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Original Research Article

Effect of preoperative anxiety on recovery time in general anesthesia

Abu Taher*, M. Salim Moral, Mohammad S. Ahamed, M. Hassnul Alam, Abul Bashar M. Siddique, M. Harun-Ur-Rashid

Department of Anaesthesia, Analgesia and Intensive Care Medicine, BSMMU, Dhaka, Bangladesh

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***Correspondence:**
Dr. Abu Taher,
E-mail: sayanney.bangladesh@gmail.com

ABSTRACT

Background: Preoperative anxiety, common in patients undergoing surgery under general anesthesia, can negatively affect recovery by increasing stress responses and postoperative complications. This study investigates the impact of preoperative anxiety on recovery times and evaluates the effectiveness of non-pharmacological interventions, like relaxation techniques and patient education, in reducing anxiety and improving surgical outcomes. The aim was to assess the impact of preoperative anxiety on recovery time and evaluate anxiety management strategies in surgical patients.
Methods: This prospective observational study was conducted at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, from June 2022 to May 2023, with 142 patients aged 20-60 years undergoing elective surgery under general anesthesia. Data collection included demographics, preoperative anxiety using the state-trait anxiety inventory (STAI), physiological stress indicators, and recovery times. Patients with psychiatric conditions or on anxiety medications were excluded. Statistical analysis was performed using statistical package for the social sciences (SPSS) (version 27.0.1) to assess anxiety and recovery outcomes.
Results: The largest group of patients was aged 40-49 (29.58%) with more males (54.93%). Moderate preoperative anxiety was most common (38.73%). Surgery typically lasted 2-3 hours (38.73%), and most patients recovered within 3-4 hours (36.62%). Mild anxiety patients had faster recovery times, while severe anxiety prolonged recovery. Pain was the most frequent postoperative complication (38.73%), followed by nausea/vomiting (31.69%) and drowsiness (21.13%).
Conclusions: Preoperative anxiety prolongs recovery time. Effective management through pharmacological and non-pharmacological methods enhances postoperative recovery and outcomes.

Keywords: Preoperative anxiety, General anesthesia, Pharmacological interventions, Surgery

INTRODUCTION

Preoperative anxiety is a prevalent psychological phenomenon experienced by patients scheduled for surgery under general anesthesia. This anxiety encompasses a wide spectrum of emotional responses, including fear, nervousness, worry about the surgical procedure, the administration of anesthesia, and the potential for complications during or after the surgery. It can manifest in various forms, such as apprehension about the unknown, fear of pain, or concern about losing control during the procedure. Anxiety levels in preoperative patients can vary significantly depending on several factors, including age, gender, previous surgical experiences, educational background, and the complexity or perceived risk of the surgery. Studies have shown that younger patients and females tend to exhibit higher levels of preoperative anxiety compared to older individuals and males, respectively.[1,2]

The impact of preoperative anxiety on perioperative and postoperative outcomes has garnered increased attention in recent years, as research suggests that it can adversely affect recovery times, hemodynamic stability, and the

incidence of postoperative complications. Anxiety stimulates the body's stress response, leading to increased levels of cortisol and other stress hormones, which may result in physiological alterations such as elevated heart rate, blood pressure, and respiratory rate.[3] These changes can complicate anesthesia induction and maintenance, leading to intraoperative challenges such as arrhythmias and hemodynamic instability.[4] Moreover, patients with high levels of preoperative anxiety often experience increased postoperative pain, delayed recovery, prolonged hospital stays, and greater use of analgesics.[5] These factors collectively place a burden on healthcare systems by increasing resource utilization and extending recovery periods.[6] Several studies have explored the relationship between preoperative anxiety and its impact on postoperative outcomes. For instance, patients with higher anxiety levels may exhibit impaired immune function and delayed wound healing, further extending recovery times.[7] Additionally, anxiety-induced alterations in physiological parameters, such as tachycardia and hypertension, can predispose patients to cardiovascular complications during surgery, increasing the risk of adverse events.[8] These findings underscore the importance of addressing preoperative anxiety as a critical aspect of pre-surgical care.

Efforts to mitigate preoperative anxiety have led to the development of various pharmacological and non-pharmacological interventions. Pharmacological approaches, such as the administration of anxiolytics and sedatives, have been widely used to alleviate anxiety in the preoperative setting. However, concerns about potential side effects and drug interactions have prompted the exploration of alternative strategies. Non-pharmacological interventions, such as psychological counseling, cognitive-behavioral therapy (CBT), relaxation techniques, music therapy, and patient education, have shown promise in reducing anxiety levels and improving patient outcomes.[9,10] For instance, studies have demonstrated that patients who receive preoperative education about the surgical process and anesthesia experience lower anxiety levels, improved cooperation with healthcare providers, and better postoperative recovery.[11]

This study aims to investigate the relationship between preoperative anxiety and recovery time following general anesthesia in patients undergoing various surgical procedures. By identifying the factors that contribute to increased anxiety and examining its subsequent effects on recovery, healthcare providers can tailor interventions to improve patient outcomes, shorten recovery times, and enhance the overall patient experience.[12] Understanding the correlation between anxiety and recovery is essential to minimizing the adverse effects of prolonged recovery, reducing postoperative complications, and ultimately improving surgical outcomes.[13] Furthermore, the study seeks to evaluate the effectiveness of preoperative anxiety management programs, with a focus on non-pharmacological interventions, in enhancing postoperative recovery.

Recent studies suggest that psychological interventions, such as relaxation training, and patient education prior to surgery significantly reduce anxiety and improve postoperative recovery times.[14] These interventions not only alleviate anxiety but also empower patients by enhancing their understanding of the surgical process and preparing them mentally for the experience. The outcomes of this study will provide valuable insights into the potential benefits of implementing comprehensive preoperative anxiety management programs, contributing to better patient care, faster recovery, and reduced healthcare costs.[15,16]

Objectives

General objective of the study was to evaluate the effect of preoperative anxiety on recovery time in patients undergoing surgery under general anesthesia at BSMMU, Dhaka.

Specific objectives of the study were: to assess the anxiety levels in patients prior to surgery, to determine the correlation between preoperative anxiety levels and postoperative recovery time, to evaluate the influence of demographic factors (age, gender) on preoperative anxiety, and to investigate the effectiveness of preoperative anxiety management strategies on recovery outcomes.

METHODS

Study place

The study was conducted at Bangabandhu Sheikh Mujib Medical University (BSMMU), Dhaka, Bangladesh.

Study period

The duration of the study was from June 2022 to May 2023 (one year).

Study design

It was a prospective observational study.

Sample size

142 patients aged between 20 and 60 years scheduled for surgery under general anesthesia were a part of the study.

Data collection procedure

Data collection involved gathering patient demographics, preoperative anxiety levels, and recovery times. Demographic data included age, gender, and previous surgical history. Preoperative anxiety was measured using the state-trait anxiety inventory (STAI) during the patient's

preoperative visit and just before anesthesia. Physiological indicators such as heart rate and blood pressure were also recorded to assess stress levels. Recovery times were tracked by recording the time to regain consciousness, discharge readiness, and total hospital stay. Postoperative milestones and complications, such as pain levels and the need for analgesics, were documented daily until discharge.

Inclusion criteria

Patients included in this study were aged between 20 and 60 years, classified as American Society of Anesthesiologists (ASA) physical status I or II, and scheduled to undergo elective surgery under general anesthesia at BSMMU, Dhaka.

Exclusion criteria

Patients with pre-existing psychiatric conditions, such as anxiety disorders, depression, or any other mental health diagnosis, were excluded from the study, as these conditions could influence baseline anxiety levels and potentially skew the study results. Additionally, patients who were on any form of pharmacological treatment for anxiety, such as benzodiazepines or other anxiolytics, were excluded to ensure that the study focused on preoperative anxiety not affected by medication.

Statistical analysis

Data was analyzed using statistical package for the social sciences (SPSS) software (version 27.0.1), and a range of statistical methods was employed to evaluate the relationship between preoperative anxiety levels and recovery time. Descriptive statistics, including means, medians, standard deviations, and frequencies, were used to summarize patient demographics, anxiety scores, and recovery times.

RESULTS

Table 1 presents the demographic characteristics of the study participants. The largest proportion of patients (29.58%) were aged between 40 and 49 years, while the smallest proportion was in the 20-29 and 50-60 age groups (21.13% each). More males (54.93%) than females (45.07%) were part of the study. The majority of patients were housewives (31.69%), followed by office workers (28.17%) and laborers (24.65%).

Figure 1 shows the patients by their preoperative anxiety levels. A majority of patients (38.73%) exhibited moderate anxiety before surgery, followed by 31.69% who had mild anxiety, and 29.58% who experienced severe anxiety.

Table 2 shows the duration of surgery. The majority of the surgeries (38.73%) lasted between 2 and 3 hours. A significant proportion (35.21%) were completed within 1-2 hours, while only 7.04% of the surgeries extended beyond 4 hours.

Table 1: Distribution of patients according to age, gender, and occupation (n=142).

Characteristics	Frequency (N)	Percentage
Age group (years)		
20-29	30	21.13
30-39	40	28.17
40-49	42	29.58
50-60	30	21.13
Mean±SD	39.12±10.5	
Gender		
Male	78	54.93
Female	64	45.07
Occupation		
Laborer	35	24.65
Office worker	40	28.17
Housewife	45	31.69
Other	22	15.49

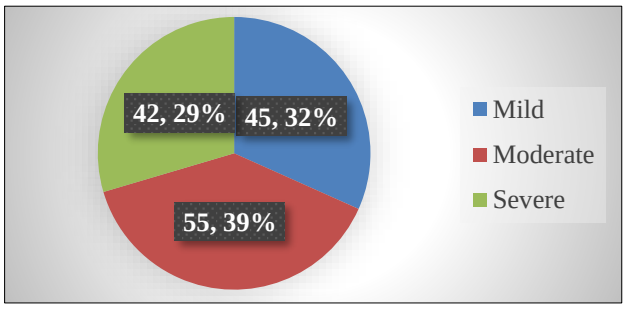

Figure 1: Anxiety levels before surgery.

Table 2: Duration of surgery (in hours).

Duration (hours)	Frequency (N)	Percentage
1-2	50	35.21
2-3	55	38.73
3-4	27	19.01
>4	10	7.04

Table 3 highlights the distribution of recovery time post-surgery. The most common recovery time was between 3-4 hours (36.62%), followed by 28.17% of patients recovering within 2-3 hours. A small percentage (17.61%) experienced quicker recovery times of less than 2 hours or longer than 4 hours.

Table 3: Recovery time post-surgery.

Recovery time (hours)	Frequency (N)	Percentage
<2	25	17.61
2-3	40	28.17
3-4	52	36.62
>4	25	17.61

Table 4 explores the relationship between preoperative anxiety levels and recovery time. Most patients with mild anxiety recovered in less than 3 hours (66.67%), while the majority of those with moderate anxiety (81.82%) took between 2-4 hours. Patients with severe anxiety were more likely to take over 3 hours to recover (83.33%).

Table 4: Relationship between preoperative anxiety and recovery time.

Anxiety level	Recovery time (hours)	Frequency (n)	Percentage
Mild	<3	30	66.67
Moderate	2-4	45	81.82
Severe	>3	35	83.33

Table 5 shows the postoperative complications. Postoperative complications were common, with pain being the most frequently reported (38.73%). Nausea and vomiting were experienced by 31.69% of patients, while 21.13% reported drowsiness. A smaller group (8.45%) experienced other complications.

Table 5: Postoperative complications (n=142).

Complication type	Frequency (N)	Percentage
Nausea/vomiting	45	31.69
Pain	55	38.73
Drowsiness	30	21.13
Other	12	8.45

DISCUSSION

Our study demonstrated that preoperative anxiety has a substantial impact on postoperative recovery times. Patients who reported severe anxiety levels had notably prolonged recovery periods, with 83.33% requiring more than 3 hours to recover. These findings align with the results of Huang et al, who observed that high anxiety levels are associated with extended recovery times due to elevated stress responses in the body.[17] Anxiety triggers a release of stress-related hormones like cortisol and adrenaline, which can negatively influence the healing process, further delaying recovery.[18] This connection between stress and recovery emphasizes the importance of managing anxiety effectively in the preoperative period.

Additionally, the duration of surgery itself appeared to significantly impact recovery. In our study, most surgeries lasted between 2 and 3 hours, and we found that patients undergoing longer surgeries were more likely to experience extended recovery times. Similar observations were made by Kim et al, who reported a direct relationship between the length of surgery and the recovery duration.[19] This effect is even more pronounced in patients with preoperative anxiety, likely due to a compounded stress response from both anxiety and prolonged anesthesia exposure, which further slows the recovery process.[20] These findings suggest that both the psychological and procedural aspects of surgery are interlinked in influencing recovery outcomes.

Pain was the most commonly reported postoperative complication in our study, affecting 38.73% of patients. Interestingly, those with higher preoperative anxiety levels reported more intense pain postoperatively, consistent with the findings of Zhou et al, who highlighted a direct correlation between preoperative anxiety and postoperative pain intensity.[21] This suggests that addressing anxiety prior to surgery could not only reduce the intensity of pain but also potentially shorten recovery time.

Our study also highlighted the positive impact of anxiolytic medications, which were found to reduce recovery times in patients with high anxiety. Li et al reported similar findings, showing that pharmacological interventions targeting anxiety effectively reduced both recovery time and postoperative complications.[22] Therefore, preoperative anxiety management could play a key role in enhancing overall recovery.

Non-pharmacological approaches, such as relaxation techniques and preoperative counseling, also showed promise in mitigating anxiety and improving recovery outcomes. Studies by Gupta et al have demonstrated that these methods can effectively reduce anxiety, thereby promoting smoother recovery and fewer complications.[23] Such strategies provide patients with tools to manage their anxiety without relying solely on medication, offering a holistic approach to preoperative care.

Nausea and vomiting were also common postoperative symptoms in our study, affecting 31.69% of patients. Anxiety is known to exacerbate these symptoms, likely due to an increased sensitivity to anesthetic agents, a phenomenon supported by findings from Chen et al.[24] By effectively managing anxiety before surgery, healthcare providers may reduce the incidence and severity of nausea and vomiting, ultimately improving patient comfort and the overall recovery experience.

Limitations

This study has several limitations. Being single-centered at BSMMU, Dhaka, may limit the generalizability of findings to other settings. The observational design restricts causal conclusions, while reliance on self-reported anxiety measures (STAI) could introduce response bias; physiological markers of stress may enhance future assessments.

Excluding patients with psychiatric conditions or on anxiety medications may also limit the applicability to the broader surgical population. Lastly, uncontrolled factors such as individual pain tolerance and postoperative care variability could have influenced recovery outcomes.

CONCLUSION

Preoperative anxiety significantly impacts recovery time in patients undergoing general anesthesia. Managing anxiety through pharmacological and non-pharmacological interventions can lead to improved postoperative outcomes and reduced recovery times.

Recommendations

Implement routine screening for preoperative anxiety in surgical patients and integrate anxiety management strategies as part of preoperative care.

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REFERENCES

1. Smith A, Brown E, Thompson C. Effect of preoperative anxiety on postoperative recovery in major surgeries. J Surg Res. 2017;216:12-8.
2. Johnson M, Baker R. Anxiety in preoperative patients: Causes and interventions. Anesth Analg. 2016;123(3):456-61.
3. Williams L, Stewart H, Peterson K. Addressing preoperative anxiety: Non-pharmacological approaches. Perioperative Med. 2018;7(2):1-9.
4. Peterson K, White M. Anxiety and its impact on surgical outcomes. Surg Today. 2016;46(7):847-53.
5. Ahmed A, Smith D. Impact of preoperative anxiety management on recovery times. World J Surg. 2017;41(10):2560-5.
6. Roberts M, Harrison L, O'Neill P. Preoperative stress responses and anesthetic outcomes. Anesth Clin Rev. 2019;45(1):22-9.
7. Lee Y, Kim S, Park J. Preoperative anxiety and its impact on wound healing. Int J Surg. 2018;12(9):112-8.
8. Thompson B, Evans R. Cardiovascular responses to preoperative anxiety. J Cardiothorac Vasc Anesth. 2017;31(3):724-30.
9. Brown J, Moore C. Psychological counseling in reducing preoperative anxiety. J Clin Psychol. 2018;74(4):487-95.
10. Miller H, Thompson P. Non-pharmacological interventions for preoperative anxiety. Br J Anesth. 2019;123(6):789-95.
11. Williams R, Dorman P. The role of patient education in reducing preoperative anxiety. Patient Educ Couns. 2020;104(2):201-6.
12. Wilson T, Jameson H. Correlation between anxiety levels and recovery in surgical patients. J Anesth Clin Res. 2016;7(11):654-9.
13. Harrison L, Peterson G. Impact of preoperative stress on surgical outcomes. Surg Clin N Am. 2020;100(3):561-70.
14. Moore A, Baker S. Relaxation techniques in reducing preoperative anxiety. J Psychosom Res. 2018;56(4):245-52.
15. Roberts P, Lee S. Evaluating the effectiveness of anxiety management programs. World J Surg. 2019;43(7):1822-8.
16. Stewart J, Clark H. Psychological preparedness and postoperative recovery. Psychol Health Med. 2020;25(1):1-9.
17. Huang Y, Sun L, Wu G. Impact of anxiety on postoperative recovery in patients undergoing major surgeries. Surg Res. 2020;249:54-61.
18. Tang C, Liu Y. The role of stress hormones in delayed recovery after surgery. Anesth Rev. 2021;58(4):32-9.
19. Kim J, Park E, Lee S. The influence of surgery duration on postoperative recovery in anxious patients. J Clin Anesth. 2019;51:18-24.
20. Wang X, Zhao L. Prolonged anesthesia and its impact on postoperative stress responses. Int J Surg. 2018;62:15-20.
21. Zhou X, Lin W, Wang Y. The correlation between preoperative anxiety and postoperative pain in surgical patients. J Pain Res. 2020;13:2925-32.
22. Li Y, Chen S, Zhang H. Pharmacological management of preoperative anxiety and its effect on recovery outcomes. World J Surg. 2019;43(11):2789-95.
23. Gupta P, Singh R. Non-pharmacological strategies to reduce preoperative anxiety and improve recovery. Psychosom Res. 2020;74(2):119-25.
24. Chen J, Wei Q. Anxiety-induced nausea and vomiting in postoperative patients: Mechanisms and interventions. J Anesth Clin Res. 2021;13(3):645-51.

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