ORIGINAL ARTICLE

DOI: https://doi.org/10.53350/Annalspakmed.1.1.9

ASSESSMENT OF PREOPERATIVE ANXIETY AMONG PATIENTS OF OPEN-HEART SURGERY

SHAHZAD SHOUKAT[1], BILAL RAFIQUE MALIK[2], SHAHID IQBAL[3]

[1]Assistant Professor of Cardiology, Cardiology Department, Punjab institute of Cardiology, Lahore

[2]Associate Professor of Medicine, South Medical Ward, Mayo Hospital Lahore

[3]Consultant Cardiologist, Cardiology Department, Punjab Institute of Cardiology, Jail Road, Lahore

Correspondence to: Bilal Rafique malik, Email: drbilalrafiq165@gmail.com, Cell: 0333 4515000

ABSTRACT

Introduction: Preoperative anxiety is a common phenomenon experienced by patients undergoing surgical procedures, particularly those of significant complexity and risk, such as open-heart surgery.

Objectives: The main objective of the study is to find the preoperative anxiety among patients of open-heart surgery.

Material and Methods: This cross-sectional study was conducted at Punjab Institute of Cardiology lahore from 1st janurary 2023 to 30th June 2023.The study comprised 220 patients who undergo open-heart surgery. Participants were selected through convenient sampling based on their eligibility for open-heart surgery and willingness to participate in the study. Upon obtaining informed consent, participants completed baseline assessments of demographic characteristics, medical history, and baseline anxiety levels using standardized instruments such as the Hospital Anxiety and Depression Scale (HADS) or State-Trait Anxiety Inventory (STAI). Preoperative anxiety levels were assessed both objectively through physiological measures, heart rate, blood pressure and subjectively through self-reported anxiety scales.

Results: Data were collected from 220 patients. Mean age of the patients was 59.2 ± 7.1years in intervention group and 58.8 ± 8.0 years in control group. Regarding diagnoses, 45.5% of the intervention group had coronary artery disease, 36.4% had valve disorders, and 18.2% underwent combined procedures, with similar distributions in the control group. Intraoperative complications occurred in 10.9% of the intervention group (n=110) compared to 18.2% in the control group (n=110), although the difference was not statistically significant (p = 0.183). However, postoperative pain levels were significantly lower in the intervention group 3.2 ± 1.5 compared to the control group 4.0 ± 1.8, with a p-value of 0.042. Additionally, patients in the intervention group had a shorter length of hospital stay (6.0 ± 1.8 days) compared to the control group (7.5 ± 2.3 days), with a p-value of 0.011.

Conclusion: It is concluded that preoperative anxiety is prevalent among patients undergoing open-heart surgery, potentially impacting surgical outcomes and patient well-being. However, the findings highlight the effectiveness of targeted anxiety reduction interventions in improving preoperative anxiety and improving postoperative recovery.

Keywords: Preoperative anxiety, Open-heart surgery, Postoperative outcomes, Anxiety assessment, Patient recovery

---

This article may be cited as: Shoukat S, Malik BR, Iqbal S: Assessment of Preoperative Anxiety Among Patients of Open-Heart Surgery. Pak Med & Allied, 2025; 01(1): 9-12.

Received: 10-04-2025 **Revised:** 25-07-2025 **Accepted:** 24-07-2025 **Published:** 05-09-2025

© The Author(s) 2025. This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY 4.0), which permits unrestricted use, distribution, and reproduction in any medium, provided the original author(s) and source are credited.

INTRODUCTION

Preoperative anxiety is a common phenomenon experienced by patients undergoing surgical procedures, particularly those of significant complexity and risk, such as open-heart surgery. It encompasses feelings of apprehension, fear, and nervousness related to the impending surgery and its associated outcomes. Understanding and addressing preoperative anxiety is crucial as it can have a significant impact on the patient's overall experience, surgical outcomes, and postoperative recovery[1]. Patients going through elective cardiac surgery often experience pre-operative anxiety. Anxiety is a

distressing feeling that can cause patients going through coronary artery bypass surgery to delay planned procedures. Such delays may end up being fatal[2]. Millions of patients are given sedatives before surgery to assist them with relaxing, yet the decision to do so is often based on institutional habit and practice[3]. Preoperative anxiety influences surgical outcomes affect mental prosperity and actuate hypertension, tachycardia, and increased surgical dying, among others[4]. These are crucial factors to consider in cardiac surgery which can precipitate sudden myocardial infarction in patients with critical coronary artery narrowing. In 2020, the WHO ranked Pakistan as 30th for its death rate because of cardiac diseases. Also, CVD is the major reason of most fatalities in Pakistan[5]. One in each four moderately aged people are at the risk of developing CVD. In addition, around 250,000 individuals bite the dust each year because of CVD in Pakistan. Preoperative anxiety is characterized by an intense sensation of fear, apprehension, and nervousness. In the domain of cardiac surgery, the assessment and management of preoperative anxiety is of paramount importance, as it plays a pivotal job in shaping the patient's surgical experience and immediate postoperative outcomes[6]. While the etiology of preoperative anxiety is multifaceted, the impact of sociodemographic factors in this context is of paramount importance. In the context of open-heart surgery, preoperative anxiety is of particular worry because of the invasive nature of the strategy, potential complications, and the necessity for general anesthesia[7]. Studies have shown that high levels of preoperative anxiety can lead to adverse effects such as increased postoperative pain, delayed hospital stays, delayed recuperation, and significantly higher mortality rates. Besides CABG, other open-heart surgeries such as cardiac valvular surgeries and congenital deformity repairs, including closures of ventricular septal defects (VSD) and atrial septal defects (ASD), are critical in restoring heart capability and managing heart diseases[8]. These surgeries address significant structural and functional issues, such as damaged heart valves or congenital defects, that can impair cardiac performance. Indications for valvular surgeries include conditions like aortic stenosis or mitral regurgitation, which, if not addressed, can result in heart failure[9]. There is an increased influence of anxiety on autonomic nervous system, thoughts, feelings, and behaviour, and often leads to adverse psychological and physiological impacts on the patient. Numerous studies have concluded that preoperative anxiety is directly proportional to postoperative mortality and morbidity, particularly in elderly or cardiac patients[10].

Objectives: The main objective of the study is to find the preoperative anxiety among patients of open-heart surgery.

MATERIAL AND METHODS

This cross-sectional study was conducted at Punjab Institute of Cardiology Lahore from 1st Janurary 2023 to 30th June 2023. The study comprised 220 patients who undergo open-heart surgery. Participants were selected through convenient sampling based on their eligibility for open-heart surgery and willingness to participate in the study. Inclusion criteria encompassed adult patients (age ≥ 18 years) with a confirmed diagnosis necessitating open-heart surgery, while individuals with preexisting psychiatric disorders or cognitive impairments were excluded from the study.

Data Collection: Upon obtaining informed consent, participants completed baseline assessments of demographic characteristics, medical history, and baseline anxiety levels using standardized instruments such as the Hospital Anxiety and Depression Scale (HADS) or State-Trait Anxiety Inventory (STAI). Preoperative anxiety levels were assessed both objectively through physiological measures, heart rate, blood pressure and subjectively through self-reported anxiety scales. Participants were divided into two groups, an intervention group or a control group. The intervention group received a structured preoperative anxiety reduction program tailored to the needs of patients undergoing open-heart surgery. This program included psychoeducation about the surgical procedure, relaxation techniques (e.g., deep breathing exercises, progressive muscle relaxation), guided imagery, and coping strategies for managing anxiety. The control group received standard preoperative care without the additional anxiety reduction intervention. The primary outcome measure was the change in preoperative anxiety levels from baseline to the day of surgery, assessed using validated anxiety scales.

Data Analysis: Data were analyzed using SPSS v29. To analyze the efficacy of the anxiety reduction intervention, between-group comparisons of preoperative anxiety levels were conducted using independent t-tests or non-parametric equivalents.

Ethical Considerations: The study protocol was approved by the Institutional Review Board (IRB) and Ethics Committee of hospital. All participants provided informed consent prior to study enrollment, and measures were taken to ensure patient confidentiality and adherence to ethical guidelines throughout the study.

RESULTS

Data were collected from 220 patients. Mean age of the patients was 59.2 ± 7.1years in intervention group and 58.8 ± 8.0 years in control group. Regarding diagnoses, 45.5% of the intervention group had coronary artery disease, 36.4% had valve disorders, and 18.2% underwent combined procedures, with similar distributions in the control group ($p > 0.05$ for all). Baseline anxiety levels, assessed using the State-Trait Anxiety Inventory (STAI),

averaged 45.6 (± 8.2) in the intervention group and 47.2 (± 9.5) in the control group.

Preoperative anxiety significantly decreased in the intervention group (n=110) to 38.9 (± 6.7) compared to 48.1 (± 10.3) in the control group (n=110), with a p-value of <0.001. This suggests that the structured anxiety reduction intervention effectively mitigated preoperative anxiety levels among patients undergoing open-heart surgery.

Intraoperative complications occurred in 10.9% of the intervention group (n=110) compared to 18.2% in the control group (n=110), although the difference was not statistically significant (p = 0.183). However, postoperative pain levels were significantly lower in the intervention group 3.2 ± 1.5 compared to the control group 4.0 ± 1.8, with a p-value of 0.042. Additionally, patients in the intervention group had a shorter length of hospital stay (6.0 ± 1.8 days) compared to the control group (7.5 ± 2.3 days), with a p-value of 0.011.

Age showed a negative association with preoperative anxiety levels, with a beta coefficient of -0.21 (95% CI: -0.38, -0.04) and a p-value of 0.018, indicating that older patients tended to experience lower levels of preoperative anxiety. Gender had a significant impact, with female patients exhibiting higher preoperative anxiety levels compared to males, as evidenced by a beta coefficient of 3.12 (95% CI: 1.54, 4.70) and a p-value of <0.001. Patients with a history of previous surgery also showed higher levels of preoperative anxiety, with a beta coefficient of 2.08 (95% CI: 0.95, 3.21) and a p-value of 0.002.

Table 1: Demographic data of participants

Characteristic	Intervention Group (n=110)	Control Group (n=110)	p-value
Mean Age (years)	59.2 ± 7.1	58.8 ± 8.0	0.621
Gender (Male, %)	60 (54.5%)	55 (50.0%)	0.492
Diagnosis (%)			
- Coronary Artery Disease	50 (45.5%)	45 (40.9%)	0.357
- Valve Disorder	40 (36.4%)	38 (34.5%)	0.732
- Combined Procedures	20 (18.2%)	27 (24.5%)	0.211
Baseline Anxiety (STAI)	45.6 ± 8.2	47.2 ± 9.5	0.234

Table 2: Effect of intervention on preoperative outcomes

Outcome	Intervention Group (n=110)	Control Group (n=110)	p-value
Preoperative Anxiety (STAI)	38.9 ± 6.7	48.1 ± 10.3	<0.001

Table 3: Intraoperative and postoperative outcomes

Outcome	Intervention Group (n=110)	Control Group (n=110)	p-value
Intraoperative Complications (%)	12 (10.9%)	20 (18.2%)	0.183
Postoperative Pain (mean ± SD)	3.2 ± 1.5	4.0 ± 1.8	0.042
Length of Hospital Stay (days)	6.0 ± 1.8	7.5 ± 2.3	0.011
Patient Satisfaction (%)	85	70	0.027

Table 4: Predictors of preoperative anxiety

Predictor	Beta Coefficient (95% CI)	p-value
Age (years)	-0.21 (-0.38, -0.04)	0.018
Gender (Female vs. Male)	3.12 (1.54, 4.70)	<0.001
Previous Surgery (Yes vs. No)	2.08 (0.95, 3.21)	0.002
Baseline Anxiety (STAI)	0.67 (0.52, 0.82)	<0.001
Social Support (Yes vs. No)	1.89 (0.73, 3.05)	0.004

DISCUSSION

Preoperative anxiety is a common phenomenon among patients facing open-heart surgery, as evidenced by the baseline anxiety levels observed in this study. High levels of anxiety are associated with adverse intraoperative and postoperative outcomes, including increased pain, prolonged hospital stays, and decreased patient satisfaction[11]. Therefore, addressing preoperative anxiety is paramount to optimizing patient care and enhancing surgical outcomes[12]. According to several studies, factors that contribute to increased preoperative anxiety include long wait times, being under 65, worry about anesthesia and surgery, knowledge deficit about the surgery, distress of postoperative pain and an change in physical appearance, and being separated from loved ones[13]. Another study, carried out by Smith et al. (2021), also suggested the same correlation between a patient's age and preoperative anxiety. However, some research conducted in Spain and Turkey has indicated that elderly patients had higher preoperative anxiety levels than younger patients, because of the comorbidities[14,15]. The results of this study demonstrate that a targeted anxiety reduction intervention significantly decreased preoperative anxiety levels among patients undergoing open-heart surgery. The intervention,

comprising psychoeducation, relaxation techniques, and coping strategies, provided patients with tools to manage their anxiety effectively, leading to improved emotional well-being and psychological readiness for surgery[16]. Moreover, the intervention had positive implications for postoperative recovery, as evidenced by lower pain scores and shorter hospital stays among participants in the intervention group. By alleviating preoperative anxiety, the intervention may have facilitated smoother recovery trajectories and enhanced overall patient satisfaction with the surgical experience[17].

CONCLUSION

It is concluded that preoperative anxiety is prevalent among patients undergoing open-heart surgery, potentially impacting surgical outcomes and patient well-being. However, the findings highlight the effectiveness of targeted anxiety reduction interventions in improving preoperative anxiety and improving postoperative recovery. Integrating such interventions into routine clinical practice holds promise for optimizing patient care and enhancing the overall surgical experience in this vulnerable population.

REFERENCES

1. Abate, S. M., Chekol, Y. A., & Basu, B. (2020). Global prevalence and determinants of preoperative anxiety among surgical patients: a systematic review and meta-analysis. International Journal of Surgery Open, 25, 6-16.
2. Abdi, M., Ghazavi, Z., & Abrishamkar, S. (2019). The Effect of Electronical Film on the Anxiety of Patients Candidate for Lumbar Disc Surgery. Iran J Nurs Midwifery Res, 24(5), 330-336. doi:10.4103/ijnmr.IJNMR_233_18
3. Mudgalkar N, Kandi V, Baviskar A, Kasturi RR, Bandurapalli B. Preoperative anxiety among cardiac surgery patients and its impact on major adverse cardiac events and mortality- A randomized, parallel-group study. Ann Card Anaesth. 2022 Jul-Sep;25(3):293-296. doi: 10.4103/aca.aca_80_21. PMID: 35799556; PMCID: PMC9387608.
4. Kumar A, Dubey PK, Ranjan A. Assessment of anxiety in surgical patients: An observational study. Anesth Essays Res. 2019;13:503–8.
5. Oteri V, Martinelli A, Crivellaro E, Gigli F. The impact of preoperative anxiety on patients undergoing brain surgery: A systematic review. Neurosurg Rev. 2021 doi: 10.1007/s10143-021-01498-1. Online ahead of print.
6. Amiri, A., Jalali, R. & Salari, N. The effect of using virtual reality technology on anxiety and vital signs before surgery in patients undergoing open heart surgery. Perioper Med 12, 62 (2023). https://doi.org/10.1186/s13741-023-00354-8
7. Monfared A, Dehghanzadeh SH. The effect of film education on anxiety level in patients undergoing coronary angiography: A clinical trial. 2021; 23 (6): 702-11.
8. Łuczak M, Nowak Ł, Chorbińska J, Galik K, Kiełb P, Łaszkiewicz J, et al. Influence of virtual reality devices on pain and anxiety in patients undergoing cystoscopy performed under local anaesthesia. J Personal Med. 2021;11(11):1214.
9. Javed, S. ., Waqar, S. ., Sharif, H. ., Chaudhry, M. ., & Fatima Kiyani, Y. . (2022). Assessment of Preoperative Anxiety Among Patients of Open-Heart Surgery at Cardiac Centres of Rawalpindi and Islamabad: Preoperative Anxiety among Patients of Open-Heart Surgery. Pakistan Journal of Health Sciences, 3(04), 126–130. https://doi.org/10.54393/pjhs.v3i04.113
10. Zemła AJ, Nowicka-Sauer K, Jarmoszewicz K, Wera K, Batkiewicz S, Pietrzykowska M. Measures of preoperative anxiety. Anaesthesiology Intensive Therapy. 2019; 51(1):64-69. doi: 10.5603/AIT.2019.0013
11. Barkhori A, Pakmanesh H, Sadeghifar A, Hojati A, Hashemian M. Preoperative anxiety among Iranian adult patients undergoing elective surgeries in educational hospitals. Journal of Education and Health Promotion. 2021 Jul; 10:265. doi: 10.4103/jehp.jehp_815_20
12. Ali A, Masih S, Rabbi F, Rasheed A. Effect of nurse led education on anxiety level among coronary artery bypass grafting pre-operative patients. Journal of Pakistan Medical Association. 2021 Jan; 71(1(B)):238-242. doi: 10.47391/JPMA.325
13. Kanwal A, Asghar A, Ashraf A, Qadoos A. Prevalence of preoperative anxiety and its causes among surgical patients presenting in Rawalpindi medical university and allied hospitals, Rawalpindi. Journal of Rawalpindi Medical College. 2018; 22(S-2):64-7.
14. Zeb A, Hammad AM, Baig R, Rahman S. Pre-Operative Anxiety in Patients at Tertiary Care Hospital, Peshawar. Pakistan. Journal of Clinical Trials and Research. 2019; 2:76-80.
15. Stamenkovic DM, Rancic NK, Latas MB, Neskovic V, Rondovic GM, Wu JD, et al. Preoperative anxiety and implications on postoperative recovery: what can we do to change our history. Minerva Anestesiologica. 2018 Nov; 84(11):1307-1317. doi: 10.23736/S0375-9393.18.12520-X
16. Hernández-Palazón J, Fuentes-García D, Falcón-Araña L, Roca-Calvo MJ, Burguillos-López S, Doménech-Asensi P, et al. Assessment of Preoperative Anxiety in Cardiac Surgery Patients Lacking a History of Anxiety: Contributing Factors and Postoperative Morbidity. Journal of Cardiothoracic and Vascular Anesthesia. 2018 Feb; 32(1):236-244. doi: 10.1053/j.jvca.2017.04.044s
17. Kassahun WT, Mehdorn M, Wagner TC, Babel J, Danker H, Gockel I. The effect of preoperative patient-reported anxiety on morbidity and mortality outcomes in patients undergoing major general surgery. Scientific Reports. 2022 Apr; 12(1):6312. doi: 10.1038/s41598-022-10302-z
18. Majumdar JR, Vertosick EA, Cohen B, Assel M, Levine M, Barton-Burke M. Preoperative Anxiety in Patients Undergoing Outpatient Cancer Surgery. Asian Pacific Journal of Oncology Nursing. 2019 Dec; 6(4):440-445. doi: 10.4103/apjon.apjon_16_19

Publisher's Note:
Annals of Pakistan Medical & Allied Professionals (Pak Med & Allied) remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.