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Original Article

Frequency Of Anxiety in Pre-Operative Surgical Patients in the Tertiary Care Hospitals, Karachi

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ABSTRACT

Background: Preoperative anxiety significantly impacts patient outcomes and healthcare delivery, with varying degrees of prevalence reported globally. Understanding and managing this anxiety are crucial for improving surgical experiences and patient recovery. This study focuses on tertiary care hospitals in Karachi, aiming to elucidate the frequency and determinants of preoperative anxiety among elective surgery patients.

Objective: To ascertain the prevalence of preoperative anxiety among patients awaiting elective surgeries in various surgical units of tertiary care hospitals in Karachi and to identify significant contributing factors.

Methods: In a prospective cross-sectional design, 400 patients scheduled for elective surgeries across six surgical units were assessed using the Amsterdam Preoperative Anxiety and Information Scale (APAIS). SPSS version 24 facilitated the analysis, focusing on global anxiety prevalence and its associations with demographic and clinical variables.

Results: The study revealed a 62.0% prevalence of preoperative global anxiety. The APAIS scores indicated higher anxiety related to the surgery (mean = 7.27 ± 2.31) compared to anesthesia (mean = 5.14 ± 2.35). Significant associations were found between anxiety levels and age groups (p=0.002), surgical procedures (p<0.001), and type of anesthesia (p<0.001). ENT and urology patients exhibited notably higher anxiety, at 75.0% and 68.0% respectively. Multivariate analysis demonstrated a significant impact of gender on preoperative anxiety, with females showing increased vulnerability [aOR 1.91 (95% CI 1.13-3.21); p=0.015].

Conclusion: Preoperative anxiety remains a prevalent concern, with female patients exhibiting higher levels of anxiety than their male counterparts. The findings advocate for targeted counseling and informational support for patients, especially females, prior to surgery and anesthesia consultations, underscoring the need for healthcare professionals to address and mitigate preoperative anxiety effectively.

Keywords: Anesthesia anxiety, Amsterdam Preoperative Anxiety and Information Scale (APAIS), preoperative, surgical patients.

INTRODUCTION

The phenomenon of preoperative anxiety among individuals awaiting surgical procedures has been recognized as a critical concern within the medical community, attributable to its association with negative surgical outcomes such as increased risk of bleeding, heightened pain perception, and elevated morbidity and mortality rates (1). Annually, the global medical field undertakes approximately 243.2 million major surgeries, with reports indicating that between 60% to 80% of these patients experience varying degrees of preoperative anxiety (2, 3). This condition is marked by a spectrum of psychological and physiological manifestations, ranging from elevated tension and worry to more tangible symptoms such as increased blood pressure, nervousness, irritability, feelings of isolation, nausea, excessive sweating, breathlessness, accelerated heartbeat, and cognitive impairments (4, 5).

The susceptibility to preoperative anxiety is influenced by a myriad of factors, including but not limited to the nature and duration of the surgical procedure, the patient's age and gender, previous surgical experiences, and an individual's inherent predisposition to

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stress (6). The presence of this anxiety not only poses a significant challenge in healthcare settings, particularly escalating in the pre-surgical phase, but it has also been linked to a myriad of adverse postoperative outcomes. These include an enhanced risk of infection, nausea, vomiting, fluctuations in heart rate and blood pressure, and, notably, it serves as an independent predictor of postoperative morbidity and mortality, especially among adults and patients undergoing cardiac surgeries (7, 8).

Furthermore, the condition necessitates increased dosages of analgesics and anesthetics, contributing to exacerbated postoperative pain, extended hospitalization durations, and potentially impeding the surgical wound healing process, thus delaying recovery (9). The assessment of preoperative anxiety, while complex, can be effectively conducted using a variety of validated instruments such as the Hospital Anxiety and Depression Scale (HADS), Visual Analogue Scale (VAS), Multiple Affect Adjective Checklist (MAACL), State-Trait Anxiety Inventory (STAI), Amsterdam Preoperative Anxiety Information Scale (APAIS), and the Anxiety Specific to Surgery Questionnaire (ASSQ), with the MAACL and APAIS being preferred for their efficacy in evaluating anxiety specifically in surgical patients (10). Noteworthy is the finding from a Sri Lankan investigation revealing a 76.7% prevalence of anxiety among individuals awaiting general surgical procedures (11), while a comprehensive global systematic review and meta-analysis identified a 48% incidence of preoperative anxiety among surgical patients (12). Historical data have indicated a wide-ranging incidence of this anxiety, from 11% to 80% in adult surgical candidates and 60% to 92% in a broader spectrum of surgical patients (13).

Given the significant implications of preoperative anxiety on both the surgical process and patient outcomes, this study is dedicated to quantifying the frequency of such anxiety among elective surgical patients in tertiary care hospitals in Karachi. Through this investigation, the objective is to illuminate the extent of preoperative anxiety within this demographic, providing a foundation for the development of targeted interventions aimed at mitigating its impact on surgical efficacy and patient welfare.

MATERIAL AND METHODS

In the pursuit of advancing our understanding of pre-operative anxiety among patients awaiting elective surgeries, a prospective cross-sectional study was orchestrated. This investigation unfolded within the confines of two distinguished institutions: Dr. Ruth Pfau Civil Hospital, Karachi, and Dow University of Health Sciences. The study spanned from March 2, 2022, to December 31, 2022, and garnered participation from a cohort of 400 patients. These individuals were poised for elective surgical interventions across six specialized surgical units, identified as Units I through VI. The ethical framework guiding this study received the endorsement of the Institutional Review Board, under the approval number IRB # 2134 DUHS/Approval/2021, 719. This certification underscored the study's commitment to upholding the highest ethical standards and guidelines throughout its execution.

The determination of the sample size was rooted in a calculated approach, leveraging the OpenEpi online software to gauge the prevalence of pre-operative anxiety within this patient population. The prevalence was identified at 59.6%, with a calculated sample size of 370 patients. This figure factored in a margin of error at 5% and a confidence interval of 95%. To account for potential attrition and ensure robustness in the study's findings, an additional 8% was appended to the calculated sample size, culminating in a total of 400 patients (14). The recruitment of participants was conducted through a non-probability consecutive sampling technique, ensuring a systematic and inclusive approach.

Eligibility for inclusion in the study was determined based on specific criteria. Participants were required to be consecutive surgical patients, aged 18 years or above, who were scheduled for elective surgeries. The study delineated clear exclusion criteria to maintain the integrity of its findings. Patients earmarked for acute emergency procedures, those with documented psychiatric or mental disorders, and individuals who declined participation were systematically excluded. This delineation of inclusion and exclusion criteria ensured a focused and relevant participant base, facilitating a comprehensive analysis of pre-operative anxiety within this demographic.

RESULTS

This investigation examined the prevalence and predictors of pre-operative anxiety among 400 surgical patients, adhering to inclusion criteria, across the span of March 2, 2022, to December 31, 2022. The participants, ranging in age from 18 to 76 years, presented an average age of 39.75 years, with a standard deviation of 15.27. A significant portion of these individuals, precisely 36.3% (145 patients), were categorized within the 15-30 year age group, followed closely by 30.5% (122 patients) in the 31-45 year age bracket. The demographic composition further revealed a slight male predominance at 53.5% (214 patients), with females constituting 46.5% (186 patients). The marital status of the cohort indicated that a vast majority, 83.8% (335 patients), were married. Educationally, secondary education emerged as the most prevalent, representing 38.2% (153 patients) of the sample.

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Surgical and anesthesia details of the patients unveiled that 67.2% (269 patients) underwent major surgeries, predominantly under general anesthesia (70.2%, 281 patients). The surgical disciplines involved highlighted general surgery, neurosurgery, and gynecology & obstetrics as the most frequent, with respective patient counts of 134, 80, and 70, translating to 34.0%, 20%, and 17.6% of the total sample. A notable observation was the lack of awareness regarding chronic conditions among 65.0% (260 patients) of the cohort.

The Amsterdam Preoperative Anxiety and Information Scale (APAIS) served as the primary tool for anxiety assessment, yielding a mean global score of 12.40 with a standard deviation of 4.03. Analysis of specific anxiety components revealed that surgical anxiety (7.27 ± 2.31) outweighed anesthesia-related anxiety (5.14 ± 2.35), with procedure information scoring at 5.50 ± 2.10 on average. These results underscore the nuanced facets of pre-operative anxiety, particularly the heightened apprehension towards the surgery itself compared to anesthesia.

Further exploration into the association between APAIS items and patient characteristics illuminated significant correlations. Anxiety regarding anesthesia was significantly linked to the surgical procedure type ($p=0.038$) and anesthesia type ($p=0.001$), whereas surgical anxiety was markedly associated with patient age groups ($p=0.002$), surgical procedures ($p<0.001$), and anesthesia type ($p<0.001$). This differentiation in anxiety sources underscores the intricate interplay between patient demographics, surgical specifics, and the nature of anesthesia in modulating pre-operative anxiety levels.

The study also identified a robust positive correlation between procedure information and global anxiety scores ($r=0.739$, $p<0.001$), emphasizing the pivotal role of comprehensive procedural information in mitigating anxiety. This insight advocates for enhanced patient education and information dissemination as a strategy to alleviate pre-operative apprehension.

Diving deeper into the prevalence of pre-operative anxiety, the study recorded a 62% incidence rate based on APAIS global anxiety scores and a 76% rate according to the Multiple Affect Adjective Checklist (MACL). Univariate analysis pinpointed surgical procedure and anesthesia type as significant factors in APAIS-derived anxiety, while MACL-anxiety showed significant associations with patient age groups, anesthesia type, and the surgical procedure. This divergence in anxiety predictors between APAIS and MACL underscores the complexity of pre-operative anxiety as a multidimensional phenomenon.

Multivariate analysis further refined these insights, identifying gender, surgical discipline (specifically gynecology & obstetrics vs. general surgery), and anesthesia type (particularly spinal vs. general anesthesia) as significant predictors of APAIS-global anxiety. Similarly, significant predictors of MACL-anxiety included age group, ethnicity, marital status, anesthesia type, and surgery magnitude. This granular analysis offers a nuanced understanding of the factors influencing pre-operative anxiety, providing a roadmap for targeted interventions.

The study sheds light on the significant prevalence of pre-operative anxiety among surgical patients and delineates its multifaceted predictors. These findings furnish healthcare professionals with critical insights into identifying at-risk patients and formulating effective strategies to manage pre-operative anxiety, ultimately enhancing patient care and surgical outcomes.

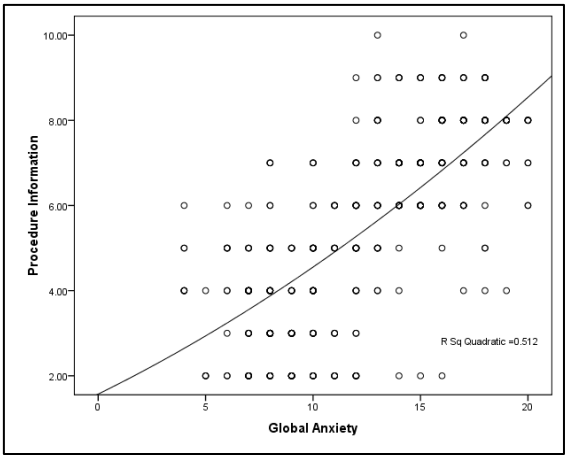

Figure 1: The correlation between preoperative global anxiety and procedure information among patients

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Table 1: Comparison of APAIS dimensions according to descriptive and clinical characteristics of the patients (n=400)

Characteristics		Overall	Anxiety about anaesthesia	Anxiety about surgery	Global Anxiety	Procedure information
		n (%)	Mean±SD	Mean±SD	Mean±SD	Mean±SD
Age groups	15-30	145 (36.3)	4.86±2.28	6.75±2.41	11.62±3.93	5.20±2.18
	31-45	122 (30.5)	5.0±2.34	7.30±2.36	12.41±4.03	5.54±1.96
	46-59	75 (18.7)	5.50±2.56	7.53±2.11	13.04±4.26	5.80±2.12
	≥60	58 (14.5)	5.37±2.26	8.13±1.87	13.52±3.69	5.77±2.08
	p-value		0.74	0.002*	0.007*	0.116
Ethnicity	Sindhi	78 (19.5)	4.71±2.19	7.26±2.23	11.99±3.78	5.33±2.05
	Phatan	62 (15.5)	5.00±2.05	7.48±2.14	12.48±3.69	5.46±1.97
	Balochi	66 (16.5)	5.81±2.70	7.60±2.25	13.42±4.33	5.90±2.21
	Urdu speaking	70 (17.5)	4.71±2.41	7.28±2.29	12.00±4.14	5.32±2.10
	Punjabi	39 (9.8)	5.46±2.22	7.43±2.08	12.90±3.61	5.66±1.97
	Others	85 (21.2)	5.28±2.33	6.75±2.61	12.04±4.30	5.43±2.20
	p-value		0.068	0.42	0.234	0.488
Gender	Male	214 (53.5)	5.10±2.37	7.20±2.11	12.31±4.06	5.42±2.09
	Female	186 (46.5)	5.17±2.34	7.33±2.51	12.51±4.01	5.59±2.11
	p-value		0.733	0.181	0.551	0.421
Education	Illiterate	92 (23.0)	5.01±2.16	7.48±2.26	12.50±3.89	5.25±2.04
	Primary	56 (14.0)	5.46±2.57	7.58±2.11	13.05±4.16	5.42±2.08
	Secondary	153 (38.2)	5.11±2.29	7.28±2.21	12.40±3.85	5.65±2.22
	College and above	99 (24.8)	5.09±2.51	6.85±2.56	11.95±4.37	5.54±1.97
	p-value		0.793	0.309	0.499	0.579
Marital status	Married	335 (83.8)	5.14±2.39	7.27±2.31	12.41±4.04	5.56±2.05
	Unmarried	65 (16.2)	5.10±2.20	7.23±2.27	12.34±4.06	5.20±2.33
	p-value		0.984	0.808	0.898	0.252

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Procedures	General	136 (34.0)	5.30±2.07	7.69±1.94	13.00±3.51	5.99±1.86
	Orthopaedic	36 (9.0)	5.11±2.06	7.72±2.23	12.83±3.94	5.61±2.07
	Gynae & Obstetrics	70 (17.6)	4.61±2.63	5.72±2.81	10.34±4.37	5.14±2.14
	Neurosurgery	80 (20.0)	4.86±2.63	7.26v2.16	12.12±3.99	5.03±2.21
	ENT	24 (6.0)	6.29±2.47	8.12±2.11	14.42±4.29	5.66±2.49
	Vascular	29 (7.2)	5.24±2.02	6.93±1.92	12.17±3.80	5.13±2.04
	Urology	25 (6.2)	5.36±2.44	8.16±1.84	13.52±4.09	5.44±2.16
	p-value		0.038*	<0.001*	<0.001*	0.017*
Type of Anesthesia	General	281 (70.2)	5.41±2.36	7.76±2.07	13.19±3.92	5.72±2.11
	Spinal	101 (25.2)	4.47±2.16	5.90±2.35	10.38±3.59	4.98±2.01
	Local	18 (4.6)	4.38±2.50	7.11±2.60	11.50±4.26	5.00±1.78
	p-value		0.001*	<0.001*	<0.001*	0.004*
Type of Surgery	Major	269 (67.2)	5.29±2.39	7.33±2.39	12.62±4.11	5.65±4.46
	Minor	47 (11.8)	4.46±2.17	7.02±2.11	11.49±3.39	4.82±1.95
	Medium	84 (21.0)	5.00±2.28	7.19±2.15	12.19±4.07	5.38±2.08
	p-value		0.083	0.434	0.164	0.035*
Chronic Conditions	HTN	47 (11.8)	5.25±2.17	7.59±1.71	12.85±3.24	5.72±1.93
	DM	48 (12.0)	5.35±2.25	7.66±2.20	13.02±4.11	5.70±2.26
	Liver Disease	10 (2.4)	4.50±2.01	6.50±1.26	11.00±3.12	5.00±2.21
	Renal Disease	11(2.8)	6.27±2.64	8.27±1.46	14.55±3.69	6.00±2.00
	Cardiovascular Disease	24 (6.0)	5.66±2.63	7.45±1.84	13.12±4.11	6.00±2.00
	None	260 (65.0)	5.00±2.37	7.10±2.49	12.10±4.16	5.43±2.08
	p-value		0.323	0.324	0.137	0.754

APAIS, Amsterdam Preoperative Anxiety and Information Scale; SD, standard deviation

* p-value calculated by using Mann Whitney U-test and Kruskal Walli's test

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Table 2: Univariate and multivariate logistic regression analyses results: Predictors of anxiety in preoperative surgical patients (n=400)

Variables		Global Anxiety		p-value*	aOR (95% CI)	p-value	MACL		p-value*	aOR (95% CI)	p-value
		No	Yes				No	Yes			
		n (%)	n (%)				n (%)	n (%)			
Age groups	15-30	60(41.4)	85(58.6)	0.371			107(73.8)	38(26.2)	0.044*	1	
	31-45	49(40.2)	73(59.8)				97(79.5)	25(20.5)		0.89 (0.43-1.84)	0.767
	46-59	26(34.7)	49(65.3)				50(66.7)	25(33.3)		0.40 (0.18-0.90)	0.028*
	≥60	17(29.3)	41(70.7)				50(86.2)	8(13.8)		1.10 (0.40-3.01)	0.854
Ethnicity	Sindhi	31(39.7)	47(60.3)	0.218	1		57(73.1)	21(26.9)	0.088	1	
	Phatan	20(32.3)	42(67.7)		1.36 (0.63-2.92)	0.425	52(83.9)	10(16.1)		2.68 (1.03-6.97)	0.043*
	Balochi	22(33.3)	44(66.7)		1.45 (0.69-3.07)	0.323	45(68.2)	21(31.8)		1.05 (0.47-2.33)	0.893
	Urdu	30(42.9)	40(57.1)		0.92 (0.46-1.85)	0.822	49(70.0)	21(30.0)		1.09 (0.50-2.36)	0.828
	Punjabi	10(25.6)	29(74.4)		1.56 (0.62-3.93)	0.345	29(74.4)	10(25.6)		1.47 (0.56-3.83)	0.422
	Others	39(45.9)	46(54.1)		1.20 (0.59-2.44)	0.607	72(84.7)	13(15.3)		3.10 (1.30-7.39)	0.010*
Gender	Male	89(41.6)	125(58.4)	0.122	1		166(77.6)	48(22.4)	0.430		
	Female	63(33.9)	123(66.1)		1.91 (1.13-3.21)	0.015*		48(25.8)			
Education	Illiterate	33(35.9)	59(64.1)	0.784			74(80.4)	18(19.6)	0.731		
	Primary	19(33.9)	37(66.1)				42(75.0)	14(25.0)			
	Secondary	59(38.6)	94(61.4)				114(74.5)	39(25.5)			
	College & above	41(41.4)	58(58.6)				74(74.7)	25(25.3)			
Marital status	Married	127(37.9)	208(62.1)	0.999			44(67.7)	21(32.3)	0.087	1	
	Unmarried	25(38.5)	40(61.5)				260(77.6)	75(22.4)		0.43 (0.19-0.96)	0.042*
Procedures	General	40(29.4)	96(70.6)	0.001*			104(76.5)	32(23.5)	0.058	1	
	Orthopaedic	12(33.3)	24(66.7)		0.92 (0.39-2.16)	0.857	32(88.9)	4(11.1)		2.58 (0.76-8.70)	0.126
	Gynae & Obstetrics	41(58.6)	29(41.4)		0.33 (0.15-0.70)	0.004*	49(70.0)	21(30.0)		0.81 (0.37-1.79)	0.613
	Neurosurgery	30(37.5)	50(62.5)		0.53 (0.27-1.02)	0.057	67(83.8)	13(16.3)		1.45 (0.64-3.28)	0.361
	ENT	6(25.0)	18(75.0)		1.02 (0.36-2.89)	0.968	16(66.7)	8(33.3)		0.82 (0.29-2.26)	0.702
	Vascular	15(51.7)	14(48.3)		0.43 (0.17-1.02)	0.058	21(72.4)	8(27.6)		0.64 (0.24-1.72)	0.380
	Urology	8(32.0)	17(68.0)		0.92 (0.34-2.49)	0.876	15(60.0)	10(40.0)		0.58 (0.21-1.58)	0.291

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Type of Anesthesia	General	81(28.8)	200(71.2)	<0.001*			221(78.6)	60(21.4)	0.005*	1	
	Spinal	62(61.4)	39(38.6)		0.28 (0.16-0.51)	<0.001*	66(65.3)	35(34.7)		0.47 (0.24-0.92)	0.029*
	Local	9(50.0)	9(50.0)		0.38 (0.13-1.10)	0.07	17(94.4)	1(5.6)		2.85 (0.31-25.70)	0.349
Type of Surgery	Major	96(35.7)	173(64.3)	0.313			209(77.7)	60(22.3)	0.002*	1	
	Minor	22(46.8)	25(53.2)				42(89.4)	5(10.6)		2.30 (0.77-6.86)	0.134
	Medium	34(40.5)	50(59.5)				53(63.1)	31(36.9)		0.49 (0.26-0.92)	0.029*
Chronic Conditions	HTN	13(27.7)	34(72.3)	0.384			39(83.0)	8(17.0)	0.747		
	DM	18(37.5)	30(62.5)				36(75.0)	12(25.0)			
	Liver Disease	4(40.0)	6(60.0)				7(70.0)	3(30.0)			
	Renal Disease	2(18.2)	9(81.8)				8(72.7)	3(27.3)			
	Cardiovascular Disease	8(33.3)	16(66.7)				16(66.7)	8(33.3)			
	None										

*p-value calculated by using chi-square test and multivariate binary logistic regression analysis

DISCUSSION

The phenomenon of preoperative anxiety, a common response to the anticipation of surgery, presents a considerable challenge within the healthcare domain. This study's exploration into the prevalence and predictors of preoperative anxiety in elective surgical patients employed both the Multiple Affect Adjective Checklist (MAACL) and the Amsterdam Preoperative Anxiety and Information Scale (APAIS), instruments acclaimed for their reliability in assessing the multifaceted nature of preoperative fear. The findings revealed a prevalence rate of 62.0% for preoperative anxiety, aligning with the broader spectrum of contemporary research, which generally estimates prevalence rates between 60–70% (18). Such consistency underscores the pervasive nature of anxiety across surgical contexts globally, highlighting the critical need for effective anxiety management strategies to optimize patient outcomes and surgical efficacy (17).

Pain, as a primary catalyst for anxiety, remains a complex variable to quantify due to its subjective nature. Nonetheless, the utilization of self-report questionnaires like the MAACL and APAIS facilitates a nuanced understanding of anxiety's impact, emphasizing the significance of personalized anxiety management approaches. The correlation of anxiety with the anticipation of surgery-related complications, as supported by systematic reviews, amplifies the need for comprehensive patient education and counseling to mitigate such concerns (19).

An intriguing aspect of the study's findings pertains to the differential impact of gender on preoperative anxiety levels. Female patients exhibited a higher incidence of global anxiety compared to their male counterparts (58.4% vs. 66.1%), resonating with prior studies that have identified gender as a contributing factor to heightened preoperative anxiety (21). This gender disparity not only highlights the necessity for gender-sensitive approaches in preoperative counseling but also underscores the importance of addressing specific anxieties related to anesthesia and the surgical procedure itself (22).

The type of surgery emerged as a significant predictor of preoperative anxiety, with patients scheduled for ENT and urology procedures exhibiting notably higher anxiety levels. This observation might be attributed to the prevalent use of local anesthesia in these surgeries, which could exacerbate patient anxiety due to fear of intraoperative awareness or pain (23, 24). Comparatively, the study noted variations in anxiety levels among different surgical specialties, indicating the influence of procedure-specific factors on patient anxiety. For instance, the association between orthopedic surgeries and anxiety, as evidenced in other research, could be linked to concerns over pain severity and potential long-term disabilities (14).

The study's findings also contribute to the ongoing discourse regarding the impact of age on preoperative anxiety. While some literature suggests age as a non-contributory factor, other research indicates it as a predictive element of anxiety (20). Such discrepancies underscore the complexity of preoperative anxiety's etiology, suggesting that age-related factors may interact with individual patient characteristics and surgical contexts to influence anxiety levels.

Notwithstanding its contributions, the study acknowledges certain limitations, including the absence of a comparative analysis between preoperative and postoperative anxiety levels, which could provide insights into the trajectory of anxiety surrounding surgical experiences. Additionally, the focus on government sector hospitals without incorporating private sector comparisons may limit the generalizability of the findings across different healthcare settings.

This investigation into preoperative anxiety among elective surgical patients highlights the multifaceted nature of this psychological phenomenon and its implications for surgical preparation and recovery. The study's findings emphasize the importance of personalized, gender-sensitive preoperative counseling and the need for targeted interventions to address the specific concerns associated with different types of surgeries. Future research endeavors should aim to broaden the understanding of preoperative anxiety's dynamics, incorporating diverse healthcare settings and longitudinal perspectives to enhance patient care and surgical outcomes.

CONCLUSION

This study illuminates the pervasive nature of preoperative anxiety among surgical patients and its consequential impact on healthcare outcomes. By employing validated tools like the MAACL and APAIS, it emphasizes the necessity for tailored anxiety management strategies that account for individual risk factors such as age, gender, and surgery type. The findings underscore the

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importance of further research to unravel the complexities of preoperative anxiety and to devise targeted interventions. Highlighting the critical need for personalized preoperative care, this research paves the way for enhancing patient experiences and outcomes in surgical settings through improved understanding and management of preoperative anxiety.

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