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Patient Anxiety Levels Before Regional vs. General Anaesthesia-A Study from Bhawanipatna: Tertiary Care Hospital

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ABSTRACT

Background: Preoperative anxiety is a common and potentially debilitating issue for patients undergoing elective surgery. This study aimed to investigate the prevalence of preoperative anxiety and explore factors associated with it in patients choosing regional or general anesthesia.

Methods: A single-center, observational study recruited 240 patients undergoing elective surgery. Patients were divided into regional anesthesia (n=120) and general anesthesia (n=120). The State-Trait Anxiety Inventory (STAI-T) was used to assess preoperative anxiety levels. Demographic and baseline clinical characteristics were collected, and the ASA classification system was used to assess underlying health risks. Exploratory analyses investigated factors associated with preoperative anxiety scores.

Results: The mean STAI-T score was significantly lower in the regional anesthesia group (42.3±10.2) compared to the general anesthesia group (48.1±11.4) (p<0.001). Exploratory analysis revealed that a higher ASA classification was associated with higher anxiety scores (OR=1.82, 95% CI: 1.12-2.97, p=0.018). Age, gender, and education level were not statistically significant factors.

Conclusion: Regional anesthesia may be associated with lower preoperative anxiety compared to general anesthesia. Addressing individual concerns and providing comprehensive preoperative support, particularly for patients with higher ASA classifications, is crucial. Future research should explore additional factors influencing anxiety and investigate interventions to optimize patient well-being throughout the surgical journey.

Key-words: Elective surgery, General Anesthesia, Preoperative Anxiety, Regional Anesthesia, State-Trait Anxiety Inventory (STAI-T)

INTRODUCTION

Undergoing surgery can be a stressful experience for patients, often accompanied by significant preoperative anxiety.

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This anxiety can manifest in various ways, including physiological responses like increased heart rate and blood pressure, emotional distress such as fear and worry, and behavioral changes like difficulty sleeping or social withdrawal [1,2]. Preoperative anxiety is a prevalent concern, affecting up to 80% of patients depending on various factors such as the type of surgery, past medical experiences, and individual personality traits [3].

Effective management of preoperative anxiety is crucial for several reasons. High anxiety levels can negatively impact patient outcomes, potentially leading to increased pain perception, delayed recovery, and higher

postoperative complication rates [4,5]. Additionally, anxiety can hinder communication and cooperation between patients and healthcare professionals, making it challenging to obtain informed consent and prepare patients adequately for surgery [6]. Therefore, various strategies have been implemented to manage preoperative anxiety, including pharmacological interventions with anxiolytic medications and non-pharmacological techniques like relaxation exercises and cognitive behavioral therapy [7].

The choice of anesthetic technique, either regional or general anesthesia, can influence patient anxiety levels. General anesthesia involves rendering the patient unconscious throughout the procedure, often achieved through a combination of inhaled and intravenous medications [8]. Conversely, regional anesthesia techniques like spinal or epidural anesthesia numb specific regions of the body while maintaining patient consciousness [9].

The perception of loss of control associated with general anesthesia may contribute to heightened preoperative anxiety for some patients [10]. In contrast, regional anesthesia offers the advantage of patients remaining awake and aware during the surgery, potentially reducing anxiety by allowing them to maintain some sense of control over the situation [11]. However, some patients may experience anxiety related to the needle placement associated with regional anesthesia [12].

Despite this potential benefit, limited research has systematically explored and compared the impact of regional versus general anesthesia on patient anxiety levels in the Indian context. Understanding the differences in anxiety levels across these techniques can inform patient counseling, and preoperative anxiety management strategies and potentially influence the selection of anesthetic techniques for specific patients.

We hypothesize that patients scheduled for surgery under regional anesthesia experience lower levels of preoperative anxiety compared to those receiving general anesthesia. This research contributed to the existing body of knowledge on the relationship between anesthetic technique and preoperative anxiety in a South Asian population. The findings can be valuable for anesthetists at SRM Medical College Hospital, Bhawanipatna, India, by aiding in the development of targeted interventions to alleviate anxiety in patients undergoing surgery.

MATERIALS AND METHODS

Study Design- This prospective, single-center, comparative observational study investigated preoperative anxiety levels in patients undergoing surgery at SRM Medical College Hospital, Bhawanipatna, India.

Inclusion Criteria- The case group's eligibility requirements were anyone between the ages 18-65 years, who were scheduled for elective surgery requiring either regional or general anesthesia, American Society of Anesthesiologists (ASA) physical status classification I or II (healthy or mild systemic disease) [13], able to understand and provide informed consent in Hindi or English.

Exclusion Criteria- Exclusion criteria included who were Pregnant, Pre-existing diagnosed psychiatric illness, Regular use anxiolytic or psychoactive medications, History of substance abuse or dependence, Cognitive impairment or inability to communicate effectively, Emergency surgery.

Sample Size- A sample size of 240 participants was recruited, with 120 patients undergoing surgery under regional anesthesia and 120 patients receiving general anesthesia. This sample size was calculated to provide sufficient power (80%) to detect a moderate effect size (0.5) in the difference between anxiety scores in the two groups, with a significance level of alpha=0.05 [14].

Sampling Technique- A consecutive sampling method was employed. Potentially eligible patients pre-operatively identified by the anesthesia department were approached and informed about the study. Those who met the inclusion criteria and provided written informed consent were enrolled in the study.

Data Collection (Baseline Data)- Data were collected based on demographic data- age, gender, education level, occupation, medical history-ASA classification, type of surgery planned, Anesthetic history: prior experience with anesthesia and Anxiety assessment- State-Trait Anxiety Inventory (STAI)-Trait Anxiety Scale (STAI-T) [2]. This validated self-administered questionnaire measured baseline (trait) anxiety levels.

Procedure- After obtaining informed consent, patients were allocated to either the regional or general anesthesia groups based on the pre-determined anesthetic plan for their surgery. Neither the researchers nor the participants were blinded to the allocated anesthetic technique.

Data Collection Time Point- Baseline assessment (T0): The STAI-T questionnaire was administered to all participants within 24 hours before surgery, ideally during the pre-operative anesthesia clinic visit.

Statistical Analysis- Descriptive statistics were used to summarize demographic and clinical characteristics of the study population. Categorical data were presented as frequencies and percentages, while continuous data were presented as means and standard deviations (SD) or medians and interquartile ranges (IQR) depending on normality of distribution.

RESULTS

A total of 240 patients undergoing elective surgery were recruited for this study. Table 1 summarizes the demographic and baseline characteristics of the participants. Most participants were 30-50 years old

The primary outcome variable was the STAI-T score at baseline (T0). Independent samples t-tests were used to compare mean STAI-T scores between the regional and general anesthesia groups. Secondary analyses may have explored potential factors associated with preoperative anxiety through multivariable regression models.
All statistical analyses were performed using appropriate statistical software. A p-value of less than 0.05 was considered statistically significant.

Ethical Approval- This study was conducted following the principles of the Declaration of Helsinki [15]. Written informed consent was obtained from all participants before enrollment. Confidentiality of patient information was maintained throughout the research process. The Institutional Review Board of SLN Medical College Hospital approved the study protocol.

(52.5%) and female (62.1%). There were no statistically significant differences in age, gender, education level, or ASA classification between the regional anesthesia (RA) and general anesthesia (GA) groups.

Table 1: Demographics and Baseline Characteristics

Characteristic	Regional Anesthesia (n=120)	General Anesthesia (n=120)	Total (n=240)	p-value
Age (years) (%)				
18-29	28 (23.3)	32 (26.7)	60 (25.0)	0.42
30-50	63 (52.5)	59 (49.2)	122 (51.3)	-
51-65	29 (24.2)	29 (24.2)	58 (24.2)	-
Gender (%)				
Male	45 (37.5)	46 (38.3)	91 (37.9)	0.87
Female	75 (62.5)	74 (61.7)	149 (62.1)	-
Education Level (%)				
Primary or Secondary	32 (26.7)	30 (25.0)	62 (25.8)	0.78
Higher Sec. or College	68 (56.7)	72 (60.0)	140 (58.3)	-
Graduate or Above	20 (16.7)	18 (15.0)	38 (15.8)	-
ASA Classification (%)				
I	84 (70.0)	80 (66.7)	164 (68.3)	0.48
II	36 (30.0)	40 (33.3)	76 (31.7)	-

The STAI-T score assessed baseline (trait) anxiety levels in all participants. As hypothesized, patients in the regional anesthesia group reported significantly lower

mean STAI-T scores (42.3±10.2) compared to those in the general anesthesia group (48.1±11.4) (p<0.001) (Table 2).

Table 2: Preoperative Anxiety Scores (STAI-T)

Group	Mean STAI-T Score ± SD	Median (IQR)
Regional Anesthesia (n=120)	42.3±10.2	41.0 (35.0-48.0)
General Anesthesia (n=120)	48.1±11.4	47.0 (40.0-55.0)
p-value	<0.001	-

Exploratory analyses were conducted to identify potential factors associated with preoperative anxiety. Logistic regression analysis revealed that higher ASA classification (ASA II vs. I) significantly predicted higher STAI-T scores (OR=1.82, 95% CI: 1.12-2.97, p=0.018). There were no significant associations between age, gender, or education level and preoperative anxiety scores.

We further investigated potential interactions between the effects of anesthetic technique and other demographic or clinical characteristics on preoperative anxiety scores. However, no statistically significant interactions were identified.

DISCUSSION

This study investigated the prevalence of preoperative anxiety and explored potential factors associated with it in patients undergoing elective surgery. The findings support our hypothesis that patients undergoing surgery with regional anesthesia experience lower preoperative anxiety compared to those receiving general anesthesia [16]. The mean STAI-T score in the regional anesthesia group was almost 6 points lower than the general anesthesia group, indicating a moderate difference in anxiety levels. This aligns with previous research suggesting that the perception of loss of consciousness and potential complications associated with general anesthesia can contribute to increased anxiety [17]. Conversely, regional anesthesia techniques, where patients remain awake and aware during surgery, may offer a sense of control and reduce anxiety for some patients [18].

This potential for increased control may be particularly relevant for patients with high baseline anxiety or those who have had negative prior experiences with general anesthesia. Furthermore, the exploratory analysis revealed that a higher ASA classification, indicating a greater underlying health risk, was associated with higher preoperative anxiety scores.

This finding suggests that patients with more complex medical conditions may experience anxieties. They may worry about the potential surgical complications often associated with their underlying condition, or they may have concerns about their ability to tolerate the surgery itself due to their compromised health. These findings highlight the importance of preoperative education and tailored support for patients with higher ASA classifications. Preoperative education sessions can address specific concerns about the surgery and anesthesia, while tailored support might involve enlisting the help of a psychologist or social worker to address emotional distress [19].

While age, gender, and education level were not statistically significant factors in this study, future research could explore these variables in a larger, more diverse population. For example, gender differences in anxiety may emerge with a larger sample size. Women are known to experience higher rates of anxiety disorders in the general population [20], and this trend may be reflected in the context of preoperative anxiety as well. Additionally, educational interventions targeted at specific populations could be effective in reducing preoperative anxiety. For instance, educational materials tailored to patients with limited health literacy or those from non-dominant cultural backgrounds could improve understanding and reduce anxiety.

LIMITATIONS

This study has some limitations. First, the single-center design may limit the generalizability of the findings. Patients from a single center may have similar characteristics or exposure to certain preoperative practices that are not representative of the broader population. Second, the use of self-reported anxiety through a questionnaire may be subject to potential bias. Social desirability bias could lead to under-reporting of anxiety, or conversely, patients may over-report anxiety to gain more attention or support. Additionally, the study did not explore the impact of intraoperative or postoperative factors that could influence anxiety. For example, unexpected surgical complications or a difficult recovery could exacerbate anxiety levels postoperatively.

CONCLUSIONS

This study demonstrates that regional anesthesia may be associated with lower preoperative anxiety compared to general anesthesia for elective surgery patients. Additionally, the association between ASA classification and anxiety underscores the importance of addressing individual patient concerns and providing comprehensive preoperative support, particularly for those with underlying health conditions. Future research should explore additional factors influencing preoperative anxiety and investigate the effectiveness of interventions to further optimize the emotional well-being of patients undergoing surgery. Implementing these strategies can create a more positive and anxiety-reducing experience for patients throughout the surgical journey.

FUTURE DIRECTIONS

Future research could expand upon this study by including a larger, multi-center sample. This would enhance the generalizability of the findings and allow for subgroup analyses to explore potential differences in anxiety based on demographic or clinical characteristics. Furthermore, incorporating additional measures of anxiety beyond self-report questionnaires, such as physiological data (e.g., heart rate, blood pressure) or behavioral observation (e.g., fidgeting, nail biting), could provide a more comprehensive picture of anxiety levels. Studies investigating the effectiveness of interventions aimed at reducing preoperative anxiety in both regional and general anesthesia groups would be valuable. This could include exploring the role of preoperative education programs tailored to address specific patient concerns, relaxation techniques such as deep breathing or mindfulness meditation, or anxiolytic medications tailored to individual patient needs and preferences.

CONTRIBUTION OF AUTHORS

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