

Research Article

Anxiety and Depression in Pre-Operative Patients in Faisalabad Institute of Cardiology: A Cross-Sectional Study

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Citation: Adnan M, Gill A, Rahman A, Iqbal M, Anwar N, Ali S, Khan S. Anxiety and Depression in Pre-Operative Patients in Faisalabad Institute of Cardiology: A Cross-Sectional Study. *Innov Res J Clin Sci.* 2025;3(1):1-8. Available from: <https://irjpl.org/irjcs/article/view/177>

Article Info

Received: April 8, 2025

Revised: June 19, 2025

Accepted: June 22, 2025

Keywords

Preoperative Care

Anxiety

Depression

Cardiac Surgical Procedures

Heart Disease

Disorder

Cardiovascular Disease

Psychological Stress

Adult

Risk Factors

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Published by Innovative
Research Journals (IRJPL).

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Abstract

Background: Pre-operative patients frequently suffer from depression and anxiety, which can negatively influence their general health and potentially affect surgical outcomes. Symptoms of depression and anxiety are present in a considerable number of individuals prior to surgery. The prevalence rates vary depending on the type of surgery, patient characteristics, and underlying medical conditions.

Objective: The present study aimed to assess preoperative anxiety and depression among patients undergoing heart surgery at the Faisalabad Institute of Cardiology (FIC), Pakistan, and to identify patient-related factors associated with anxiety levels.

Methods: This study was conducted from June 2024 to March 2025 in the Microbiology Research Laboratory (MRL), Department of Pathology, Pakistan Institute of Medical Sciences (PIMS), Islamabad, and at the Faisalabad Institute of Cardiology. A representative sample of preoperative heart surgery patients was selected from the FIC preoperative evaluation clinics and wards. The sample size was calculated based on the expected prevalence of anxiety and depression and the desired level of accuracy, resulting in a sample of 100 patients. Standardized questionnaires were used to assess anxiety and depression, and their internal consistency was evaluated using Cronbach's alpha.

Results: The distribution of subjects among the 55 adult patients analyzed was balanced. The questionnaires demonstrated strong internal consistency, with Cronbach's alpha values of 0.85 and 0.93. Significant differences were observed between patients with high trait anxiety and those with normal anxiety levels regarding situational anxiety scores ($p < 0.05$). Female sex was the only patient-related factor significantly associated with higher anxiety levels ($p < 0.05$). Further stratification revealed that younger women and females with prior experience of general anesthesia reported higher anxiety levels compared to their male counterparts.

Conclusion: The study identified several patient-related factors influencing

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preoperative anxiety and demonstrated findings consistent with the validated Korean versions of the anxiety assessment surveys. A notable sex-related difference in anxiety regarding future events was observed, which may be explained by a combination of biological and psychological factors. These findings highlight the importance of recognizing and addressing anxiety in preoperative cardiac surgery patients, particularly among female patients.

Introduction

Prior to surgery, depression and anxiety are prevalent neurological issues within patients, particularly at locations such as the Faisalabad Institute of Cardiology where patients are undergoing extensive medical procedures. These patients frequently feel anxious, scared, and fearful about the impending procedure, any possible problems, and the results. Given the crucial nature of heart surgeries performed at the Faisalabad Institute of Cardiology, patients may have additional concerns. They may be concerned about the outcome of the surgery, possible changes to their lifestyle following the procedure, and how it will affect their quality of everyday life [1]. It's critical that the institute's medical staff identify and attend to these patients' psychological requirements. Pre-operative evaluations must include routine screening for depression and nervousness. Some of their worries can be reduced by educating them about the surgical procedure, clearing up common misconceptions, and providing coping mechanisms. Additionally, providing psychological support services like therapy or counseling might be helpful for individuals who are significantly depressed or anxious [2]. A feeling of understanding and camaraderie can also be fostered by joining support groups with other sufferers [3]. Overall, improving the wellbeing of pre-operative patients at the Faisalabad Institute of Cardiology requires an all-encompassing strategy that takes into account both the psychological and physical components of treatment [4].

Anxiety is defined as a tense sensation that can lead to aberrant hemodynamics and has no clear cause or origin [5]. According to data from the UN's World Health Organization, anxiety and depression account for twenty percent of mental health issues among teenagers. Iranian children and adolescents were reported to have anxiety disorders at a rate of 6.7%–66% [6]. Anxiety can arise for a number of causes, such as being in

hospitals or healthcare facilities even if one is well fear of getting sick, being admitted to the hospital, anesthesia, or surgery. Prolonged anxiety can also cause stress and hinder the patient's healing process [7]. In Iran, nearly forty-seven percent of patients said they were anxious before surgery. Postoperative anxiety, often known as an anticipated response experienced by patients waiting for surgery, is still a concern in preoperative care despite advancements in surgical methods [8]. In addition, fifty percent of patients report feeling anxious before to surgery. Research revealed that a number of variables might be responsible for anxiety before surgery. Preoperative anxiety can be increased by certain characteristics, including feminine sex, smoking, a history of mental health issues, and dread of pain following surgery [9]. Previous research has shown that individuals who have never undergone surgery or who are female were more nervous. Furthermore, the most frequent cause of preoperative anxiety was concern about the results and consequences of surgery. On the other hand, a patient's degree of education, prior surgical experience, anesthetic kinds, and postoperative pain may all help to lessen postoperative concern [10].

The WHO has designated depression disorders as a priority because they consistently rank among the top three causes of nonfatal illness burden worldwide (as expressed in years lived with disability) [11]. Disability is defined as a loss of health related to a certain condition of health. When compared to physical problems, psychiatric disorders result in more impairment yet receive less treatment in high-, middle-, and low-income nations [12]. Anxiety and depression account for fourteen percent and forty-five percent of disability-adjusted life years, respectively, among mental and drug use disorders [13]. Patients who experience psychological stress are linked to a persistent inflammatory reaction, which may hinder or postpone the healing process following surgery. Furthermore, there may be genetic

predispositions shared by immune mediated inflammation and depressive disorders [14].

Decreased reactivity to antidepressants may also be linked to certain genetic traits that control immune function. Normal immune activity is necessary for tissue healing and infection prevention following surgery [15]. Mental health optimization is rarely addressed prior to major surgery, despite the fact that there are therapeutic techniques accessible for mood problems [16]. While psychological distress is a strong predictor of postoperative pain in many surgical disciplines, some surgeons do not take their patients' depressed symptoms into account while planning an operation. Furthermore, in a number of surgical specialties, depression has been linked to greater rates of complications, duration of stay, early readmission, and an increase in the use of analgesics. Research on depression and anxiety in heart surgery has shown that these conditions markedly enhance the risk of postoperative death. Adult women have a greater burden from psychiatric disorders than men, yet the impact of sex on postsurgical outcomes is unclear and conflicting in various studies [17].

Preoperative patient frequently experience depression and anxiety, which has a substantial negative influence on both their general state of health and the results of their operation [18]. The well-known medical institution Faisalabad Institute of Cardiology is not an exception to this standard. Even with advances in medical treatments, pre-operative individuals' mental health is still a cause for worry, which calls for a thorough knowledge and efficient treatment of depressive and anxiety disorders in this population. The purpose of this research at the Faisalabad Institute of Cardiology is to look at the frequency, intensity, and related variables of anxiety and depression in preoperative subjects. The investigation attempts to provide light on the difficulties encountered by this patient population and provide solutions for better pre-operative treatment by determining the prevalence and

contributing factors of these mental health conditions. This study addresses a gap in the current literature by concentrating on pre-operative anxiety and depression in the context of a specific healthcare facility, offering insights into the area's prevalence and variables affecting these medical conditions. Therefore Aims of this research study were to catch out the prevalence, severity, and associated factors of anxiety and depression among pre-operative patients at Faisalabad Institute of Cardiology.

Materials and Methods

From the month of June 2024 to March 2025 of the following year, the current investigation had been carried out in the in the Department of Pathology, PIMS Islamabad and in Faisalabad Institute of Cardiology. The undergoing preoperative depression and anxiousness experienced by patients visiting Pakistan's Faisalabad Institute of Cardiology was the primary goals of the present study. The current investigation consisted of a cross-section research. This methodology makes it achievable to gather the data at a certain moment in a period of time giving a general picture of the target population's psychological well-being. Patients are in preparation for surgery to repair the heart at the Faisalabad Institute of Cardiology. From the hospital's pre-operative evaluation medical centers or units, a representative group of pre-operative patients was randomly chosen. In accordance with the expected proportion of people with both depression and anxiety and the required accuracy to be 100, the population sample size has been calculated [19].

A total of 100 preoperative patients from the Faisalabad Institute of Cardiology (FIC), Pakistan, were initially recruited for the study. After exclusions (two incomplete questionnaires, five withdrawals, and seven dropouts), data from 55 participants were included in the final analysis. Participants were divided into two groups: 27 patients with no prior exposure to general anesthesia and 28 patients with previous exposure (Figure 1).

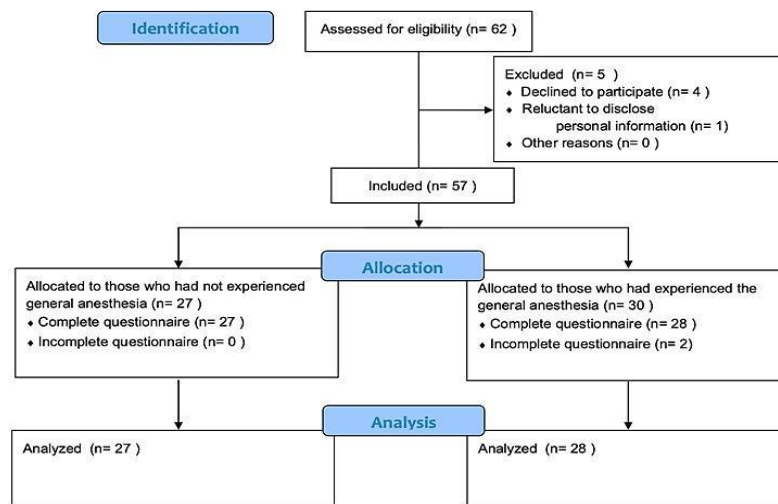


Figure 1: Shows the samples distribution. STROBE flow diagram for applying exclusion criteria and allocation: each group of 27 and 28 patients was allocated by prior general anesthesia experience. STROBE: Strengthening the Reporting of Observational Studies in Epidemiology.

Patients scheduled for cardiac surgery at FIC were invited to participate in the study during their pre-operative assessment appointments. Healthcare providers were explain the purpose of the study, assure confidentiality, and obtain informed consent from interested patients. Participants' mental health condition was evaluated by using validated screening instruments for depression and anxiety, such as the Patient Health Questionnaire (PHQ-9) or the Hospital Anxiety and Depression Scale (HADS) [20]. These instruments, which have been extensively employed in clinical and research contexts, are intended to identify signs of anxiety and depression. Trained research personnel were administer the screening tools to participants and collect demographic information (e.g., age, gender, marital status, education level) and clinical data (e.g., type of cardiac surgery, comorbidities) using a structured questionnaire. Participants' responses were recorded anonymously to ensure confidentiality [21].

The collected data were analyzed to estimate the prevalence of anxiety and depression among pre-operative patients at FIC. Descriptive statistics, such as means, percentages, and confidence intervals, were calculated to summarize the prevalence rates of anxiety and depression. Subgroup analyses were also conducted to explore potential associations between demographic or clinical factors and mental health outcomes. The study was adhere to ethical principles, including obtaining informed consent

from participants, ensuring confidentiality of data, and protecting participants' rights. Ethical approval was obtained from the relevant institutional review board before initiating data collection [22].

Results

The demographic distribution of participants is shown in Table 1. The sample was nearly equally distributed by sex (49.1% males, 50.9% females). The majority of participants were aged 31–50 years (49.1%), and most had completed high school education (41.8%). The internal consistency of the questionnaires was strong, with Cronbach's alpha values of 0.85 and 0.93, confirming good reliability of the translated APAIS and STAI-KYZ instruments.

Among 55 respondents, 13 reported subjective preoperative concerns. The most common fear was not regaining consciousness after surgery (n = 17, 54.8%), followed by postoperative pain or complications (n = 6, 19.4%), intraoperative awareness (n = 4, 12.9%), operating room environment (n = 2, 6.4%), and anxiety about anesthesia or surgery itself (n = 1, 3.2%).

Descriptive statistics showed a mean APAIS anxiety score of 17.2 ± 5.2 . Significant differences were observed in anxiety levels based on sex. Females had significantly higher APAIS anxiety scores and STAI-KYZ state anxiety scores compared to males (12.8 ± 3.9 vs. 9.8 ± 3.0 , $p = 0.003$; 46.8 ± 11.5 vs. 39.6 ± 8.8 , $p = 0.011$).

Table 1: Demographic data of respondents (n = 55).

Variable	Category	Count (n)	Percentage (%)
Age (years)	19–30	13	23.6
	31–50	27	49.1
	51–65	12	21.8
	>65	3	5.5
Sex	Male	27	49.1
	Female	28	50.9
History of General Anesthesia	Never	27	49.1
	More than once	28	50.9
Education Level	Below high school	7	12.7
	High school graduate	23	41.8
	Some college	15	27.3
	Above undergraduate degree	10	18.2

Note: APAIS: Amsterdam Before surgery Information and Anxiety Scale. Sum: the total of the six APAIS questions (6–30 points). The APAIS anxiety disorders score, which ranges from 4 to 20, represents the patient’s level of unease with surgery and anesthesia. Information score: the APAIS’s need-for-information assessment (points: 2 to 10). State anxiety disorders: the State-Trait Anxiety Inventory-Korean YZ form’s state anxiety (transitory emotional state) score (STAI-KYZ). An individual’s constant degree of anxiety is a reasonably steady propensity or personality feature, as measured by the STAI-KYZ personality trait anxiety index. The values are shown as averages with a standard deviation (SD).

No statistically significant differences were observed in anxiety levels based on age, educational level, or prior experience with general anesthesia. However, subgroup analysis revealed that younger females and females with prior

general anesthesia exposure had higher anxiety levels compared to males (Table 2). No significant differences were found in APAIS information scores across sex, age groups, educational levels, or anesthesia history.

Table 2: Scores of anxiety questionnaires compared by sex.

Assessment Tool	Parameter	Male (n = 27)	Female (n = 28)	Mean Difference	p-Value
APAIS	Anxiety Score	9.8 ± 3.0	12.8 ± 3.9	3.0	0.003*
APAIS	Information Score	6.9 ± 1.8	7.1 ± 2.0	0.2	0.62
STAI-KYZ	State Anxiety	39.6 ± 8.8	46.8 ± 11.5	7.2	0.011*
STAI-KYZ	Trait Anxiety	41.2 ± 7.9	42.0 ± 8.4	0.8	0.74

Note: Values are presented as mean ± standard deviation (SD)

Mean difference = Female – Male

*p < 0.05 indicates statistical significance

NS = not significant

APAIS = Amsterdam Preoperative Anxiety and Information Scale

STAI-KYZ = State-Trait Anxiety Inventory

Discussion

This study investigated preoperative anxiety in patients undergoing surgical procedures, focusing on associations with demographic and clinical variables. Our findings are consistent with previous literature and further support the validity of translated anxiety assessment tools such as APAIS and STAI-KYZ [23].

The internal consistency of both scales was strong (Cronbach’s alpha = 0.85 and 0.93), indicating reliability comparable to earlier validation studies.

Similar to Farhan et al. [24], significant correlations were observed between APAIS anxiety scores and STAI-KYZ state and trait anxiety scores. This supports the usefulness of both tools in assessing situational anxiety related to surgery and anesthesia.

Consistent with McLean et al. [25], a relationship between anxiety and information-seeking behavior was hypothesized; however, in our study, APAIS information scores were not significantly associated with STAI-KYZ scores.

This suggests that while both instruments effectively measure anxiety, they may capture slightly different psychological dimensions.

A key finding of this study was the significant association between female sex and higher preoperative anxiety levels. Age, education level, and prior exposure to general anesthesia did not significantly influence anxiety in the overall sample. These findings align with previous research indicating that females are more susceptible to anxiety disorders due to biological, psychological, and social factors.

Further subgroup analysis revealed that younger females and females with prior anesthesia experience exhibited significantly higher anxiety levels than their male counterparts. This is consistent with Bahram et al. [27], who reported higher anxiety in younger female patients, potentially due to differences in coping strategies and cognitive appraisal of stress.

Additionally, previous negative experiences with anesthesia appeared to influence anxiety levels, supporting findings by Woldegerima et al. [28], who demonstrated that individuals with higher trait anxiety tend to recall negative experiences more intensely, increasing anticipatory fear.

Interestingly, no significant differences were found in APAIS information scores across demographic variables. This contrasts with earlier literature suggesting that higher educational levels may increase information-seeking behavior. Cultural factors, including communication styles and deference to medical authority, may explain this discrepancy.

Another notable finding was that the most common patient concern was not regaining consciousness after surgery, rather than postoperative pain or nausea, which differs from several previous studies [29–34]. This may reflect cultural misconceptions about anesthesia and surgery in the local population, suggesting a need for improved preoperative education and counseling.

Overall, these findings highlight that female sex, particularly among younger patients and those with prior anesthesia experience, is a key predictor of preoperative anxiety. This underscores the importance of targeted psychological assessment and patient education during preoperative care to improve surgical experiences and outcomes.

Conclusion

In summary, our research revealed patient-related variables that impact anxiousness prior to surgery and showed conclusions that were in line with the translation of the questionnaire. It is interesting that there was a notable difference in the level of anxiety that females had about forthcoming events. This difference might be the result of a mix of both physiological and psychological characteristics. In addition, in today's medical anesthesia procedures, preoperative anesthesia education is frequently disregarded. In order to lower patient anxiety and enhance perioperative patient outcomes, it is critical to aggressively conduct preoperative preparation, including educating patients. Consequently, anesthesia professionals have to use care and offer anxiolytic therapies, particularly for individuals who are female with co-occurring mental problems.

Author's contributions

Muhammad Adnan; Investigation, writing editing and review, **Muhammad Iqbal Khan Rahman;** writing editing and review, **Anwar Awan;** Methodology, **Sayed Ali;** writing-original draft, **Abdullah Abbas bin Al Salam;** writing editing and review. The text has been written and is approved in its current version by all authors.

Funding

No external funding was obtained for this manuscript.

Conflict of interest

The authors declare that there have no conflicts of interest to this manuscript.

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