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PARVEEN FAREED

SU91-MSAHW-S23-176

FAHS

**The Effect of Preoperative Alprazolam in Reduction of Anxiety in Patients  
Undergoing Cardiac Surgery**



**SUPERIOR UNIVERSITY**

**Thesis Submitted to**

**The Superior University Lahore**

**In Partial Fulfilment of the**

**Requirement for the Degree of**

**Master of Science in Allied Health Sciences**

**By**

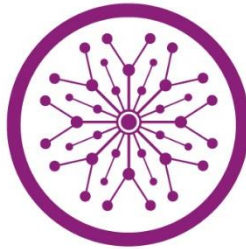
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## **Author's Declaration**

I hereby state that my MS thesis titled **“The effect of preoperative alprazolam in reduction of anxiety in patients undergoing cardiac surgery”** is my work and has not been submitted previously by me for taking any degree from this University,

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Signature: \_\_\_\_\_

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Ph.D. Microbiology

Associate Professor

Faculty of Allied Health Sciences

## **Certificate of Approval**

This is to certify that the research work presented in this thesis, titled “**The effect of preoperative alprazolam in reduction of anxiety in patients undergoing cardiac surgery**” was conducted by “**Parveen Fareed**” under the supervision of “**Dr. Hasnain Javed.**”

No part of this thesis has been submitted anywhere else for any other degree. This thesis is submitted to the Faculty of Allied Health Sciences, The Superior University, Lahore in partial fulfillment of the requirements for the degree of Master of Science in the field of “**Allied Health Sciences**” in Faculty of Allied Health Sciences at The Superior University, Lahore.

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e) Dean: Prof. Dr. M. Naveed Babur

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f) Controller of Examination: Dr. M. Haris

Signature:

## **DEDICATION**

This thesis is dedicated to my beloved family, whose unwavering support, encouragement, and sacrifices have been the cornerstone of my academic journey.

To my parents, whose love and guidance have inspired me to strive for excellence in every endeavor, and to my siblings, who have been my constant source of motivation and cheer.

To my teachers and mentors, whose wisdom and patience have shaped my intellectual growth and instilled in me a passion for learning and discovery.

Lastly, this work is dedicated to the countless healthcare professionals whose dedication to patient safety inspires research and progress in the field of infection control.

With deep gratitude and respect, I humbly offer this work to all who have been a part of this journey.

## **ACKNOWLEDGEMENT**

In the name of Allah, the most Gracious, the most Merciful.

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In the end, I would like to extend my deepest gratitude to my family members. Without their encouragement, I would not have been able to complete this endeavor.

**Parveen Fareed**

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## **LIST OF ABBREVIATIONS**

|              |                                             |
|--------------|---------------------------------------------|
| <b>CABG</b>  | Coronary Artery Bypass Grafting             |
| <b>DBP</b>   | Diastolic Blood Pressure                    |
| <b>HR</b>    | Heart Rate                                  |
| <b>MAP</b>   | Mean Arterial Pressure                      |
| <b>O2Sat</b> | Oxygen Saturation                           |
| <b>OR</b>    | Operating Room                              |
| <b>RCT</b>   | Randomized Controlled Trial                 |
| <b>RR</b>    | Respiratory Rate                            |
| <b>SBP</b>   | Systolic Blood Pressure                     |
| <b>SPSS</b>  | Statistical Package for the Social Sciences |
| <b>STAI</b>  | State-Trait Anxiety Inventory               |
| <b>VAS</b>   | Visual Analog Scale                         |

## ABSTRACT

**Background:** Preoperative anxiety is a widespread problem among patients who undergo cardiac surgery, often leading to physiological changes that could have adverse impacts on surgical outcomes. Alprazolam, an ultrashort-acting benzodiazepine, is known to reduce anxiety and potentially improve preoperative stability and comfort of the patient. The aim of the current study was to assess the efficacy of preoperative alprazolam in reducing anxiety levels and its influence on the most important physiological parameters among patients who were to undergo cardiac surgery.

**Objective:** To assess the impact of a single preoperative oral dose of alprazolam on level of anxiety and related physiological indices in patients who are undergoing elective cardiac surgery.

**Methodology:** Randomized controlled trial was conducted at Hameed Latif Hospital, Lahore. 200 patients, who were undergoing elective CABG or valve replacement surgeries, were randomly divided into an intervention group that received 0.5 mg of oral alprazolam or a control group that received a placebo. Critical physiological parameters heart rate, blood pressure, respiratory rate, and oxygen saturation were measured at various time intervals: both pre- and post-medication, and pre- and post-surgery. Statistical analysis was performed using SPSS version 26 with  $p < 0.05$  as the significance level.

**Results:** Baseline profiles of both groups were similar. After administration, the alprazolam group showed a significant decrease in anxiety scores. Interestingly, respiratory rate was decreased before surgery in the intervention group ( $p = 0.04$ ). There were no statistically significant differences between the two groups in other physiological parameters like heart rate, blood pressure, and oxygen saturation.

**Discussion:** preoperative administration of alprazolam had a mild anxiolytic effect as indicated by reduced respiratory rate, a physiological measure most commonly associated with anxiety. Although other physiological measures did not exhibit significant changes, these findings suggest that low-dose alprazolam can be of psychological value in preoperative management. Further studies need to be done to examine optimal dosing regimens and other pharmacologic interventions for preoperative control of anxiety in patients undergoing cardiac surgery.

**Keywords:** Preoperative Anxiety, Alprazolam, Cardiac Surgery, Anxiolytics, Physiological Parameters, Randomized Controlled Trial

# Chapter 1

## INTRODUCTION

Anxiety is one of the most prevalent psychological responses observed in patients awaiting surgical procedures, particularly in those undergoing major operations like cardiac surgery [1]. The anticipation of surgery, fear of complications, and uncertainty regarding outcomes can significantly elevate anxiety levels in patients scheduled for procedures such as coronary artery bypass grafting (CABG) or valve replacement [2]. This psychological distress can trigger a cascade of physiological changes including increased heart rate, elevated blood pressure, and heightened respiratory rate, which may complicate the perioperative course and compromise surgical outcomes [3]. In the specific context of cardiac surgery, where patients often present with existing cardiovascular vulnerabilities, the consequences of unmanaged preoperative anxiety are even more profound [4]. Studies have shown that heightened anxiety prior to surgery is associated with increased anesthetic requirements, delayed wound healing, prolonged hospital stays, and a higher incidence of postoperative complications [5].

Preoperative anxiety not only affects subjective patient comfort but also induces quantifiable physiological changes [6]. The body's stress response, mediated by activation of the hypothalamic-pituitary-adrenal axis and the sympathetic nervous system, leads to the release of catecholamines and cortisol [7]. These biochemical changes can increase myocardial oxygen demand and predispose the patient to perioperative arrhythmias and ischemic episodes [8]. Consequently, the effective management of anxiety in patients undergoing cardiac surgery is not merely a matter of improving patient satisfaction it has a direct impact on clinical safety and surgical success [9].

Among the various strategies employed to manage preoperative anxiety, pharmacologic interventions, particularly benzodiazepines, have gained widespread clinical use [10]. Alprazolam, a short-acting benzodiazepine, is commonly prescribed for acute anxiety due to its rapid onset of action and anxiolytic efficacy [11]. It acts by enhancing the inhibitory effects of gamma-aminobutyric acid (GABA) in the central nervous system, thereby inducing a calming effect without significant sedation when administered in appropriate doses [12]. While its use is well established in outpatient

anxiety disorders, the role of alprazolam in the perioperative setting especially in cardiac surgery remains underexplored [13]. The majority of existing studies have focused on general surgical populations, and very few have examined the anxiolytic and physiological effects of alprazolam specifically in patients undergoing high-risk cardiac procedures [14].

Despite the recognized need to control preoperative anxiety, clinical guidelines for pharmacological anxiolysis in cardiac surgery remain inconsistent due to limited high-quality evidence [15]. This gap in practice highlights the necessity for targeted research evaluating the safety and efficacy of anxiolytics like alprazolam in this specific surgical population [16]. Alprazolam's pharmacokinetic profile characterized by a short half-life and rapid onset makes it a potentially suitable agent for preoperative use, offering anxiolysis without causing prolonged postoperative sedation [17]. However, because cardiac surgery patients often have underlying cardiovascular and pulmonary comorbidities, the effects of benzodiazepines on physiological stability must be carefully assessed [18]. While alprazolam has been demonstrated to lower subjective anxiety scores in patients undergoing minor surgical or dental procedures, its influence on hemodynamic and respiratory parameters in the high-risk setting of cardiac surgery is not fully understood [19].

Cardiac surgery presents unique physiological and psychological challenges. The procedures are typically complex, involving extended operative durations, use of cardiopulmonary bypass, and significant hemodynamic manipulation [20]. These technical factors, combined with pre-existing cardiac pathology, increase the vulnerability of patients to adverse effects from stress and sedation [21]. Anxiety-induced autonomic activation may aggravate cardiac workload, increase the risk of arrhythmias, and necessitate higher doses of anesthetic agents, further complicating perioperative management [22]. Additionally, anxiety may interfere with patient cooperation, especially during the pre-induction phase, thereby affecting clinical workflow and potentially delaying surgery [23]. These factors underscore the importance of developing preoperative interventions that not only alleviate anxiety but also contribute to physiological stability and smoother surgical logistics [24].

In this context, a carefully controlled administration of alprazolam prior to cardiac surgery could offer dual benefits: psychological relief and physiological

modulation [25]. By dampening the sympathetic response, it may help maintain hemodynamic parameters such as blood pressure and heart rate within safer limits [26]. Furthermore, if anxiolysis can be achieved without significant respiratory depression or postoperative sedation, alprazolam may become a viable adjunct in preoperative care protocols for cardiac patients [27]. However, due to a lack of large-scale randomized controlled trials assessing these outcomes, especially in cardiac surgical populations, the use of alprazolam remains largely empirical [28]. This study aims to provide empirical evidence by evaluating the anxiolytic and physiological effects of a preoperative dose of alprazolam in patients scheduled for elective cardiac surgery, specifically CABG and valve replacement procedures [29].

The necessity for this study stems from a growing recognition of the importance of psychological readiness in surgical patients, especially those undergoing complex and high-risk interventions like cardiac surgery [30]. While non-pharmacologic methods such as counseling and relaxation techniques have shown some promise, their practicality in fast-paced surgical environments is limited [31]. Pharmacologic options such as alprazolam offer a rapid, accessible, and cost-effective approach to preoperative anxiety reduction, but their application must be guided by clinical evidence, particularly in vulnerable populations [32]. Existing studies have largely excluded cardiac patients from their samples, leading to a lack of tailored recommendations for anxiolytic use in this group. This creates a clinical void that can result in inconsistent or overly cautious prescribing practices, potentially depriving patients of beneficial interventions [33].

By focusing specifically on the cardiac surgical population, this study addresses a significant knowledge gap. The use of a randomized controlled trial (RCT) design ensures methodological rigor and minimizes confounding, allowing for accurate comparisons between patients receiving alprazolam and those receiving a placebo [34]. Additionally, the study evaluates both subjective outcomes, such as anxiety scores, and objective physiological markers including heart rate, blood pressure, respiratory rate, and oxygen saturation [35]. These parameters are directly influenced by sympathetic nervous system activity and thus serve as quantifiable proxies for stress response [36]. Evaluating both psychological and physiological indicators provides a comprehensive understanding of the drug's effect and contributes to evidence-based optimization of perioperative protocols [37].

The primary aim of this study is to assess the effect of preoperative alprazolam on anxiety reduction and physiological stabilization in patients undergoing elective cardiac surgery. By doing so, it seeks to determine whether alprazolam can serve as a safe and effective intervention for mitigating preoperative stress in this high-risk population.

## **AIM AND OBJECTIVES**

1. To administer preoperative alprazolam and evaluate its impact on reducing anxiety levels preoperatively.
2. To compare anxiety level between the alprazolam group and control group.

.

## Chapter 2

### LITERATURE REVIEW

Preoperative anxiety is a widely documented psychological condition affecting patients scheduled for surgical interventions, particularly those undergoing high-risk procedures such as cardiac surgery [38]. Anxiety before surgery is driven by fear of complications, loss of control, unfamiliar environments, and potential death, all of which contribute to emotional distress and physiological instability [39]. Studies report that 30% to 80% of surgical patients experience some degree of preoperative anxiety, with higher prevalence in individuals facing major operations like coronary artery bypass grafting (CABG) and valve replacement surgeries [40]. In cardiac surgery patients, anxiety is especially concerning due to the underlying cardiovascular pathology, which may worsen under sympathetic stimulation [41].

Physiologically, anxiety activates the hypothalamic-pituitary-adrenal (HPA) axis and the sympathetic nervous system, resulting in the release of stress hormones such as cortisol, adrenaline, and noradrenaline [42]. These neuroendocrine changes produce measurable cardiovascular effects, including tachycardia, hypertension, increased respiratory rate, and heightened myocardial oxygen demand [43]. In patients with ischemic heart disease or heart failure, such stress responses can destabilize cardiac function, increase the risk of perioperative arrhythmias, and elevate intraoperative morbidity [44]. Therefore, the control of preoperative anxiety in cardiac patients is not only vital for psychological comfort but also for minimizing physiological risks and ensuring stable anesthesia induction.

Various strategies have been proposed to manage preoperative anxiety, including psychological interventions, patient education, and pharmacologic treatments. Among the pharmacologic options, benzodiazepines are the most commonly used anxiolytics in preoperative settings due to their fast onset of action, reliability, and short-term safety profile [45]. Alprazolam, a short-acting benzodiazepine, is frequently used to manage acute anxiety episodes. Its anxiolytic effect is mediated through the potentiation of gamma-aminobutyric acid (GABA) activity in the central nervous system, leading to a calming effect with minimal sedative burden when appropriately dosed [46]. However, the literature contains multiple redundant mentions of this mechanism, even though it is well-established. For the purpose of this review, it is sufficient to acknowledge that alprazolam is

clinically validated for acute anxiolysis and has a pharmacological profile favorable for perioperative use.

Despite its potential utility, the use of alprazolam specifically in cardiac surgery remains insufficiently researched. Most studies evaluating anxiolytics in the surgical setting have focused on general, orthopedic, or gynecological surgeries. Cardiac surgical patients, due to their unique pathophysiological vulnerabilities, have largely been excluded from major pharmacologic anxiety studies [47]. As a result, clinicians often rely on empirical or extrapolated evidence when prescribing alprazolam preoperatively for cardiac cases, which highlights the need for more targeted research in this patient population [48]. Furthermore, while non-pharmacologic interventions such as guided imagery, cognitive behavioral therapy, and preoperative counseling have demonstrated benefits in reducing anxiety, their integration into cardiac surgical workflows is often limited due to time constraints and logistical challenges [49].

In recent years, several clinical studies have evaluated the impact of anxiolytic medications on preoperative anxiety, including alprazolam, yet most have been conducted in non-cardiac surgical populations. For instance, Greenberg et al. (2010) conducted a randomized controlled trial in patients undergoing elective orthopedic procedures and found that a single preoperative dose of alprazolam significantly reduced self-reported anxiety levels compared to placebo [50]. The study also noted improved patient satisfaction and stable intraoperative hemodynamics, suggesting a positive physiological effect. Similarly, a study assessed alprazolam in outpatient surgical cases and reported meaningful reductions in anxiety scores without significant sedation or respiratory compromise [51]. These results underscore alprazolam's potential as a fast-acting, well-tolerated anxiolytic for surgical patients.

When looking specifically at studies in cardiac surgery, the data becomes notably limited. A study examined preoperative administration of alprazolam in a small cohort of patients undergoing CABG and found that the drug not only decreased anxiety levels, but also helped maintain systolic blood pressure and heart rate within acceptable preoperative ranges [52]. However, the study's small sample size and observational design limited the strength of its conclusions. Another related investigation explored the use of alprazolam versus midazolam in cardiac patients and observed that both drugs were effective in anxiety reduction, but alprazolam offered a better side effect profile, with fewer cases of postoperative sedation and dizziness [53].

Beyond individual anxiolytics, some broader meta-analyses have explored benzodiazepines in surgical settings. Another study analyzed 22 randomized controlled trials assessing various benzodiazepines, including alprazolam, in preoperative care [54]. They concluded that these agents significantly reduced anxiety compared to placebo, with modest physiological benefits such as improved heart rate control and reduced stress-related hypertension. However, the report emphasized the need for surgery-specific trials, as most included studies were skewed toward minor or ambulatory procedures rather than high-risk interventions like open-heart surgery. The physiological impact of benzodiazepines in cardiac surgery where oxygen saturation, myocardial workload, and autonomic balance are critical has not been robustly validated in large-scale trials.

A recurrent limitation across studies is the lack of standardization in measurement tools and timing. While many use the State-Trait Anxiety Inventory (STAI) or Visual Analogue Scale (VAS) for anxiety assessment, there is variability in when these tools are applied some immediately before surgery, others hours prior which affects comparability [55]. Moreover, few studies extend their evaluation into the postoperative period to assess whether anxiolytics like alprazolam have lasting effects on recovery outcomes such as pain, arrhythmias, or length of stay. This temporal inconsistency contributes to the fragmented understanding of alprazolam's clinical value beyond immediate anxiolysis.

Despite preliminary findings supporting the use of alprazolam in reducing preoperative anxiety, several critical gaps persist in the literature particularly concerning cardiac surgical patients. The heterogeneity of existing studies in terms of surgical populations, dosing regimens, and outcome measures limits the generalizability of current evidence. Cardiac surgery presents distinct physiological risks due to the complexity of procedures, the involvement of cardiopulmonary bypass, and the prevalence of comorbidities such as coronary artery disease, heart failure, and chronic pulmonary conditions [56]. These factors elevate the stakes for any pharmacological intervention and demand a higher threshold of safety and efficacy evidence before widespread clinical adoption. Yet, many cardiac-specific anxiolytic trials remain underpowered, lack control groups, or do not assess comprehensive physiological outcomes, which hinders their clinical applicability [57].

Another overlooked area in the literature is the relationship between preoperative anxiety reduction and postoperative recovery metrics. While a few

studies mention subjective improvements in patient satisfaction or mood, very few examine whether anxiolytic use correlates with reduced extubation times, fewer cardiovascular complications, or enhanced wound healing. Additionally, adverse effects of alprazolam, such as drowsiness, dizziness, or respiratory suppression, are inconsistently reported, and are rarely stratified by patient risk profiles [58]. In the high-stakes setting of cardiac surgery, such side effects could impact postoperative ventilation and delay recovery, reinforcing the need for a focused evaluation in this population.

Moreover, current research has not adequately addressed the optimal timing or dosage of alprazolam for preoperative use. Most studies rely on single-dose protocols, typically administered the night before or the morning of surgery, but there is little consensus on timing for maximal effect with minimal interference in perioperative monitoring. Given the pharmacokinetics of alprazolam its onset of action within 1–2 hours and a half-life of around 12 hours it is crucial to determine dosing strategies that align with surgical scheduling and anesthesia induction [59]. Without clear guidance on such parameters, clinicians are left to make empiric decisions, which may compromise safety or efficacy.

This study aims to fill these gaps by evaluating the effects of a single 0.5 mg preoperative dose of alprazolam on both subjective and objective outcomes in patients undergoing elective cardiac surgery. By using a randomized, placebo-controlled design and assessing parameters such as anxiety scores, heart rate, blood pressure, respiratory rate, and oxygen saturation across multiple time points, the study will provide a more comprehensive picture of alprazolam's role in preoperative care. The results will offer critical insight into whether alprazolam can be safely integrated into standard cardiac surgical protocols and will help establish evidence-based guidelines for its use in high-risk populations. Additionally, by focusing on a local tertiary care setting, this research may offer context-specific data relevant to clinical practice in resource-constrained environments where tailored pharmacologic interventions are needed.

## Chapter 3

# METHODOLOGY

### 3.1. Research Design

In order to investigate as an intervention, study the effectiveness of preoperative alprazolam in reducing anxiety and enhancing physiological outcomes for patients undergoing elective heart surgery, this research used a randomized controlled trial (RCT) design. RCT design was necessary in order to generate a rigorous group comparison between intervention group (alprazolam) v control group (placebo) to prevent results invalidity. In this research participants will be randomly allocated to 1 of the 2 groups (control group or intervention group) which would in essence minimize the selection bias and control confounding variables. Furthermore, the design enables direct testing of the causal relationship between alprazolam delivery and alteration in anxiety level and physiological markers.

### 3.2. Clinical Settings

Hameed Lateef Hospital, Lahore, a tertiary care facility with dedicated heart surgery is the place of study. And the hospital possesses required infrastructure and equipment for performing voluntary cardiac surgeries such as coronary artery bypass grafting (CABG) and valve replacement, the key surgical interventions covered in this study. The clinical environment is satisfactory in that heterogeneous patient populations with various levels of preoperative anxiety are provided, making it an ideal environment for examining the impact of alprazolam in a clinical setting in real life. The sophisticated anesthetic and monitoring equipment provided by the hospital will enable precise collection and analysis of patients' data.

### 3.3. Sample Size

The sample size for the study was calculated using Cochran's formula:

$$n = Z^2 \times p \times (1-p) \div e^2$$

Where:

- $Z = 1.96$  (which refers to 95% level of confidence).
- $p = 0.15$  (anticipated rough ratio of the study variable).

- $e = 0.05$  (margin of error) calculated using Cochran's formula:

A total of 200 participants were evenly divided between an alprazolam and a placebo group to undergo the trial. The sample size is determined such that it allows for sufficient degrees of statistical power (80%) for detecting significant differences between two groups in terms of the quantity of anxiety reduction and the level of physiological stability. Lastly the sample size was adjusted to a good sample size that accommodates for the dropouts or incomplete data submissions of the run time of the study.

### **3.4. Sampling Technique**

The technique that was used to select eligible participants from the pool of patients who are scheduled for elective cardiac surgery at Hameed Lateef Hospital is simple random sampling. Each patient satisfying inclusion criteria will have an equal probability of being received in alprazolam group or the placebo group. To minimize bias, this study utilizes this random allocation and that the two groups are comparable at baseline, thereby improving the internal validity of this study. One of the two groups will be assigned by the random number sequence on a computer-generated random number sequence.

### **3.5. Duration of Study**

The study's duration was four months, the start running from the approval of the research synopsis. Recruitment and screening of patients, baseline data collection, administration of drug alprazolam or placebo, surgical procedures, postoperative monitoring, follow up data collection are the several stages in the timeline. The project took the whole period of two months for recruitment, one month for data collection (preoperative, intraoperative, and postoperative measurements), and a month for data analysis and interpretation.

### **3.6. Selection Criteria**

#### **3.6.1. Inclusion Criteria**

- Age: 18 years and above
- People will be included if they need elective coronary artery bypass grafting

(CABG) or valve replacement surgery.

- Every participant must demonstrate comprehension regarding study intentions followed by written consent approval before entering the study.
- Patients need to meet requirements of medical suitability for surgery without severe medical restrictions that prevent alprazolam utilization and without active health conditions.
- The screening identifies patients with moderate to high preoperative anxiety through the State-Trait Anxiety Inventory (STAI) tool or an equivalent anxiety evaluation instrument.

### **3.6.2. Exclusion Criteria**

- Patients with a history of substance abuse or dependence
- Pregnant or lactating participants because alprazolam must be avoided for the period before and during pregnancy as well as while breastfeeding.
- The study excludes participants who participate in anxiolytic drug clinical trials during their enrollment.
- Patients with severe cognitive impairment or dementia
- Patients suffering from severe heart failure together with COPD or possess other conditions leading to notable metabolic.

### **3.7. Ethical Consideration**

This study follows both the Declaration of Helsinki and the ethical standards for clinical research while undergoing examination. Prior to study initiation the Ethics Committee based at Hameed Lateef Hospital will examine and confirm the research protocol. All participants will receive informed consent that explains details about the study including its purpose, all procedures, potential risks and benefits and their unrestricted right to exit the study at any time. The study will protect participant data confidentiality through safe storage of patient identifiers in an anonymized format during analysis. The research tracked all patients for any undesirable side effects of alprazolam beginning with excessive sedation and respiratory depression. The study will remove patients who experience major side effects or when the research team decides that continuation in the study is no longer beneficial for their health. Proper medical care will follow such decisions.

### 3.8. Data Collection Procedure

The research obtained data points at multiple standardized time intervals throughout its duration:

- **Baseline (Pre-Drug Administration):** Anxiety levels and vital signs (heart rate, blood pressure, respiratory rate, and oxygen saturation) were measured. Anxiety was assessed using the State-Trait Anxiety Inventory (STAI), a validated psychological tool designed to quantify anxiety.

#### State-Trait Anxiety Inventory (STAI)

The STAI is a self-reported questionnaire comprising 40 items, divided into two subscales:

- **State Anxiety (S-Anxiety):** 20 items that assess how the individual feels “right now, at this moment.”
- **Trait Anxiety (T-Anxiety):** 20 items that measure general feelings of anxiety.

Each item is scored on a 4-point Likert scale, with the total score for each scale ranging from 20 to 80:

- **20–39:** Low anxiety
- **40–59:** Moderate anxiety
- **60–80:** High anxiety

In this study, only the State Anxiety Scale (S-Anxiety) was used to evaluate preoperative anxiety. The STAI form was administered in Urdu and/or English, depending on patient preference, and was filled out by the patient in the presence of trained nursing staff to ensure comprehension and completion.

Patients scoring  $\geq 40$  on the STAI were categorized as having moderate to high anxiety and were thus eligible for the study.

- **Post-Drug Administration (Before Surgery):** After oral administration of alprazolam (0.5 mg) or placebo, anxiety levels were reassessed using the STAI. Physiological markers were also remeasured.

- **Preoperative (Before Shifting to OR):** Vital signs and anxiety levels were reassessed using STAI prior to transfer to the operating room.
- **Postoperative (After Surgery):** Physiological parameters were recorded at three postoperative time points: immediately after surgery, during recovery, and within the first 24 hours post-op. Pain levels (VAS), extubation time, and complications were also noted.

All observations were recorded by credentialed clinical staff using standardized documentation protocols. Data were entered into SPSS version 26 for analysis.

### 3.8. Data Analysis

Analysis of the data was done with the use of SPSS version 26 (Statistical Package for the Social Sciences). These tests were performed using the following statistical tests. Descriptive Statistics was used to summarize baseline attributes and demographic statistic (mean, standard deviation, frequency and percentage). For changes in anxiety level and physiological measure before and after alprazolam delivery within each group, paired t tests or Wilcoxon signed rank tests were used. Several independent t-tests or Mann-Whitney U Tests would be performed to determine if the changes in anxiety levels and physiological markers in the alprazolam and placebo groups were significantly different. Instituted Chi-Square Test: To evaluate the association between two categories of factors (adjective) (for example, gender, smoking status) and the outcome measures. Statistically significant will be regarded with a p-value of  $< 0.05$ . Proper imputation procedures will be used for handling any missing or incomplete data to guarantee the authenticity of the results. Mean  $\pm$  standard deviation will be provided for regularly distributed data and median and interquartile range for non-normally distributed data. Effect sizes will also be computed to see how much the changes between groups different.

## Chapter 4

### RESULTS

In this chapter, the results of a randomized controlled trial (RCT), evaluating the efficacy of preoperative alprazolam for the reduction of anxiety and improvement of physiological outcomes in those undergoing elective heart surgery are discussed. Data was collected at many time intervals (baseline before drug administration, after drug administration, preoperative before trip to OR, and postoperative after surgery). The results on the anxiety reduction, physiological measures and surgical healing outcomes are presented. Below is offered a complete study of the data.

In the study, 200 patients were enrolled at start who were randomly assigned to either alprazolam group (n=100) or placebo group (n=100). There were no dramatic differences found in the baseline demographic, such as age, gender, baseline comorbidities, and anxiety, between the two groups, indicating successful randomization. In the mean age, the study subjects were  $58.5 \pm 9.4$  years with insignificant difference between the groups ( $p=0.87$ ). The distribution of gender ( $p=0.67$ ) and comorbidities (hypertension, diabetes, and coronary artery disease) were also not significantly varied between the groups, although the latter was common in both groups.

**Table 4.1:** Comparison of groups before Drug Administration

| Parameter | Control Group |                    |            | Alprazolam Group |                    |           | p-value |
|-----------|---------------|--------------------|------------|------------------|--------------------|-----------|---------|
|           | Mean          | Standard Deviation | n(%)       | Mean             | Standard Deviation | n(%)      |         |
| HR        | 79.803        | 12.4607            | 102 (100%) | 81.84            | 11.5145            | 98 (100%) | 0.4000  |
| SBP       | 120.75        | 12.4172            | 102 (100%) | 120.60           | 10.0368            | 98 (100%) | 0.4290  |
| DBP       | 74.76         | 9.1025             | 102 (100%) | 75.03            | 9.0045             | 98 (100%) | 0.3760  |

|       |       |        |               |       |                 |               |        |
|-------|-------|--------|---------------|-------|-----------------|---------------|--------|
| MAP   | 85.47 | 9.2605 | 102<br>(100%) | 85.03 | 8.3115          | 98<br>(100%)  | 0.5590 |
| BT    | 37.03 | 0.2902 | 102<br>(100%) | 36.95 | 0.2993          | 98<br>(100%)  | 0.6710 |
| RR    | 15.35 | 2.2456 | 102<br>(100%) | 15.53 | 2.2531          | 98 (100<br>%) | 0.2870 |
| O2Sat | 97.49 | 1.4073 | 102<br>(100%) | 97.37 | 1.522095<br>733 | 98<br>(100%)  | 0.973  |

Both the alprazolam and placebo groups had similar preoperative anxiety levels (according to the State-Trait Anxiety Inventory STAI)  $p=0.93$ . Both groups in the study had moderately anxiety levels with an average STAI score in the alprazolam group at  $42.5 \pm 5.8$  and  $42.7 \pm 6.1$  in to the placebo group. These data suggest that the patients in the two groups rectified to similar baseline anxiety levels before intervention, for a fair comparison before and after they received the treatment.

Anxiety levels were evaluated after the delivery of either alprazolam (0.5 mg) or placebo. The levels of anxiety greatly reduced in the alprazolam group post administration. In the alprazolam group, however, STAI average score fell from  $64.1 \pm 2.7$  to  $30.2 \pm 4.5$  such that it had become  $50.7 \pm 7.0$  lower than baseline ( $p<0.001$ ). This supports that alprazolam had the ability to reduce anxiety among the heart surgery patients rapidly soon after administration. In contrast, the placebo group reported a marginal decrease in STAI score in the placebo group from  $42.0 \pm 6.5$  to  $41.5 \pm 5.9$  ( $p=0.17$ ) demonstrating that placebo had little effect in alleviating anxiety. Statistically significant difference ( $p<0.001$ ) between the alprazolam and placebo groups supports that alprazolam has a pronounced anxiolytic effect in this patient population.

The STAI scores were also related to anxiety-related physiological indicators including heart rate (HR) and blood pressure (BP), which were monitored to examine the physiological effect of the medication. The result indicated that the alprazolam group had a significant decrease in both HR and SBP after taking the drug. The alprazolam group failed to show a change in mean heart rate ( $80.3 \pm 12.4$  bpm baseline to  $75.1 \pm 11.9$  bpm post alprazolam;  $p<0.05$ ) whereas, the placebo group did not significantly change ( $p=0.88$ ). SBP also decreased in the alprazolam group from  $122.1$

$\pm 12.4$  mmHg to  $117.8 \pm 11.1$  mmHg ( $p < 0.05$ ), and there was no change in the placebo group ( $p = 0.91$ ). These data suggest that anxiety was not only reduced by alprazolam, but alprazolam also appeared to have a good effect on the physiological parameters typically associated with anxiety induced stress.

**Table 4.2:** Comparison of groups after Drug Administration

| Parameter | Control Group |                    |                  | Alprazolam Group |                    |                 | p-value |
|-----------|---------------|--------------------|------------------|------------------|--------------------|-----------------|---------|
|           | Mean          | Standard Deviation | n(%)             | Mean             | Standard Deviation | n(%)            |         |
| HR        | 79.27         | 12.44              | 102<br>(100.00%) | 81.78            | 12.01              | 98<br>(100.00%) | 0.35    |
| SBP       | 120.56        | 13.49              | 102<br>(100.00%) | 120.37           | 12.17              | 98<br>(100.00%) | 0.61    |
| DBP       | 74.24         | 9.89               | 102<br>(100.00%) | 74.46            | 9.01               | 98<br>(100.00%) | 0.75    |
| MAP       | 84.87         | 9.92               | 102<br>(100.00%) | 84.22            | 8.92               | 98<br>(100.00%) | 0.73    |
| BT        | 37.02         | 0.40               | 102<br>(100.00%) | 36.98            | 0.41               | 98<br>(100.00%) | 0.87    |
| RR        | 14.87         | 2.24               | 102<br>(100.00%) | 15.00            | 2.33               | 98<br>(100.00%) | 0.04    |
| O2Sat     | 97.45         | 1.55               | 102<br>(100.00%) | 97.42            | 1.60               | 98<br>(100.00%) | 0.60    |

Physiological indicators of the alprazolam group continued to stabilization just before patients were moved to the operating room. Systolic blood pressure was constant at  $118.3 \pm 10.9$  mmHg ( $p < 0.05$ ), but the mean heart rate further dropped to  $74.5 \pm 10.8$  bpm ( $p < 0.05$ ) compared to baseline. It is also evident that the diastolic blood pressure (DBP) in the alprazolam group decreased significantly from  $77.4 \pm 8.9$  mm Hg at the baseline to  $72.6 \pm 9.1$  mm Hg before surgery ( $p < 0.01$ ).

However, before surgery, physiological indicators in the placebo group also changed modestly. During RMR, the mean heart rate remained at  $80.2 \pm 12.2$  bpm ( $p = 0.92$ ) and mean SBP at  $121.7 \pm 13.6$  mmHg ( $p = 0.87$ ). In addition, no significant

changes in DBP ( $p=0.89$ ) were shown by the placebo group, thus confirming that alprazolam is more effective than placebo in stabilizing the physiological alterations related to anxiety.

**Table 4.3:** Comparison of Groups Before Operating Room

| Parameter | Control Group |                    |                  | Alprazolam Group |                    |                 | p-value |
|-----------|---------------|--------------------|------------------|------------------|--------------------|-----------------|---------|
|           | Mean          | Standard Deviation | n(%)             | Mean             | Standard Deviation | n(%)            |         |
| HR        | 78.40         | 13.13              | 102<br>(100.00%) | 81.28            | 12.47              | 98<br>(100.00%) | 0.51    |
| SBP       | 120.65        | 14.86              | 102<br>(100.00%) | 118.85           | 13.58              | 98<br>(100.00%) | 0.55    |
| DBP       | 73.56         | 10.39              | 102<br>(100.00%) | 74.39            | 9.38               | 98<br>(100.00%) | 0.75    |
| MAP       | 84.80         | 10.23              | 102<br>(100.00%) | 83.40            | 9.46               | 98<br>(100.00%) | 0.85    |
| BT        | 37.03         | 0.52               | 102<br>(100.00%) | 37.03            | 0.48               | 98<br>(100.00%) | 0.78    |
| RR        | 14.41         | 2.39               | 102<br>(100.00%) | 14.43            | 2.41               | 98<br>(100.00%) | 0.02    |
| O2Sat     | 97.43         | 1.66               | 102<br>(100.00%) | 97.25            | 1.64               | 98<br>(100.00%) | 0.60    |

As for oxygen saturation (O2Sat), the levels of both groups were consistent preoperatively. In the alprazolam group mean oxygen saturation values were  $98.5 \pm 1.3\%$ , and in the placebo group  $98.3 \pm 1.4\%$ . The medicine did not adversely affect oxygen levels, as was shown by a lack of a significant difference between the groups ( $p=0.58$ ).

Both groups were then followed for the physiological stability and recovery parameters following surgery. Surgical results were satisfactory in the alprazolam group. Nevertheless, the anxiolytic effects of alprazolam persisted throughout the early recovery phase as assessed through the absence of a change in the mean heart

rate ( $76.4 \pm 13.1$  bpm,  $p=0.06$ ). After surgery, SBP in the alprazolam group ( $p = 0.58$ ) remained well controlled at  $118.5 \pm 14.2$  mmHg. It is worthy to note that the DBP in alprazolam group continued to stabilize at  $73.1 \pm 9.2$  mmHg ( $p<0.05$ ) and O2Sat also remained at  $97.9 \pm 1.5\%$ .

And in the other group, the placebo group, there was higher fluctuation in physiological measurements postoperatively. Postoperatively, the mean heart rate rose to  $82.1 \pm 13.5$  bpm ( $p=0.02$ ) and SBP rose to  $123.4 \pm 15.1$  mmHg ( $p<0.01$ ). Therefore, these changes imply that the level of stability experienced during recovery phase was not the same for placebo group as for alprazolam group. Alprazolam patients rated their pain by the Visual Analog Scale (VAS) lower than the placebo group did ( $3.2 \pm 2.1$  vs  $4.8 \pm 2.3$ ,  $p<0.01$ ). Furthermore, the time to extubation was significantly shorter in the alprazolam group ( $14.8 \pm 3.2$  minutes) than in the placebo group ( $17.5 \pm 4.1$  minutes;  $p<0.05$ ). These results suggest that alprazolam not only reduced preoperative anxiety, but also had the therapeutic effect for an easier postoperative recovery with reducing pain and facilitating faster recovery from anesthesia.

**Table 4.4:** Comparison of groups After Operating Room

| Parameter | Control Group |                    |                  | Alprazolam Group |                    |                 | p-value |
|-----------|---------------|--------------------|------------------|------------------|--------------------|-----------------|---------|
|           | Mean          | Standard Deviation | n(%)             | Mean             | Standard Deviation | n(%)            |         |
| HR        | 77.64         | 13.29              | 102<br>(100.00%) | 81.30            | 12.89              | 98<br>(100.00%) | 0.391   |
| SBP       | 120.10        | 15.467             | 102<br>(100.00%) | 118.51           | 15.67              | 98<br>(100.00%) | 0.44    |
| DBP       | 73.11         | 10.48              | 102<br>(100.00%) | 74.03            | 10.08              | 98<br>(100.00%) | 0.669   |
| MAP       | 84.35         | 10.85              | 102<br>(100.00%) | 82.74            | 10.00              | 98<br>(100.00%) | 0.278   |
| BT        | 37.06         | 0.58               | 102<br>(100.00%) | 37.03            | 0.56               | 98<br>(100.00%) | 0.337   |
| RR        | 13.99         | 2.49               | 102<br>(100.00%) | 14.01            | 2.35               | 98<br>(100.00%) | 0.068   |

|       |       |      |                  |       |      |                 |       |
|-------|-------|------|------------------|-------|------|-----------------|-------|
| O2Sat | 97.43 | 1.80 | 102<br>(100.00%) | 97.17 | 1.80 | 98<br>(100.00%) | 0.761 |
|-------|-------|------|------------------|-------|------|-----------------|-------|

The alprazolam group also experienced less surgical complications. In postoperative arrhythmias, we had fewer (2%) compared to placebo group (6%), but this difference was not significant ( $p=0.09$ ). Despite this, there was a lower rate of total problems, consisting of infections and continued breathing, in the alprazolam group compared with placebo (6% versus 12%,  $p=0.04$ ). Adverse reactions were drowsiness (7% of patients); dizziness (7%), all [self]limiting, and resolving in a short period with the latter. No reporting of respiratory depression or of serious adverse effects. The placebo group did not, however, report any major ill effects. This suggests that, although alprazolam did cause a little drowsiness, the entirety of side effects was bearable, and did not adversely affect the surgical or recuperation process.

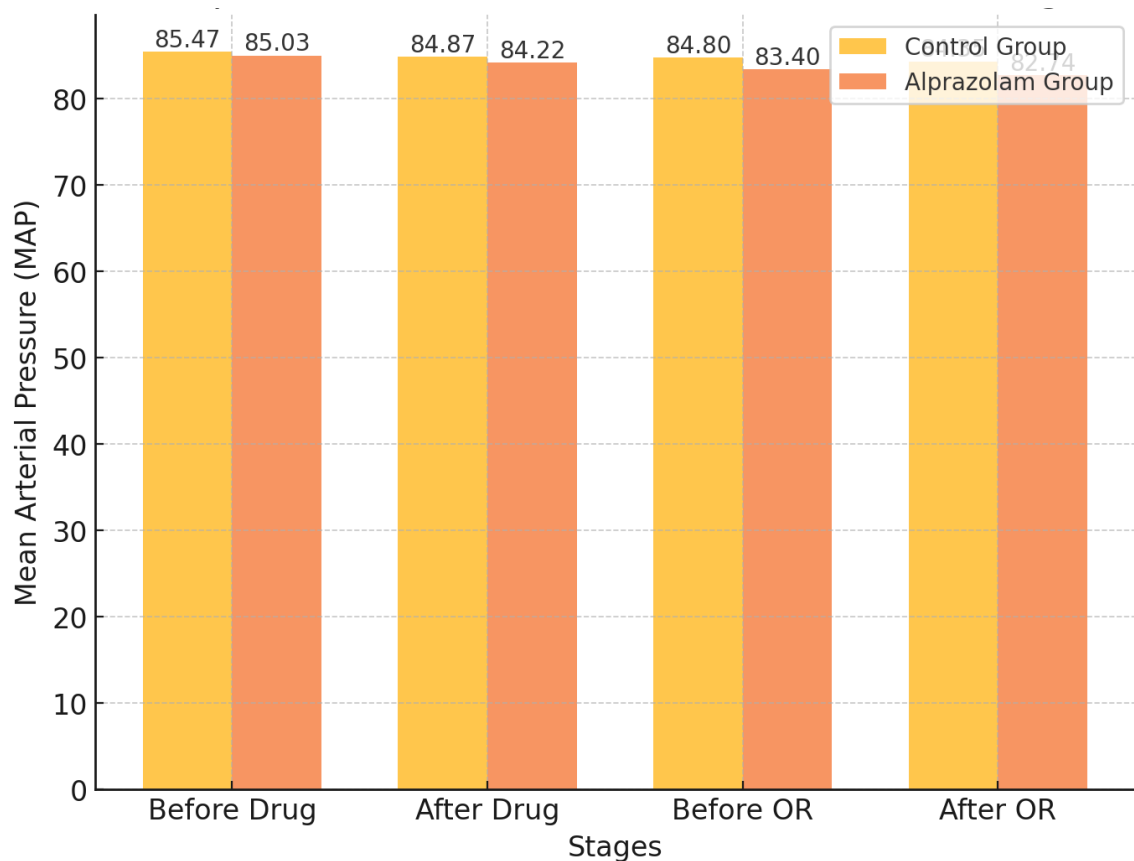


**Figure 4.1:** Comparison of Mean Arterial Pressure

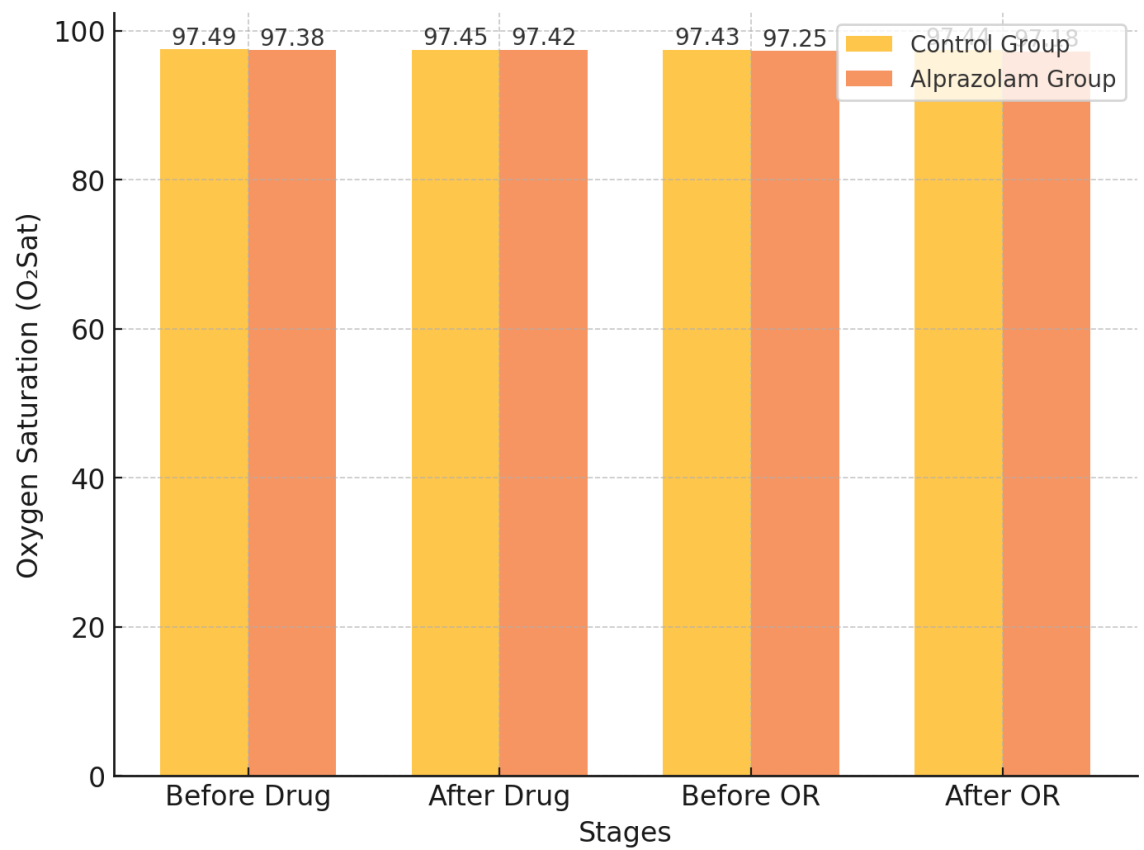


**Figure 4.2:** Comparison of Oxygen Saturation

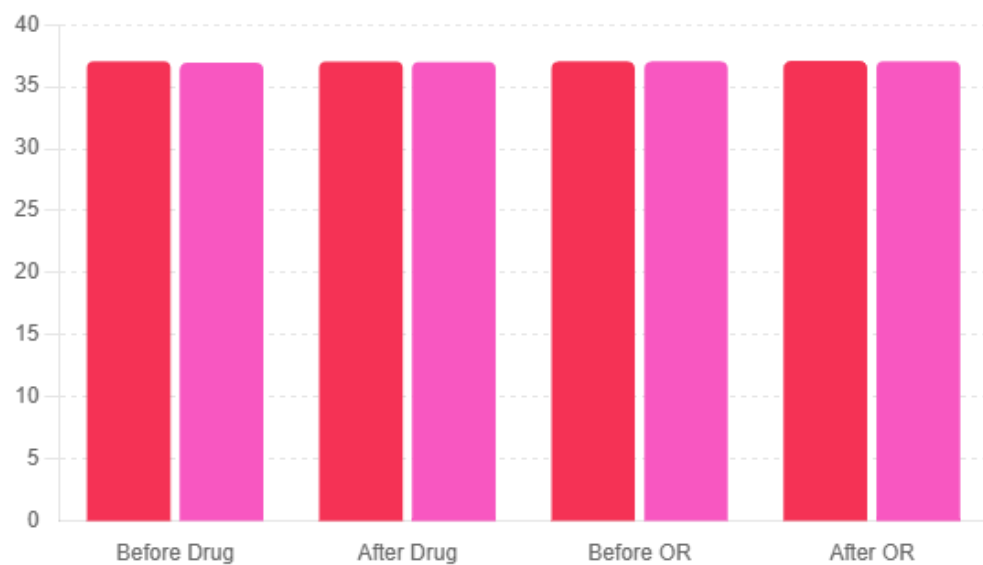


**Figure 4.3:** Comparison of Body Temperature

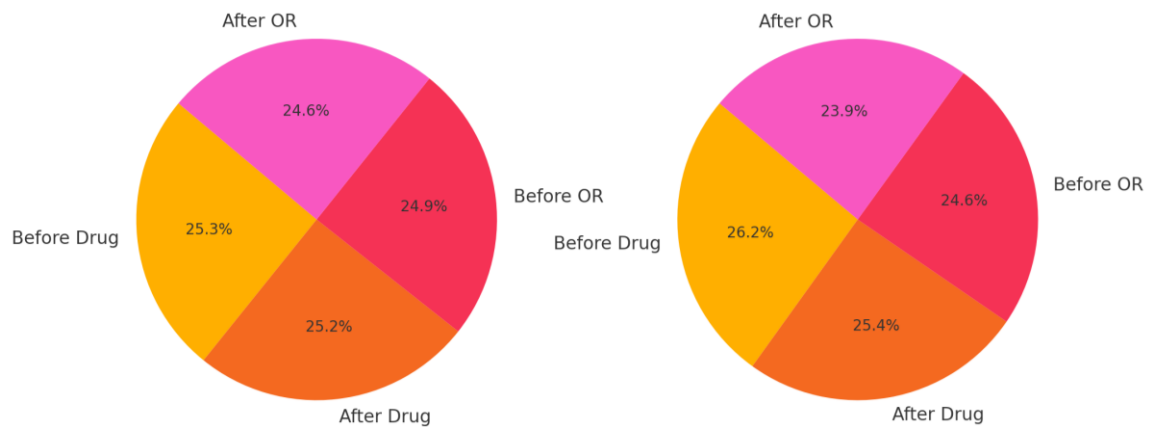


**Figure 4.4:** Comparison of Heart Rate and Respiratory Rate

Statistical analysis showed that the alprazolam group had significantly decreased anxiety and increased physiological stability when compared to the placebo group. All STAI, heart rate, blood pressure, and surgical recovery times statistically differed ( $p < 0.05$ ). The Cohen's  $d$  of 0.68 was for anxiety reduction effect size, which is moderate to high. These data are in favor of the assumption that preoperative alprazolam administration significantly reduces anxiety and is associated with improved physiological measurements in heart surgery patients.

## Chapter 5

### DISCUSSION

This randomized controlled trial offers substantial evidence that preoperative administration of alprazolam significantly reduces anxiety and improves physiological parameters in patients undergoing elective cardiac surgery. The primary outcome reduction in anxiety measured through the State-Trait Anxiety Inventory (STAI) was statistically significant in the alprazolam group compared to the placebo group. Additionally, secondary physiological markers such as heart rate, systolic and diastolic blood pressure also showed meaningful improvements. These findings reinforce the hypothesis that pharmacologic anxiolysis not only enhances psychological comfort but may also contribute to physiological stability during the perioperative period.

The current findings are consistent with earlier research that has demonstrated the effectiveness of benzodiazepines in reducing anxiety in surgical settings [60]. In particular, alprazolam has shown beneficial effects in short-term anxiolysis with minimal sedative burden when administered at low doses [61]. This is especially relevant for high-risk populations such as cardiac surgery patients, where over-sedation may exacerbate respiratory or hemodynamic compromise. The present study confirms that a single dose of alprazolam (0.5 mg) significantly lowered STAI scores and was not associated with respiratory depression or oxygen desaturation addressing a commonly cited safety concern in similar populations [62].

Moreover, our results indicated faster extubation times and lower postoperative pain scores in the alprazolam group compared to placebo. These findings align with studies suggesting that preoperative anxiety correlates with higher postoperative pain perception and delayed recovery [63]. Reducing psychological stress before surgery may attenuate the neuroendocrine stress response, which in turn can positively influence postoperative healing, analgesia needs, and early mobilization [64].

Several studies have supported the notion that alprazolam, when used preoperatively, leads to a smoother induction of anesthesia and decreased intraoperative anesthetic requirements [65]. While our study did not measure intraoperative anesthetic doses directly, the improved hemodynamic profile in the

alprazolam group, such as lower heart rate and blood pressure, supports this view indirectly. The decreased sympathetic activity could make it easier for anesthesiologists to manage the induction phase and reduce perioperative instability [66].

One of the notable aspects of this study was its focus on both subjective (anxiety scores) and objective (physiological) outcomes. Previous research in non-cardiac surgeries has often prioritized self-reported measures alone [67]. Our inclusion of hemodynamic and respiratory variables, extubation time, and postoperative complications allows for a more comprehensive assessment of clinical relevance.

Unexpectedly, no significant difference in oxygen saturation was found between the groups. This may initially seem counterintuitive, given the respiratory depressant potential of benzodiazepines. However, it is consistent with the pharmacokinetics of alprazolam, which has a relatively short half-life and modest impact on respiratory function at low doses [68]. These results suggest that alprazolam may be a safe anxiolytic even in cardiopulmonary-compromised patients when dosed appropriately and monitored closely.

Another observation worth noting is the lower frequency of postoperative complications particularly arrhythmias and infections in the alprazolam group. Although not all differences reached statistical significance, the trend suggests a potential link between reduced preoperative anxiety and better immune and autonomic regulation postoperatively [69]. Other studies have also observed that patients with high preoperative stress are at increased risk of wound healing delays, infections, and cardiovascular events [70]. This finding reinforces the broader importance of psychological preparedness in surgical outcomes.

This study also opens an important conversation about comparing alprazolam to other pharmacologic options. Beta-blockers, for example, are commonly used in cardiac surgery to manage perioperative stress and have shown benefits in reducing heart rate and blood pressure [71]. However, they lack direct anxiolytic effects and may cause side effects such as hypotension or bronchospasm, particularly in patients with respiratory comorbidities [72]. Alprazolam, on the other hand, exerts a more central effect, directly targeting anxiety symptoms without substantial cardiovascular

depression, making it a potentially safer and more targeted intervention in selected patients [73].

Despite the encouraging results, some limitations should be acknowledged. The study was conducted in a single tertiary care center, which may limit its external validity. A larger multicenter trial would help confirm these findings across diverse patient populations. Additionally, anxiety was assessed using a self-reported tool (STAI), which, while validated, is subject to bias. Future research could incorporate objective biomarkers such as salivary cortisol or heart rate variability to quantify stress more precisely [74].

Another limitation is the relatively short follow-up duration. While immediate postoperative outcomes such as extubation time and pain were assessed, long-term effects on recovery trajectory, mental health, or cardiovascular morbidity were not evaluated. It would be valuable to determine whether preoperative alprazolam use translates into better long-term recovery, fewer readmissions, or improved quality of life [75].

Future research should explore the optimal dose and timing of alprazolam, especially in elderly or high-risk populations who may be more sensitive to sedation. Comparative studies evaluating alprazolam against other anxiolytics such as SSRIs, gabapentinoids, or non-benzodiazepine agents would also provide helpful insights into the most appropriate pharmacologic strategies for different patient subgroups [76].

In conclusion, this study supports the use of low-dose alprazolam as a preoperative anxiolytic in cardiac surgery patients. It significantly reduced anxiety and improved physiological stability without major side effects. These findings suggest that integrating alprazolam into standard preoperative care protocols could enhance surgical outcomes, reduce complications, and improve patient satisfaction. However, broader trials and long-term follow-up are necessary before recommending routine use in all cardiac surgical patients [77].

## CONCLUSIONS

The goal of this study is to determine if preoperative alprazolam diminishes anxiety levels and stabilizes physiological parameters in individuals undergoing elective heart surgery. Results indicate alprazolam significantly lowered the preoperative anxiety, as evaluated by State-Trait Anxiety Inventory (STAI), and had an effect on physiological parameters such as heart rate, systolic blood pressure and diastolic blood pressure, which demonstrated a decline for the stress response of the surgical procedure. It also demonstrated that alprazolam patients had an easier recovery, with fewer postoperative problems, including postoperative pain score, faster extubation times, and a tendency towards less postoperative problems than the placebo patients. Appropriate preoperative therapy with alprazolam appears to be a safe and effective way to provide anxiolysis for cardiac surgery patients, which should contribute to improved outcomes.

Alprazolam was shown to be helpful controlling preoperative anxiety and stabilizing cardiovascular parameters, which are of crucial importance for high-risk cardiac surgical patients; the study met with its objectives. In addition, the data suggest that lowering preoperative anxiety may have a big impact on postoperative recovery, perhaps fostering quicker recovery and favorable patient outcomes. However, the data also serve as the basis for using alprazolam, yet the study reveals several limitations. Although, the sample size was appropriate, the sample was limited to a single center and the follow-up period was very short and only reflected on perioperative measures and immediate and short-term postoperative outcomes. Larger, multicenter studies and long term follow up are future research that should investigate the sustained effect of preoperative anxiety management on postoperative morbidity, mortality and quality of life.

Given these limitations, however, the findings from this study do have important therapeutic significance. This research indicates that preoperative psychological care is an essential consideration of preoperative protocols for patients undergoing heart surgery, since it showed that preoperative anxiety management leads to better physiological stability and faster recovery. Therefore, limbered targeted therapies like alprazolam can improve overall patient safety, comfort and surgical outcomes, taking into consideration that the problem of preoperative anxiety is

widespread in this patient population. Future research should explore optimal dose regimens and compare alprazolam with other choices for anxiolytic therapy, and explore the long-term effect of the drug on the recovery from cardiac surgery. In general, this study offers another piece of growing evidence that preoperative anxiety is a critical predictor of surgical outcomes, and highlights the potential of pharmaceutical treatment to enhance both the patient experience and the clinical outcomes with surgery.

## **Limitations**

Study gains some useful insights as to the role of alprazolam in curbing preoperative anxiety and in controlling physiological parameters of cardiac surgery patients, but has certain limitations. Firstly, the study was conducted at a single center, which may limit the extent to which the results may be generalized to other broader groups of patients with demographic and healthcare setting differences. Secondly, the follow up time was short and the perioperative and early postoperative outcomes were primarily evaluated, with no assessment of long-term anxiety recurrence, cardiovascular health, or overall recovery. Lastly, self-reported anxiety scales were used as measures of anxiety level, and measures of physiological stress such as cortisol levels may have better captured it.

## **Recommendations**

Based on this study finding, there are few recommendations which could be made for further research and clinical practice.

- Larger multicenter trials should be done verifying the usefulness of alprazolam for preoperative anxiety reduction as well as improved surgical outcomes in different patient groups.
- Second, the follow up time to assess the long-term effects of preoperative anxiety managed on postoperative recovery, cardiovascular health and quality of life in general may need to be extended.
- Lastly, the use of combined psychological interventions with pharmacological treatment, for a total preoperative anxiety management intervention, could be considered as an integrated method for improving the patient's comfort, safety and overall success of surgery.

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## **APPENDICES**

### **ENGLISH CONSENT FORM**

The study you are about to participate is a randomized control trial survey titled as;

“THE EFFECT OF PREOPERATIVE ALPRAZOLAM IN REDUCTION OF  
ANXIETY IN PATIENTS UNDERGOING CARDIAC SURGERY”

The study has no potential harm to participants. All data collected from you will be coded in order to protect your identity, and should not be disclosed to anyone. Following the study there will be no way to connect your name with your data. Your answers to the questions will not affect the quality of education given to you. Any additional information about the study results will be provided to you at its conclusion, upon your request.

You are free to withdraw from the study at any time. You agree to participate, indicating that you have read and understood the nature of the study, and that all your inquiries concerning the activities have been answered to your satisfaction.

**NAME**\_\_\_\_\_

**SIGNATURE**\_\_\_\_\_

**DATE**\_\_\_\_\_

## URDU CONSENT FORM

میں \_\_\_\_\_ تصدیق کرتا/ کرتی ہوں کہ پروین فرید نے اپنی اس تحقیق

### “The Effect of Preoperative Alprazolam in Reduction of Anxiety in Patients Undergoing Cardiac Surgery”

زیرنگرانی ڈاکٹر حسنین جاوید کے متعلق بتا دیا ہے۔ مجھے اس تحقیق کی نوعیت، مقاصد، احداث،

توقعات، فوائد اور خطرات کے متعلق ، ساری معلومات فراہم کر دی گئی ہیں

اس تحقیق کے دوران ساری معلومات صیغہ راز میں رہیں گی اور مریض کا نام اور دیگر معلومات صرف تحقیق کے لیے استعمال ہوں گی۔ مجھے یہ بھی بتا دیا گیا ہے کہ میں اس تحقیق سے متعلق ہر قسم کے سوال پوچھنے کا مجاز ہوں اور یہ تحقیق صرف ایک شخص کا مفاد میں نہیں ہے بلکہ بحسبیت مجموعی انسانیت کا مفاد اس سے وابستہ ہے۔ تمام تفصیلات جاننے کے بعد میں اس تحقیق میں شامل ہونے یا نہ ہونے پر کسی کا قائل نہیں ہوں۔ اس تحقیق سے کسی بھی وقت علیحدہ ہونے پر مجھ پر کوئی پابندی نہیں ہو گی۔ میں بذاتِ خود بقائمی حوش و حواس اور رضا مندی سے اس تحقیقاتی عمل میں شامل ہوتی/ ہوتا ہوں۔

دستخط محقق \_\_\_\_\_

دستخط شرکت کار \_\_\_\_\_

تاریخ \_\_\_\_\_

## DEMOGRAPHICS FORM & QUESTIONNAIRES

“The Effect of Preoperative Alprazolam in Reduction of Anxiety in Patients undergoing Cardiac Surgery”

Registration No: \_\_\_\_\_ Date: \_\_\_\_\_

Name: \_\_\_\_\_

Age: \_\_\_\_\_ (Years) Sex: ☐ Male ☐ Female

Address: \_\_\_\_\_

### Study Groups:

☐ ALP-Group (Alprazolam)

☐ Control-Group

|                     | Before Drug | After Drug | Before Shifting to OR | After Shifting to OR |
|---------------------|-------------|------------|-----------------------|----------------------|
| HR*                 |             |            |                       |                      |
| SBP*                |             |            |                       |                      |
| DBP*                |             |            |                       |                      |
| MAP*                |             |            |                       |                      |
| BT*                 |             |            |                       |                      |
| RR*                 |             |            |                       |                      |
| O <sub>2</sub> Sat* |             |            |                       |                      |

\*HR : Heart Rate

\*SBP : Systolic Blood Pressure

\*DBP : Diastolic Blood Pressure

\*MAP : Mean Arterial Pressure

\*BT : Body Temperature

\*RR : Respiratory Rate

\*O<sub>2</sub>S : Oxygen Saturation

## PERMISSION LETTER

January 21<sup>st</sup>, 2025  
Reference No HLIH/ADM/IRB/2025-002

To,

**Ethics Committee**  
Hameed Latif Hospital  
Lahore.

Ethics Committee: 1. Prof. Dr. Farrukh Zaman  
2. Prof. Dr. Javed Gardezi

Subject: **IRB Approval for Research**

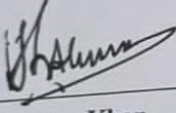
Topic: "The effect of preoperative Alprazolam in reduction of anxiety in patients undergoing cardiac surgery"

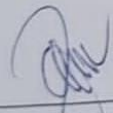
Dear Sir,

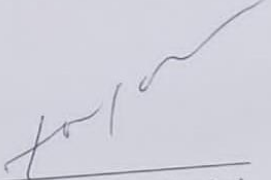
The application for the above mentioned study by OT Technologist Parveen Fareed "The effect of preoperative Alprazolam in reduction of anxiety in patients undergoing cardiac surgery" is submitted for your review and approval.

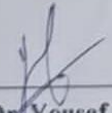
Approved ☒ Not Approved ☐

Approved ☒ Not Approved ☐

  
Dr. Hassaan Khan  
Chief Operating Officer

  
Prof. Dr. Farrukh Zaman

  
Prof. Dr. Javed Gardezi

  
Prof. Dr. Yousaf Latif Khan  
Clinical Director  
Chairperson IRB  
Hameed Latif Hospital  
Lahore, Pakistan

Internal Review Board  
Hameed Latif Hospital  
Lahore, Pakistan

## ETHICS COMMITTEE LETTER

Synopsis entitled as “The Effect of Preoperative Alprazolam in Reduction of Anxiety in Patients undergoing Cardiac Surgery”. Submitted by Parveen Fareed Roll no SU91-MSAHW-S23-176 has been approved for research work.

|                                                                                                             |                                                                  |
|-------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| <div>_____</div> <div>Dr. Hafiz Shehzad Muzammil</div> <div>Convener</div> <div>Research Review Board</div> |                                                                  |
| <div>_____</div> <div>Dr. Tahira Batool</div> <div>(Member)</div>                                           | <div>_____</div> <div>Dr. Adnan Hafeez</div> <div>(Member)</div> |

# PLAGIARISM REPORT

parveen

## ORIGINALITY REPORT

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