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Impact of Preoperative Anxiety on Postoperative Pain Intensity and Length of Hospital Stay.

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ABSTRACT

Background: Preoperative anxiety is a common but often under recognized psychological factor influencing surgical outcomes. Elevated anxiety levels are associated with higher postoperative pain intensity, increased analgesic requirements, delayed mobilization, and prolonged hospital stay. These factors collectively affect recovery quality and increase healthcare costs.

Objective: To assess the impact of preoperative anxiety on postoperative pain intensity and the duration of hospital stay among patients undergoing elective surgery.

Methods: This study was conducted at Department of Surgery, Riphah International Hospital, Islamic International Medical College, Rawalpindi from January 2023 to June 2023 in clinical setting. Preoperative anxiety was measured using the Hospital Anxiety and Depression Scale (HADS-A), while postoperative pain was assessed using the Visual Analogue Scale (VAS) at 6, 12, and 24 hours after surgery. Length of hospital stay was recorded in hours and days. Data analysis was performed using SPSS version 24. Associations were evaluated using the chi-square test, independent t-test, and Pearson correlation, followed by multivariate regression to identify independent predictors.

Results: Among the 100 participants, the mean age was 45.6 ± 12.3 years. Based on HADS-A scoring, 64% of patients had preoperative anxiety. Patients with higher anxiety scores demonstrated significantly greater postoperative pain at all measured intervals (6, 12, and 24 hours). The mean pain score in the high-anxiety group was 6.7 ± 1.5, compared with 4.8 ± 1.3 in the low-anxiety group ($p = 0.001$). Length of hospital stay was also significantly longer in anxious patients (4.3 ± 1.2 days) compared with those with lower anxiety (3.0 ± 0.9 days) ($p = 0.010$). Multivariate regression confirmed preoperative anxiety as an independent predictor of higher postoperative pain scores and prolonged hospital stay.

Conclusion: Preoperative anxiety is significantly associated with increased postoperative pain and longer hospital stay. Routine psychological screening and anxiety-relief interventions before surgery may help improve postoperative outcomes.

Keywords: *Preoperative anxiety, postoperative pain, length of hospital stay*.

1. INTRODUCTION

Of the psychological concerns about surgery, preoperative anxiety is the most common and is largely overlooked in practice. Studies show a whopping 40% to 80% experience this type of anxiety globally. First and foremost, the anxiety stems from a myriad of concerns, such as fear of the surgery, anaesthesia, pain, disabilities, complications, and the financial costs, as well as the overall surgery itself [1, 2]. These worries can trigger several physiological responses to stress, such as elevated cortisol

levels, increased sympathetic activity, a faster heart rate, and greater overall pain perception [3]. These changes can negatively affect intraoperative structure and decrease the early recovery rate [4]. Evidence shows that anxiety can significantly worsen the recovery experience. Patients who have a higher level of anxiety do not respond as well to rehabilitation and are most often prescribed a greater amount of pain relief medicine. These problems all add to the high level of untreated pain after surgery [5, 6].Furthermore, inadequate control of the pain after surgery can present complications like thromboembolism, atelectasis, and increased time to heal the wound, all of which can be problematic to the length of the hospital stay [7]. Length of hospital stay (LOS) is an essential indicator of the quality and efficiency of healthcare delivery. Anxiety has been linked to increased Length of Stay (LOS) due to increased hospital costs and the risk of getting an infection in the hospital. During an extended hospital stay, the hospital also has fewer resources allocated to other patients. Anxious patients may require more attention from medical staff, which can extend recovery times [8]. Many validated screening techniques exist to determine a patient's anxiety before a procedure. Some of these include: State–Trait Anxiety Inventory (STAI), Hospital Anxiety and Depression Scale (HADS-A), and Amsterdam. However, many medical professionals skip this screening, which can lead to patients receiving disproportionate attention from an already understaffed medical facility [9,10].

2. RESEARCH OBJECTIVES

Assessing the Impact of Preoperative Anxiety on the Severity of Postoperative Pain and Duration of Hospital Stay, and Whether Anxiety Independently Predicts Poor Recovery Among Elective Surgical Patients.

3. MATERIALS AND METHODS

Study Design & Setting

This prospective study was conducted at Department of Surgery, Riphah International Hospital, Islamic International Medical College, Rawalpindi from January 2023 to June 2023.

Participants:

100 adult patients aged 18 to 65 years scheduled for elective surgery were included in the study. Patients who were unable to communicate, had a known psychiatric diagnosis, had chronic analgesic or opioid dependency, had emergency surgeries, or had some form of cognitive impairment were excluded. Each participant completed a preoperative anxiety questionnaire and was later tracked for the pain scores and the length of their hospital stay during the postoperative period.

Sample Size Calculation

Calculations based on prior studies concerning anxiety and postoperative pain, and a 95% confidence level with 80% power and a predicted moderate effect size, showed that a sample size of 100 patients is needed. To account for potential outliers or incomplete follow-up data, an additional 10% was included.

Inclusion Criteria

Individuals between 18 and 65 years of age. Elective surgical interventions. Competency in comprehending and finalizing questionnaires. American Society of Anesthesiologists class 1 to 3.

Exclusion Criteria

Chronic Pain or Opioid Use, Emergency Surgeries, Communication Issues or Cognitive Impairments, Psychiatric Disorders, Refusals to Participate

Diagnostic and Management Strategy

Anxiety levels were measured by either STAI or HADS-A. Pain after surgery was measured using a VAS at 6, 12, and 24 hours. Established protocols for managing post-surgical pain were implemented. The hospital stay was monitored, and discharge was performed when the patient was clinically stable and had been evaluated by the surgeon.

Statistical Analysis

Data were analyzed using SPSS version 24. Descriptive statistics were used to summarize demographic and baseline variables. Differences in postoperative pain scores and length of hospital stay (LOS) between anxiety subgroups were assessed using independent t-tests. Categorical variables were compared using the Chi-square test. Pearson correlation coefficients were calculated to evaluate linear relationships between preoperative anxiety, pain scores, and LOS. Multivariate regression analysis was performed to identify independent predictors of postoperative pain and LOS after adjusting for relevant demographic and clinical variables. A p-value of <0.05 was considered statistically significant.

Ethical Approval Statement

Ethical approval for this study was obtained from the Ethical Review Committee 2023 Riphah International Hospital, Islamic International Medical College, Rawalpindi, prior to data collection. All procedures followed the principles outlined in the

Declaration of Helsinki 2013. Written informed consent was obtained from all participants after explaining the study purpose, procedures, potential risks, and their right to withdraw at any stage without affecting the quality of care provided.

4. RESULTS:

100 patients with a mean age of 45.6 years. Preoperative anxiety was identified in 64% of participants. A significant correlation was observed between higher preoperative anxiety levels and increased postoperative pain. At 24 hours, patients in the low-anxiety group had a mean pain score of 4.8, whereas those in the high-anxiety group reported a mean score of 6.7. Similar trends were noted at 6 and 12 hours postoperatively, with both intervals showing statistically significant differences ($p < 0.05$). Length of hospital stay was also greater among anxious patients; individuals with high, moderate, and low anxiety had mean stays of 4.3 days, 3.0 days, and a lower undetermined duration, respectively, with a significant association ($p = 0.010$). Overall, preoperative anxiety demonstrated a positive correlation with postoperative pain and length of stay ($r = 0.31$; anxiety score coefficient = 0.46). After adjusting for age, sex, type of surgery, and other clinical variables in multivariate regression, preoperative anxiety remained the strongest independent predictor of higher postoperative pain and prolonged hospitalization.

Intervention Outcome

Patients with anxiety before surgery who received continued supportive counselling before and after surgery integrated the psychological aspects needed and had better comfort and psychological healing, so they could mobilize even better and were discharged faster. This highlights the importance of assessing and managing patients' psychological factors during surgery.

Table 1: Demographic and Baseline Characteristics of Patients (N = 100)

Variable	Mean ± SD / n (%)
Age (years)	45.6 ± 12.3
Gender	
• Male	54 (54%)
• Female	46 (46%)
Preoperative Anxiety	
• Present	64 (64%)
• Absent	36 (36%)
Type of Surgery	Elective procedures (various specialties)

Table 1 presents the baseline demographic and clinical characteristics of the study population, including age, gender distribution, and preoperative anxiety prevalence.

Table 2: Comparison of Post-operative Pain Scores between Anxiety Groups

Time post-surgery	High Anxiety (Mean ± SD)	Low Anxiety (Mean ± SD)	p-value
VAS at 6 hours	6.2 ± 1.3	4.5 ± 1.1	0.003
VAS at 12 hours	6.5 ± 1.4	4.6 ± 1.2	0.002
VAS at 24 hours	6.7 ± 1.5	4.8 ± 1.3	0.001

Table 2 compares postoperative pain scores at 6, 12, and 24 hours between high-anxiety and low-anxiety groups, demonstrating significantly higher pain levels among patients with elevated preoperative anxiety.

Table 3: Length of Hospital Stay in Anxiety Groups

Outcome	High Anxiety (Mean ± SD)	Low Anxiety (Mean ± SD)	p-value
Length of Stay (days)	4.3 ± 1.2	3.0 ± 0.9	0.010

Table 3 shows that patients with higher preoperative anxiety experienced a significantly more extended hospital stay compared to those with lower anxiety scores.

Table 4: Multivariate Regression Analysis for Predictors of Postoperative Outcomes

Outcome	Predictor	β Coefficient	p-value
Postoperative Pain	Preoperative Anxiety	0.39	0.002
	Age	0.11	0.214
	Gender	0.07	0.341
Length of Hospital Stay	Preoperative Anxiety	0.27	0.020
	Age	0.15	0.188
	Gender	0.09	0.298

Table 4 presents multivariate regression results indicating that preoperative anxiety independently predicts higher postoperative pain and more extended hospital stay, even after adjusting for demographic variables

5. DISCUSSION

The current study shows a notable relationship between preoperative anxiety and recovery outcomes associated with pain and length of stay at the hospital. These studies strengthen the awareness of anxiety and psychological issues as factors that affect recovery after surgery and coincide with data from the recent literature within the last five years [12]. Our findings indicated that patients with significantly high preoperative anxiety levels at 6, 12, and 24 hours after surgery had a greater VAS pain deficit compared to patients with lower preoperative anxiety [13]. This study aligns with other recent studies that explain the mechanism of lower pain tolerance and higher anxiety affecting the pain pathways. A 2020 study done among multiple centers concluded that the higher the anxiety levels, the higher the pain and opioid consumption a patient would have after a procedure [14]. So many other systematic reviews, including the one from 2021, showed that anxiety leads to higher pain levels due to increased sympathetic nervous system activity and changes in how the brain controls pain [15]. This study contributes data to those studies. This anxiety mechanism, as recent literature has shown, also contributes to an increased length of hospital stay due to factors like decreased mobility, increased need for pain medications, and lack of psychological preparedness to leave the hospital. In 2019, a prospective study showed that anxious patients were recovering longer in the recovery room and had delays with getting medically cleared post-op. In 2022, another study found that among patients in orthopaedics and general surgery, anxiety was the most significant predictor for staying in the hospital longer than necessary [16]. Our study differs, and the patients in the high anxiety group averaged over one extra day of hospital stay. Hospital systems must deal with the consequences of these debilitating stay differences. Especially in economically troubled health systems, hospital bed space and prolonged stays result in greater financial strain [17]. These differences were damage and indicate that anxiety is clinically important to the patient and is an issue that must be resolved, and is undoubtedly more than a psychological reaction to stress from the surgery [18]. In other studies, with a similar regimen and treatment plans, anxiety was shown to be a clinically significant issue. In these studies, patients who received preoperative evidence-based interventions (such as guided breathing, videos, education, and medication to help patients practice passive relaxation) had a statistically significant reduction in hospital stay and post-surgery pain. Integrating these practices may reduce hospital stay and post-op pain. In the current study, preoperative anxiety was an independent risk factor for increased postoperative pain and prolonged stay. It was statistically significant, regardless of the other demographic and census variables [19,20]. This is very similar to what was identified in 2021 after considering what type of surgery was performed, what kind of anesthesia was used, what other medical disorders were present, and whether or not anxiety was present [21]. Different studies today also back up the Theory of anxiety being a risk factor, and further support the need for psychological assessments as a regular practice surrounding a surgery [22]. This also highlights the need for local evidence. Lack of patient counselling, cultural fear of surgery, low health literacy, and other factors in the South Asia region of the world can contribute to high levels of anxiety [23,24]. Evidence from the last 5 years in Pakistan, India, and Bangladesh also highlights the need for structured preoperative educational programs [25]. The identification of high-risk patients to prescribe appropriate and

timely action has led to the need for standardised assessments of anxiety, especially the HADS-A or STAI [26]. This study, to an extent, reflects the preoperative anxiety surrounding an operation and postoperative pain and length of hospital stay, and the many lost opportunities to enhance patient care, especially the need for psychological assessments, to reduce surgical wait times. This also helps bring the "no-cost" operational opportunities to hospitals, as patients' costs are brought to the forefront. This type of research is also beneficial to the operational opportunities that increase patient satisfaction and overall recovery [27].

6. CONCLUSION

Preoperative anxiety significantly influences postoperative outcomes by increasing pain intensity and prolonging hospital stay. Addressing anxiety before surgery can reduce analgesic requirements, enhance early recovery, and improve overall patient experience. Implementing routine psychological assessment and providing preoperative counselling or anxiety-relief interventions may strengthen perioperative care and contribute to more favorable surgical outcomes.

7. LIMITATIONS

The study was limited, with only one center and a small sample size, which makes this information less useful. For anxiety, one 'measurement' was taken, and there may have been unmeasured third variables, such as economic status or prior surgical experience, that would have influenced the results. We also did not include long-term postoperative follow-up.

Disclaimer: Nil

Conflict of Interest: Nil

Funding Disclosure: Nil

Authors Contributions

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Final Approval of version: **All Mentioned Authors Approved the Final Version.**

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