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Effect of Pre-operative Anxiety on Post-operative Analgesia and Anesthesia Recovery in patients undergoing Laparoscopic Cholecystectomy

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ABSTRACT

Background and Objectives: Preoperative anxiety is common among surgical patients and affects various perioperative domains. This study investigates how preoperative anxiety impacts postoperative analgesia and anesthetic recovery in patients undergoing laparoscopic cholecystectomy.

METHODOLOGY: A comprehensive literature review was conducted to identify relevant studies published between 2010 and 2023. We focused on studies examining the relationship between preoperative anxiety and postoperative outcomes, including pain intensity, analgesic consumption, recovery time from anesthesia, and patient satisfaction. Data synthesis and analysis were performed to understand possible mechanisms and assess evidence quality.

RESULTS: Fifteen studies met the inclusion criteria. Results consistently showed that higher preoperative anxiety was associated with increased postoperative pain, greater need for analgesics, prolonged recovery from anesthesia, and lower patient satisfaction. Potential mechanisms include alterations in stress hormone levels, increased pain sensitivity, and psychological factors affecting healing.

CONCLUSION: Preoperative anxiety significantly influences postoperative analgesia and anesthetic recovery in laparoscopic cholecystectomy patients. Implementing anxiety-reducing strategies, such as psychological counseling, patient education, and pharmacological interventions, could enhance perioperative outcomes and patient care. Further research is needed to clarify the underlying mechanisms and optimize strategies for managing preoperative anxiety.

KEYWORDS: Preoperative anxiety, postoperative pain, analgesia, anesthesia recovery, laparoscopic cholecystectomy.

INTRODUCTION

Anxiety during the preoperative phase, due to uncertainties and stress, can cause complications like surgery cancellations and adverse hemodynamic reactions (1).

The 7-item Generalized Anxiety Disorder Scale (GAD-7) is an effective tool for Preoperative anxiety ranges from 11% to 80%, varying by surgery type, demographics, and prior experiences. Children show higher anxiety (16%-81%), influenced by age and parental anxiety (2)

Preoperative anxiety often coexists with postoperative pain, affecting recovery. Techniques like guided imagery and traditional preoperative treatments can help alleviate both preoperative anxiety and acute postoperative pain in both adults and children (3).

The 7-item Generalized Anxiety Disorder Scale (GAD-7) is an effective tool for assessing anxiety, with high sensitivity (89%) and specificity (82%) for generalized anxiety disorder (GAD).(4)Both the course of the surgery and the recuperation period following it are significantly impacted by anxiety during the perioperative phase. (5)

The GAD-7 is a seven-item scale that assesses anxiety over the past two weeks, with scores from 0 to 3. It classifies anxiety as mild (≥ 5), moderate (≥ 10), or severe (≥ 15). It has 89% sensitivity and 82% specific

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ity for generalized anxiety disorder (GAD) and identifies social anxiety disorder, panic disorder, and post-traumatic stress disorder with reasonable accuracy (6).

Anesthesiologists assess preoperative anxiety using questionnaires and discussions, with 60% interested in these methods, and employ strategies like tours and mental health referrals (7).

Non-pharmacological methods are increasingly preferred over pharmacological treatments, with a significant number of anesthesiologists in Korea and the UK favoring reassurance and dialogue to reduce anxiety (8).

Additionally, a single 150 mg dose of oral pregabalin before surgery has been shown to effectively reduce anxiety and postoperative pain (9).

A review and study showed that opioid-avoidance protocols are effective for pain management after laparoscopic cholecystectomy, helping reduce prolonged admissions and opioid use (10).

Researchers suggested that combining opioid and non-opioid analgesics through a multimodal approach improves postoperative pain management by targeting various pain pathways (11).

Recommendations include using paracetamol with NSAIDs or cyclooxygenase-2 inhibitors, local anesthetics at the surgical site, and avoiding opioids as a primary strategy unless necessary (12).

Laparoscopic cholecystectomy (LC) is preferred for acute cholecystitis, especially in older adults with gallstones. Alternatives like Percutaneous Transhepatic Gallbladder Drainage (PTGBD) can delay surgery in high-risk cases (13).

Pharmacological options for pain management during LC include NSAIDs, lidocaine, and pregabalin, among others, though more robust clinical trials are needed to establish the best pain management protocols (14).

Laparoscopic cholecystectomy is the most common laparoscopic procedure and generally superior to open cholecystectomy, though it has a higher risk of bile duct injuries (15).

Cholecystectomy, for gallbladder issues, can be done laparoscopically or openly. Preoperative education improves outcomes and reduces complications (16).

Lower intra-abdominal pressures (7–10 mmHg) during LC may reduce postoperative pain and benefit high-risk patients (17).

METHODOLOGY

Study Design: The study was a cross-sectional study.

Study setting: All participants were chosen from Ali Fatima Hospital and Jinnah hospital Lahore.

Data Collection Tool: The data collection tool consists of the questionnaire form that contains the demographic data (age, gender, surgery, types of anesthesia and residents).

Study Duration: The study took 6 months after approval of synopsis.

Sampling technique: A convenience sampling technique was used.

Sample size: Sample size is calculated with 95% confidence level, by using Epitool which is 348.

Statistical Analysis: SPSS version 25 will be used for the analysis of data. Chi Square test is applied.

RESULTS

A sample of 348 was determined with 95% confidence. SPSS version 25 will be used for analysis, focusing on Chi-Square tests. Anxiety was measured with the Beck Anxiety Inventory, and pain with the Visual Analogue Scale. Preliminary findings show males reporting higher postoperative outcomes than females. The Chi-Square test will evaluate these differences.

Table 1: Cumulative Frequencies

		Responses		
		N	Percent	Percent of Cases
Pre-operative Anxiety	Numbness or tingling	117	3.7%	33.6%
	feeling hot	197	6.2%	56.6%
	wobbliness in legs	176	5.6%	50.6%
	unable to relax	194	6.1%	55.7%
	fear of worst happening	222	7.0%	63.8%
	dizzy or light headed	14	0.4%	4.0%
	heart pounding	258	8.2%	74.1%
	Unsteady	279	8.8%	80.2%
	terrified or afraid	1	0.0%	0.3%
	Nervous	15	0.5%	4.3%
	feeling of choking	17	0.5%	4.9%
	hands trembling	123	3.9%	35.3%
	shaky/ unsteady	250	7.9%	71.8%
	fear of losing control	125	4.0%	35.9%
	difficulty in breathing	220	7.0%	63.2%
	fear of dying	121	3.8%	34.8%
	Scared	214	6.8%	61.5%

Table 2: Dichotomy group tabulated at value 1

Descriptive Statistics	N	Mean	Std. Deviation
Numbness or tingling	348	1.68	.493
feeling hot	348	1.10	.652
wobbliness in legs	348	1.41	.569
unable to relax	348	1.44	.497
fear of worst happening	348	.78	.591
dizzy or lightheaded	348	2.19	.483
heart pounding	348	1.28	.492
unsteady	348	1.18	.407
terrified or afraid	348	2.20	.404
nervous	348	2.11	.434
feeling of choking	348	.05	.216
hands trembling	348	.35	.479
shaky/ unsteady	348	1.28	.450
fear of losing control	348	.36	.480
difficulty in breathing	348	1.37	.586
fear of dying	348	.55	.736

High Severity Symptoms: The highest mean scores are for "dizzy or light-headed" (Mean = 2.19), "terrified or afraid" (Mean = 2.20), "nervous" (Mean = 2.11), and "faint/lightheaded" (Mean = 2.26), indicating that these are the most severe symptoms.

Low Severity Symptoms: "Feeling of choking" (Mean = 0.05), "Hands trembling" (Mean = 0.35), "Fear of losing control" (Mean = 0.36), and "Face flushed" (Mean = 0.34) had the lowest mean scores, indicating that they are the least serious symptoms.

Variability: Symptoms such as "Fear of dying" (Standard Deviation = 0.736) and "Feeling hot" (Standard Deviation = 0.652) are more variable, indicating that patients have a wider range of experiences. Symptoms such as "unsteady" (Standard Deviation = 0.407) and "terrified or afraid" (Standard Deviation = 0.404) are less variable, indicating more consistent patient experiences. This data illustrates the range and intensity of pre-operative anxiety symptoms, giving healthcare providers useful information into how to effectively address and manage these symptoms.

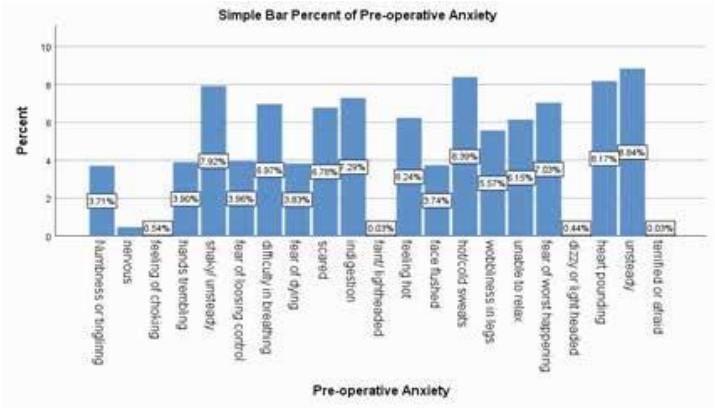

Figure 1: Simple Bar percent of Pre-operative anxiety

The most prevalent symptoms are bodily feelings (unsteadiness, heart palpitations, hot/cold sweats). Psychological symptoms such as "fear of the worst happening" and "scared" are also common, albeit to a lesser extent. Less common symptoms include more severe or bodily manifestations, such as "feeling of choking" and "dizzy or lightheaded. “This information helps identify which symptoms are most common and may necessitate more focused attention in pre-operative care and anxiety management strategies.

DISCUSSION

The aim of the study is to examine the frequency of preoperative anxiety and how affects the results of surgery or examine evaluation instruments such as the BAI scale and anxiety management strategies. Our sample size is 348 while in parent article sample size is 80 both uses Beck’s Anxiety Inventory (BAI) scale and Visual Analogue Scale (VAS) to analyze result. Our participants’ age group is 20-60 years old.

It is thus stated that, Preoperative anxiety affects 11% to 80% of adults and 16% to 81% of children. Hence, various factors, including gender, kind of surgery, and prior experiences, may contribute to this common issue. (2) Interestingly, with minimal side effects and comprehensive approach, non-pharmacological techniques including guided imagery, cognitive behavioral therapy, and therapeutic interactions are becoming more and more popular for controlling anxiety prior to surgery. For instance, studies have demonstrated the efficacy of

guided imagery in reducing acute postoperative pain and anxiety, encouraging relaxation, and possibly reducing medical expenses. (7)

For further discussion, it is elaborated that giving a single 150 mg dose of oral pregabalin before surgery reduces anxiety, intraoperative hemodynamic anomalies, and postoperative discomfort. (9)

Thus, Laparoscopic cholecystectomy (LC) pain treatment is best achieved with multimodal analgesia using dexamethasone, NSAIDs, paracetamol, and local anesthetics.

Hence, Anesthesiologists play a crucial role in assessing and managing preoperative anxiety through questionnaires and discussions. They tend to prefer non-pharmacological methods to minimize opioid use and improve surgical outcomes. A multimodal approach, integrating both pharmacological and non-pharmacological strategies, enhances pain management and overall patient care. (11)

High levels of anxiety prior to surgery have been linked to unfavorable surgical outcomes, including more pain following surgery, longer hospital stays, and lower patient satisfaction. Lowering anxiety can enhance these results. (17)

CONCLUSION

Anxiety levels that are too high prior to surgery have a negative impact on anesthetic recovery and postoperative pain management. It is important to appropriately address the increased need for postoperative analgesia in this patient population.

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Authors Contributions:

Muhammad Rao Shaheer Shahid: Substantial contributions to the conception and design of the work.

Muhammad Faheem Waseem: Design of the work and the acquisition. Drafting the work.

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