differences in interpretation or emotional expressiveness may have influenced how anxiety was reported. Additionally, the role of unmeasured confounders—such as previous surgical experiences, familial support, and coping mechanisms—could not be fully accounted for.

The implications of this study are clinically meaningful. Structured preoperative counseling should be considered a routine component of perioperative care for CABG patients. Its low cost, non-invasive nature, and significant psychological benefits make it an ideal adjunct to standard medical preparation. In resource-constrained settings, training nurses or allied health professionals to deliver brief, structured interventions could offer an effective solution to widespread anxiety management. Future research should aim to explore the longitudinal impact of preoperative counseling on postoperative pain, ICU stay, functional recovery, and quality of life. Furthermore, comparative studies evaluating various modes of counseling delivery—face-to-face, digital platforms, and audiovisual aids—would help optimize interventions according to patient preferences and health system capacities. In conclusion, the findings of this trial provide robust evidence that structured preoperative counseling significantly reduces anxiety in patients undergoing CABG. The intervention is not only effective but also practical, reinforcing its inclusion in standard cardiac surgical care pathways.

## CONCLUSION

This study concludes that structured preoperative counseling significantly reduces anxiety levels in patients undergoing coronary artery bypass grafting. By integrating this intervention into routine surgical care, clinicians can enhance psychological preparedness, improve patient experience, and potentially support better perioperative outcomes. These findings advocate for a holistic approach to cardiac surgery preparation, emphasizing both physical and emotional readiness.

## AUTHOR CONTRIBUTION

Author	Contribution
Muhammad Ammar*	Substantial Contribution to study design, analysis, acquisition of Data Manuscript Writing Has given Final Approval of the version to be published
Izaz Ali	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
Sajid Khan	Substantial Contribution to acquisition and interpretation of Data Has given Final Approval of the version to be published
Muhammad Imran	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Deepak Kumar	Contributed to Data Collection and Analysis Has given Final Approval of the version to be published
Akshy Kumar	Substantial Contribution to study design and Data Analysis Has given Final Approval of the version to be published

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