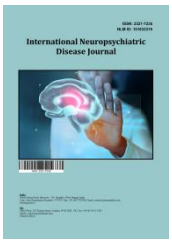

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Evaluation of Preoperative and Postoperative Anxiety Levels among Surgical Patients in a Tertiary Care Hospital

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: Surgical procedures, while crucial for medical treatment, often induce significant psychological stress, particularly preoperative and postoperative anxiety. This anxiety can adversely affect clinical outcomes, including increased pain perception, delayed wound healing,

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and extended hospital stays. Despite advancements in surgical care, the psychological aspects of surgery remain underexplored, highlighting the need for systematic evaluation of anxiety throughout the surgical journey.

Methodology: A prospective observational study was conducted at MVJ Medical College and Research Hospital from March 2023 to October 2023, including 212 participants. Preoperative and postoperative anxiety levels were assessed using the State-Trait Anxiety Inventory (STAI). Socio-demographic and clinical factors contributing to anxiety were also identified.

Results: The study revealed that 61.32% of patients experienced high preoperative anxiety, which significantly decreased to 19.33% postoperatively. Conversely, low anxiety levels increased from 12.7% to 43.34%, indicating a notable reduction in anxiety following surgery. Statistical analysis showed a significant difference between preoperative and postoperative anxiety levels ($\chi^2 = 86.12$, $p < 0.00001$). Factors contributing to preoperative anxiety included concerns about family (91.03%), fear of complications (80.6%), and financial loss (68.86%).

Discussion: The findings align with existing literature, confirming that surgical interventions reduce anxiety levels. However, moderate anxiety persisted postoperatively, possibly due to residual concerns such as pain and recovery challenges. Addressing both physical and psychological aspects in perioperative care is essential for improving patient outcomes.

Conclusion: This study highlights the importance of integrating psychological support into perioperative care. While surgery reduces preoperative anxiety, addressing residual postoperative stress is crucial for optimizing recovery and patient satisfaction. Further multicenter studies are needed to generalize these findings.

Keywords: Anxiety; pre-operative care; post-operative anxiety; surgical psychology.

1. INTRODUCTION

Surgical procedures, while critical for treating a wide range of medical conditions, often provoke significant psychological stress in patients. Preoperative anxiety frequently arises from fears associated with surgical outcomes, postoperative pain, anesthesia-related risks, financial burdens, and concerns about family responsibilities. Postoperative anxiety, on the other hand, is commonly linked to pain, limited mobility, complications, and uncertainties regarding recovery and long-term prognosis [1].

Both preoperative and postoperative anxiety not only contribute to emotional distress but can also compromise clinical outcomes, including increased pain perception, delayed wound healing, extended hospital stays, and higher susceptibility to infections due to stress-induced immunosuppression [2–4]. Despite substantial advancements in surgical techniques, anesthesia safety, and perioperative care protocols, the psychological dimensions of surgery are often overlooked in routine clinical practice [5]. This oversight underscores the critical need to systematically evaluate anxiety levels throughout the surgical journey, enabling healthcare providers to address these challenges proactively [6] By focusing on the interplay between psychological well-being and surgical outcomes, this study aimed to fill the existing gaps in perioperative care.

The primary objective of this study was to assess and compare preoperative and postoperative anxiety levels among surgical patients and identify the socio-demographic and clinical factors contributing to anxiety. Utilizing the State-Trait Anxiety Inventory (STAI), [7] the study evaluates symptom-specific trends, highlighting the psychological impact of surgery and factors influencing these outcomes.

This comprehensive approach not only examines the prevalence and intensity of anxiety but also provides a foundation for designing targeted interventions, such as enhanced preoperative counselling, family involvement, financial support, and postoperative psychological care. Ultimately, this research targets to improve patient experiences, optimize recovery outcomes, and establish an integrative model of care that addresses both physical and psychological health in surgical patients.

2. METHODOLOGY

This was a prospective observational study conducted over six months from March 2023 to October 2023 at the Department of Anaesthesiology and Department of Surgery, MVJ Medical College and Research Hospital, a 950-bedded institution. Ethical clearance was obtained from the Institutional Ethics Committee (IEC) of MVJ Medical College and Research Hospital prior to commencing the study. The

study included 212 participants, with sample size estimation based on a confidence level of 95% (z = 1.96) and an allowable error of 5%. Eligible patients were identified based on specific inclusion and exclusion criteria. The inclusion criteria comprised patients of all age groups and sexes who had complete medical records, while pregnant women and children were excluded. Informed consent was obtained from all participants following the guidelines set by ICH-GCP, and an informed consent form approved by the ethics committee was used. The study employed a questionnaire, prepared in English, which captured demographic details such as age, gender, and occupation. Anxiety levels were assessed using the State-Trait Anxiety Inventory (STAI), specifically the state portion of the scale. Each patient completed the questionnaire to evaluate preoperative and postoperative anxiety levels, responding to 20 questions rated on a 4-point Likert scale. Data were collected systematically, with socio-demographic and clinical details recorded for each participant, who also identified factors contributing to their anxiety. After completing the data collection, the responses were analyzed statistically to determine anxiety levels before and after surgery, facilitating a comparative assessment of preoperative and postoperative anxiety among the study participants.

3. RESULTS

3.1 Demographic Profile Analysis

A total of 212 patients were included in the study, whose demographics were analysed based on age, gender, and levels of preoperative and postoperative anxiety. The mean age of the participant were 44.9 years with a standard deviation of 10.08. The age distribution varied, with the majority (41.98%) falling within the 38-47 age group. Following this, 26.41% of patients were aged 48-57, 18.86% were between 28-37, and 7.07% were within the 58-67 age range. Smaller proportions included 3.30% in the 18-27 group, 1.88% in the 68-77 category, and only 0.47% of patients being 78 years and above. In terms of gender, the sample comprised 66.04% males and 33.96% females, showing a predominance of male patients in this study.

Preoperative anxiety levels were assessed, revealing that a majority (61.32%) exhibited high anxiety (score range 45-80), while 25.94% displayed moderate anxiety (score range 38-44). Only 12.73% fell into the low anxiety category (score range 20-37). Postoperative anxiety levels showed a shift, with 43.39% of patients in the low anxiety category, 37.26% in the moderate range, and 19.33% remaining in the high anxiety category. This data suggests that postoperative anxiety levels were generally lower than preoperative levels, indicating a reduction in anxiety following surgery Table 1.

3.2 Trends in Pre and Post-Operative Anxiety Levels

Statistical analysis revealed significant changes in anxiety levels prior to and after surgery. Patients with exhibiting low anxiety levels increased from 12.7% preoperatively to 43.34% postoperatively, highlighting a significant reduction in anxiety score. To the contrary, patients with moderate anxiety levels increased slightly from 25.94% to 37.26%, while high anxiety levels decreased drastically from 61.32% to 19.33%. Statistical analysis revealed a chi-square (χ^2) value of 86.12 and a p-value of less than 0.00001, indicating a significant difference between preoperative and postoperative anxiety levels. The standard deviation of anxiety scores dropped from 53.25 to 26.5, indicating a decrease in variabilty in variability. These findings suggest that surgical interventions effectively reduce anxiety, promoting better psychological outcomes post-surgery (Table 2).

3.3 State-Trait Anxiety Inventory (STAI) – Pre and Post-Operative Question-wise response

The study evaluated anxiety symptoms among surgery patients preoperatively and postoperatively and substantial decline in anxiety levels following surgery was appreciated. Especially, the mean scores for symptoms such as feeling tense (preoperative mean = 2.19, postoperative mean = 1.57) and nervous (preoperative mean = 2.85, postoperative mean = 1.54) decreased substantially. To the contrary, the mean score for the symptom of feeling strained increased postoperatively (preoperative mean = 2.13, postoperative mean = 2.43), suggesting potential postoperative stress. Other symptoms, including feelings of calmness and comfort, also exhibited declines. While many patients reported improved self-confidence and satisfaction post-surgery, some experienced no notable change, revealing the need for psychological and mental support throughout the surgical intervention process. These findings highlight the importance of addressing both physical and mental health in perioperative care.

Table 1. Demographic profile of the patient

Parameter	Subcategory	No. of Patients	Frequency (%)
Age	**Mean ± SD**	44.90±10.08	
Age Group	18-27	7	3.30%
	28-37	40	18.86%
	38-47	89	41.98%
	48-57	56	26.41%
	58-67	15	7.07%
	68-77	4	1.88%
	78 Above	1	0.47%
Gender	Male	140	66.04%
	Female	72	33.96%
Pre-operative Anxiety	Low Anxiety (20-37)	27	12.73%
	Moderate Anxiety (38-44)	55	25.94%
	High Anxiety (45-80)	130	61.32%
Post-operative Anxiety	Low Anxiety (20-37)	92	43.39%
	Moderate Anxiety (38-44)	79	37.26%
	High Anxiety (45-80)	41	19.33%

Table 2. Pre-operative post-operative anxiety levels

Anxiety Level	Pre-operative (%)		Post-operative (%)
Low Anxiety	12.7%		43.34%
Moderate Anxiety	25.94%		37.26%
High Anxiety	61.32%		19.33%
Chi-square (χ^2)		86.12	
p-value		< 0.00001	
Standard Deviation	53.25		26.5

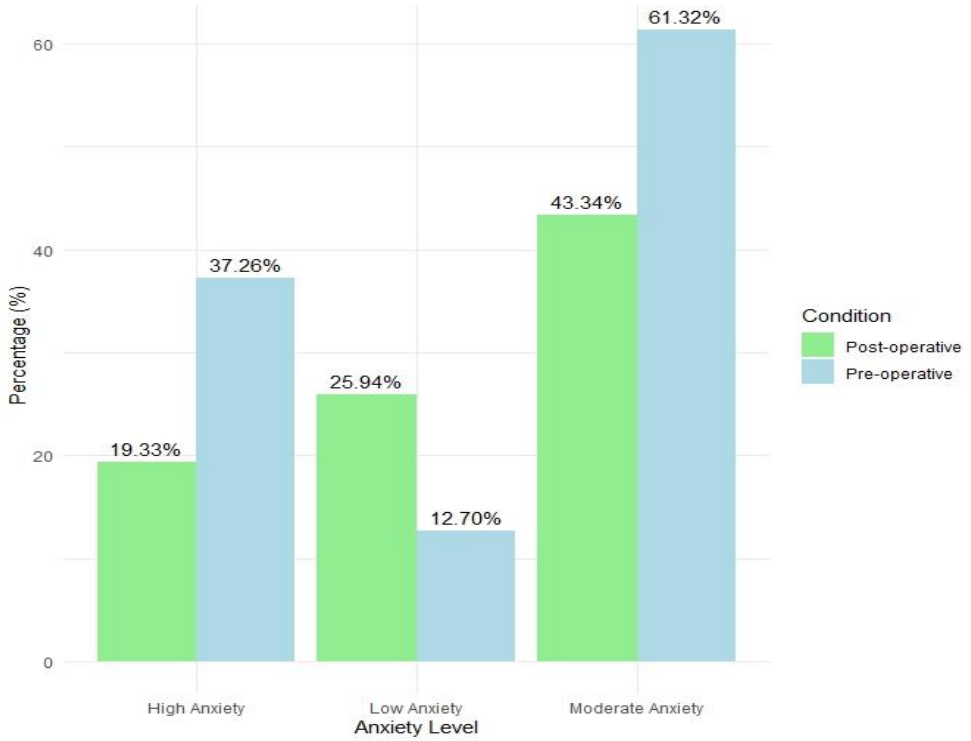

Fig. 1. Trends pre and post-operative anxiety levels

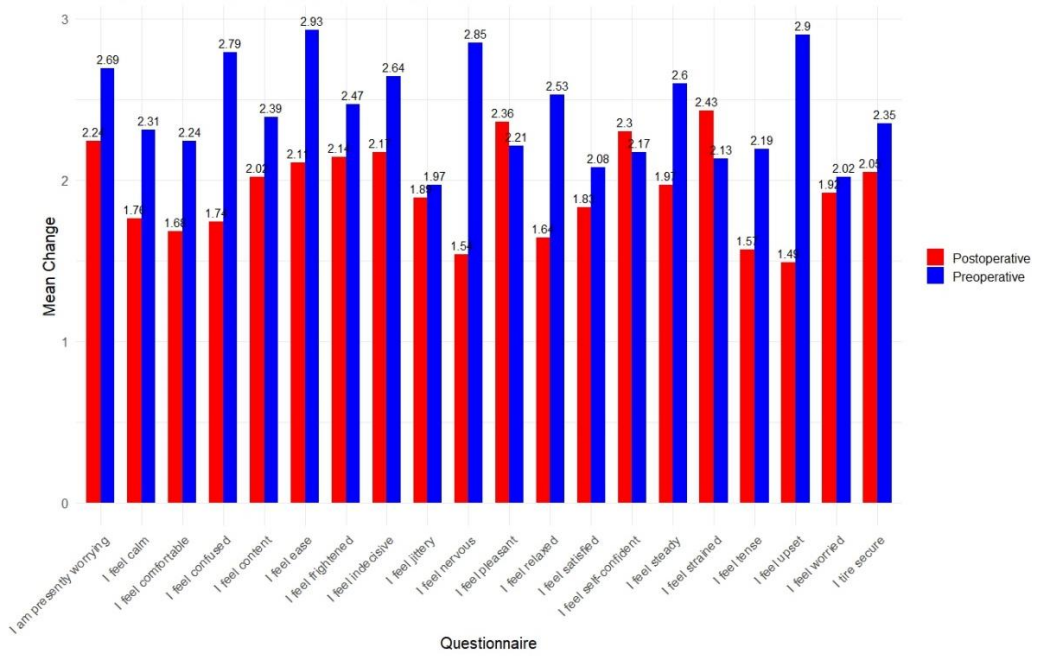

Fig. 2. Comparative assessment of anxiety symptoms before and after surgery: STAI results

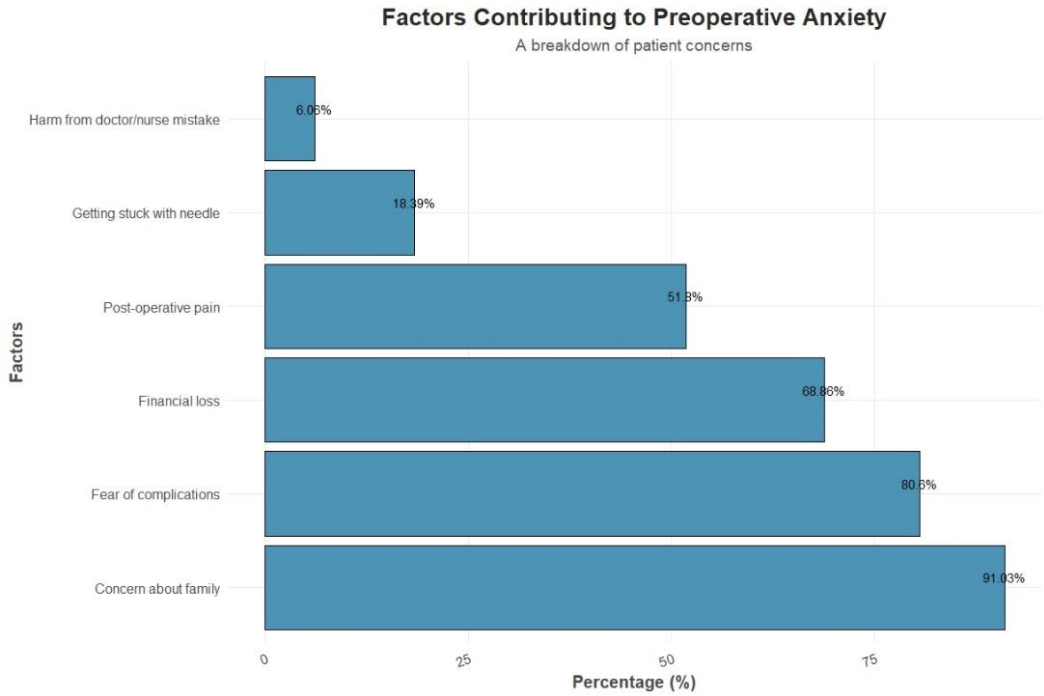

Fig. 3. Identifying major concerns related to preoperative anxiety

3.4 Patient Concerns Surrounding Surgery: Analysis of Factors

Factors contributing to preoperative anxiety were analysed and it revealed several significant concerns and grievances among patients. The most prevalent factor was "concern about family," affecting 91.03% of respondents, followed by "fear of complications" at 80.6%. Additionally, 68.86% expressed anxiety over "financial loss," and 51.8% reported concerns about "postoperative pain." While fewer participants noted anxiety related to "getting stuck with a needle" (18.39%) and "harm from

doctor/nurse mistakes" (6.06%), these concerns still highlight the need for effective patient education and support. Overall, addressing these factors is crucial for improving the surgical experience and outcomes.

4. DISCUSSION

The results of our prospective observational study depicted a notable reduction in anxiety levels following surgery, confirming the beneficial psychological impact of surgical interventions on patients. Anxiety is a common psychological problem in patients awaiting surgery, influenced by various factors such as fear of postoperative complications, financial burdens, and concern about family members. Our research findings are consistent with previous literature, which also confirms a significant decrease in postoperative anxiety due to a resolution of preoperative uncertainty and the relief associated with successful completion of the procedure [8–10]. In our study, preoperative high anxiety levels (61.32%) significantly dropped to 19.33% postoperatively, while patients with low anxiety levels increased from 12.7% preoperatively to 43.34% postoperatively. This shift aligns with the outcomes observed in a recent meta-analysis that found a substantial decrease in surgical anxiety after operative procedures when adequate perioperative support was provided [11].

While high anxiety levels decreased, the proportion of patients with moderate anxiety levels slightly increased postoperatively [12]. This suggests that although surgery mitigates acute preoperative anxiety, certain stressors persist postoperatively, potentially due to postoperative pain or recovery-related concerns [13]. Postoperative pain and limited mobility can heighten residual anxiety, underscoring the need for continuous postoperative support to manage these stressors effectively [14,15].

Our analysis of symptom-specific anxiety trends using the State-Trait Anxiety Inventory (STAI) revealed significant reductions in symptoms such as nervousness and tension. This reduction finding are similar to several studies, [16,17] which also noted a decrease in anticipatory anxiety-related symptoms, particularly after surgery, as patients no longer had to confront the uncertainty surrounding the procedure. However, the study also found an increase in postoperative feelings of strain, which could indicate ongoing stress from postoperative challenges, such as pain or limited functional recovery [18–20]. Addressing these postoperative stressors through extended psychological support may be essential to promote overall recovery and patient satisfaction.

Patient concerns contributing to anxiety were also examined, with "concern about family," "fear of complications," and "financial loss" identified as significant sources of preoperative anxiety. Previous studies have similarly highlighted the role of family-related worries and financial stress in elevating preoperative anxiety levels, indicating that family involvement in perioperative counseling can improve patient comfort and reduce anxiety [21,22] Moreover, patients with substantial financial concerns demonstrated heightened anxiety levels, which advocates for financial counseling as an effective strategy to alleviate preoperative stress [23,24] Providing transparent information on potential complications can also help reduce fear and significantly lowers anxiety among surgical patients [25,26]. The observed reduction in overall anxiety levels following surgery emphasizes the therapeutic potential of surgical interventions on psychological well-being when combined with comprehensive perioperative care. Surgical environments that integrate physical and psychological support have been shown to reduce adverse outcomes linked to high preoperative stress, such as delayed wound healing and increased infection risk, due to stress-induced immunosuppression [27,28]. These insights emphasize the value of a holistic approach in perioperative management that includes both mental and physical health support for patients to optimize surgical outcomes and enhance recovery.

5. CONCLUSION

This study demonstrates a significant reduction in anxiety levels following surgery, with a shift from high to low anxiety in patients postoperatively. Key preoperative stressors included concerns about family, complications, and financial issues, highlighting the need for comprehensive perioperative support. While the study's single-center design limits generalizability, the findings emphasize the importance of integrating psychological care into surgical treatment to improve patient outcomes. Further research with larger, multicenter samples could provide more insights into managing anxiety in surgical patients.

6. LIMITATIONS

This study's findings are limited by its single-center design, which may restrict the generalizability of results. Additionally, although the sample size was statistically sufficient, a larger, multicentre study would provide broader insights into anxiety trends among diverse patient populations undergoing surgery.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during the writing or editing of this manuscript.

CONSENT

As per international standards or university standards, patient(s) written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standards or university standards written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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