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Impact of Preoperative Surgical Fear and Anxiety on Sleep Quality and Recovery Outcomes After Arthroplasty

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Abstract

Background: Surgical interventions affect patients not only physiologically but also psychologically. Perioperative anxiety and surgical fear are common and may impact postoperative recovery and sleep quality.

Aim: This study aimed to examine the relationship between preoperative surgical fear and anxiety levels and postoperative sleep quality and recovery one month after hip and knee arthroplasty.

Methods: This cross-sectional study was conducted between 2022 and 2023 with 83 patients who underwent hip or knee arthroplasty at a training and research hospital in Türkiye. Data were collected using the Surgical Fear Questionnaire, State-Trait Anxiety Inventory – State subscale, Postoperative Recovery Index, and Pittsburgh Sleep Quality Index. The Pearson correlation test, chi-squared test, Student's t-test, Mann-Whitney U test, and Kolmogorov-Smirnov test were used for data analysis.

Results: The mean age and Body Mass Index (BMI) of the patients were 65.66±7.74 and 31.42±4.99, respectively. Of the patients, 75.9% were female and 85.5% were married. The mean Surgical Fear Questionnaire score was 27.80±20.82, and the mean State Anxiety Inventory score was 40.78±10.00. The mean Postoperative Recovery Index score was 1.76±0.73. According to the Pittsburgh Sleep Quality Index, 66.1% of patients had poor sleep quality. A moderate positive correlation was found between surgical fear and anxiety levels, while a low positive correlation was observed between surgical fear and postoperative recovery ($p<0.05$).

Conclusion: Preoperative surgical fear and anxiety are associated with poorer postoperative recovery and sleep quality among hip and knee arthroplasty patients. These findings emphasize the importance of evaluating and addressing psychological factors before surgery to improve postoperative outcomes.

Keywords: Anxiety, arthroplasty, nursing, sleep, surgical fear

Introduction

Surgical interventions aim to enhance physical health, but they can also have significant psychological effects. Perioperative anxiety and surgical fear are common and multifaceted issues that are an inherent part of the surgical process.[1] A recent systematic review and meta-analysis reported that anxiety symptoms affect more than a quarter of hospitalized individuals.[2] This rate rises to 51.2% prior to scheduled surgeries.[3] Additionally, studies conducted in low- and middle-income countries reveal that almost half of surgical patients experience preoperative anxiety, highlighting its status as a global issue.[4]

Preoperative anxiety and surgical fear, often driven by concerns such as the risk of complications, expected postoperative pain, and fear of death, are considered important psychosocial and spiritual factors that can affect patient comfort and recovery quality in multiple ways during the perioperative period.[5] These concerns not only impact patients' psychological well-being but may also adversely influence postoperative recovery processes.

High levels of preoperative anxiety have been reported to cause more severe postoperative pain, disrupt sleep quality, and slow the recovery process in various studies.[6,7] Surgical fears and anxiety are particularly frequent among orthopedic and traumatology patients, leading to greater emotional stress that may increase anesthetic and postoperative analgesic requirements, elevate the risk of complications, and delay recovery with issues such as sleep disturbances.[8]

Maintaining sleep quality during the perioperative period is crucial for accelerating physical recovery and improving postoperative prognosis. It has been shown that sleep disturbances experienced by patients following total hip and knee arthroplasty surgeries significantly impact pain management, physical functionality, and psychological well-being.[9] Furthermore, a meta-analysis has shown that sleep disturbances increase the need for analgesics and delay recovery.[10] Additionally, factors such as the use of painkillers, smoking, and pre-existing sleep problems can contribute to sleep difficulties before and after surgery, and these issues may persist for an extended period following total knee replacement.[11]

While recent studies have separately examined the relationships between preoperative fear and anxiety and postoperative outcomes such as sleep quality and recovery, most of these studies have focused on specific surgical areas and primarily identified influencing factors rather than exploring comprehensive associations.[5,7,8,10]

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In this context, effectively managing patients' preoperative surgical fear and anxiety is essential for improving the quality of surgical care and supporting postoperative recovery. Therefore, assessing preoperative levels of surgical fear and anxiety and evaluating their impact on postoperative sleep quality and recovery is a critical need for healthcare professionals. Accordingly, this study aims to investigate the relationship between preoperative surgical fear and anxiety and postoperative sleep quality and recovery during the first month following total hip and knee arthroplasty surgeries.

Study Question

1. Is there a relationship between preoperative surgical fear and anxiety levels and postoperative sleep quality and recovery outcomes among patients undergoing hip and knee arthroplasty?

Materials and Methods

Study Design and Participants

This cross-sectional study was conducted with 83 patients who were hospitalized for hip and knee surgeries at a training and research hospital. This manuscript was prepared in accordance with the STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines for observational studies.

The study included patients admitted between 2022 and 2023. A post hoc power analysis was conducted using G*Power 3.1 to assess the adequacy of the sample size for the correlational analysis. Given a medium effect size (r=0.30), an alpha level of 0.05, and a total sample size of 83, the achieved power was calculated to be approximately 0.80. This indicates that the study had sufficient power to detect statistically significant correlations of medium magnitude. The inclusion criteria were as follows: (1) scheduled for hip or knee arthroplasty, (2) 18 years of age or older, (3) cognitively intact, and (4) willing to participate in the study.

Data Collection Tools

Data collection tools included a sociodemographic information form, the Surgical Fear Questionnaire (SFQ), the State-Trait Anxiety Inventory – State subscale (STAI-S), the Postoperative Recovery Index (PoRI), and the Pittsburgh Sleep Quality Index (PSQI).

Sociodemographic Information Form

This form was developed by the researchers based on a comprehensive literature review. It consists of nine items addressing variables such as age, Body Mass Index (BMI), gender, marital status, presence of chronic diseases, use of assistive walking devices, history of previous hospitalization and surgery, and type of planned surgery.

Surgical Fear Questionnaire

The SFQ is a tool developed to measure the level of fear in patients undergoing elective surgery and has been validated for use in Türkiye.[12,13] The questionnaire is an 11-point Likert-type scale consisting of eight items, where scores range from 0 (not afraid at all) to 10 (very afraid), yielding a total possible score between 0 and 80. It includes two subscales assessing short-term and long-term surgical fear outcomes. Higher scores indicate greater levels of fear. In the Turkish version of the SFQ, Cronbach's α coefficient was 0.93 for the total questionnaire. In this study, Cronbach's alpha coefficient for the SFQ was 0.90.

State-Trait Anxiety Inventory – State subscale

The STAI-S, developed by Spielberger et al. in 1970 and adapted into Turkish by Öner and Le Compte,[14] consists of 20 items. Each item is scored on a scale from 1 to 4, with higher scores indicating higher levels of anxiety and lower scores reflecting lower levels of anxiety. The Cronbach's alpha coefficient of the Turkish version of the STAI-S was 0.94 in the original adaptation study. In this study, Cronbach's alpha coefficient for the STAI-S was 0.91.

Postoperative Recovery Index

The PoRI is a scale developed to assess the quality of postoperative recovery and has been adapted and validated for use in Turkish patients.[15,16] The scale comprises 25 items distributed across five subdimensions: psychological symptoms, physical activities, general symptoms, bowel symptoms, and appetite symptoms. Subdimension scores are calculated as the arithmetic mean of the total scores of the items within each subdimension, while the total score is derived from the arithmetic mean of all items. Higher scores on the PoRI indicate greater difficulty in the postoperative recovery process, whereas lower scores suggest easier recovery. In this study, Cronbach's alpha coefficient for the PoRI was 0.943.

Pittsburgh Sleep Quality Index

The PSQI is a scale developed to evaluate sleep quality and has been adapted into Turkish with established validity and reliability.[17,18] The scale consists of 24 items, of which only 18 are included in the scoring. The PSQI assesses sleep duration, sleep latency, and the frequency and severity of sleep-related issues across seven component scores. The total score of the scale is calculated by summing the scores of these seven components. The total score ranges from 0 to 21, with a cutoff point of five used to evaluate sleep quality. Scores of five or higher indicate poor sleep quality, while scores below five reflect good sleep quality. Lower total scores signify better sleep quality. The Cronbach's alpha coefficient of the PSQI was 0.80 in the original validation study. In this study, Cronbach's alpha coefficient for the PSQI was 0.81.

Data Collection

Data collection for the study involved face-to-face interviews conducted preoperatively, during which patients completed a sociodemographic information form, the SFQ, and the STAI-S. Preoperative data were obtained approximately one day before surgery. Each interview lasted approximately 15–20 minutes and was conducted in a quiet and private room to ensure comfort and confidentiality. One month after surgery, postoperative data were collected via telephone interviews, during which the PoRI and PSQI forms were administered. The follow-up interviews lasted about 10–15 minutes. All data were collected directly from patients by the same researcher to ensure standardization and data quality.

Data Analysis

All statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) software, version 21 (IBM Corp., Armonk, NY, USA). Descriptive statistics for numerical data were presented as numbers and percentages, while continuous variables were expressed as means and standard deviations. The Pearson correlation test was employed to examine relationships between continuous variables. Categorical variables were compared using the chi-squared test. Group differences were analyzed using the Student's t-test for normally distributed values and the Mann-Whitney U test for non-normally distributed values. The Kolmogorov-Smirnov test was applied to assess the normality of data distribution. A p-value of less than 0.05 was considered statistically significant for all analyses.

Ethical Approval

Ethical approval for the study was obtained from Bilecik Seyh Edebali University Non-interventional Clinical Research Ethics Committee (Approval Number: 6/2, Date: 26/10/2021) and from the hospital where the research was conducted. Written informed consent was secured from all patients, who were also informed of their right to withdraw from the study at any time. The study adhered to the principles outlined in the Declaration of Helsinki.

Results

The findings derived from preoperative and first-month postoperative data of patients who underwent hip and knee arthroplasty are summarized below. The sociodemographic characteristics of the patients are shown in Table 1. The mean age and BMI of the patients were 65.66±7.74 and 31.42±4.99, respectively. Of the patients, 75.9% were female and 85.5% were married. Additionally, 51.8% had at least one chronic disease, and 34.9% used assistive devices such as canes, walkers, or crutches. A total of 78.3% had been hospitalized at least once previously, and 72.3% reported undergoing at least one prior surgery. Among the 83 participants, 83.1% (n=69) underwent knee arthroplasty, and 16.9% (n=14) underwent hip arthroplasty.

The preoperative SFQ scores and subdimensions, STAI-S scores, and postoperative first-month PoRI and PSQI results are presented in Table 2. The short-term, long-term, and total scores for the SFQ were 14.51±10.92, 13.28±11.81, and 27.80±20.82, respectively. The preoperative STAI-S mean score was 40.78±10.00. In the postoperative period, the patients' mean PoRI total score was 1.76±0.73. Among the PoRI subdimensions, the lowest mean score was 1.48±0.97 for bowel symptoms, while the highest was 2.04±1.10 for physical symptoms. According to the PSQI results, 66.1% of the patients had poor sleep quality.

Table 1. Sociodemographic characteristics of patients (n=83)

	Mean±SD	Min-max
Age	65.66±7.74	34–83
BMI	31.42±4.99	19.84–46.88
	n	**%**
Gender		
Female	63	75.9
Male	20	24.1
Marital status		
Married	71	85.5
Single	12	14.5
Presence of chronic disease		
Yes	43	51.8
No	40	48.2
Assistive device use status*		
Yes	29	34.9
No	54	65.1
Previous hospitalization		
Yes	65	78.3
No	18	21.7
Previous surgery		
Yes	60	72.3
No	23	27.7
Type of Surgery		
Knee arthroplasty	69	16.9
Hip arthroplasty	14	83.1

*: Cane, walker, or crutch. SD: Standard deviation; BMI: Body mass index; Min: Minimum, Max: Maximum.

Table 2. Results of the surgical fear questionnaire (SFQ), state-trait anxiety inventory – state subscale (STAI-S), postoperative recovery index (PoRI), and pittsburgh sleep quality index (PSQI)

	Preoperative measures (n=83)		
	Cronbach's alpha	**Mean±SD**	**Min-max**
SFQ-total	0.904	27.80±20.82	0–80
SFQ-short term	0.826	14.51±10.92	0–40
SFQ-long term	0.901	13.28±11.81	0–40
STAI-S	0.911	40.78±10.00	20–60
	Postoperative measures (n=62)		
	Cronbach's alpha	**Mean±SD**	**Min-max**
PoRI-total	0.943	1.76±0.73	1–3.84
Psychological symptoms	0.765	1.68±0.77	1–3.50
Physical activities	0.968	2.04±1.10	1–5
General symptoms	0.943	1.83±1.13	1–5
Bowel symptoms	0.952	1.48±0.97	1–4.60
Appetite symptoms	0.982	1.59±0.94	1–5
		n	**%**
PSQI			
Good sleep	0.817	21	33.9
Poor sleep		41	66.1

The comparison results of SFQ, STAI-S, PoRI, and PSQI scores with independent variables are presented in Table 3. No statistically significant differences were found between SFQ, STAI-S, PoRI, and PSQI scores and variables such as age, BMI, marital status, use of assistive devices, prior hospitalization, prior surgery, or type of surgery ($p>0.05$). However, women had significantly higher STAI-S and PoRI scores compared to men ($p<0.05$). Additionally, patients without chronic illnesses had significantly higher STAI-S mean scores than those with at least one chronic illness ($p<0.05$).

Correlation data regarding patients' mean scores for SFQ, STAI-S, and PoRI are presented in Table 4. A moderate, positive, and statistically significant correlation was identified between preoperative SFQ-total and STAI-S scores ($p<0.05$). This finding indicates that as surgical fear increases preoperatively, anxiety levels also rise. Furthermore, a low-level, positive, and statistically significant correlation was observed between preoperative SFQ-total scores and the postoperative first-month PoRI-total mean score ($p<0.05$). This finding indicates that elevated levels of preoperative surgical anxiety are associated with more prolonged and challenging recovery processes following surgery. The comparison of postoperative first-month PSQI results with SFQ, STAI-S, and PoRI mean scores is shown in Table 5. It was found that patients with poor sleep quality had higher mean SFQ and PoRI scores.

Discussion

Experiencing fear and anxiety before surgery can trigger an early and heightened stress response by increasing the release of stress-related hormones, ultimately impairing postoperative recovery and sleep quality.[19] In the present study, patients scheduled for hip or knee arthroplasty reported mild levels of short-term, long-term, and overall surgical fear. These findings generally align with previous research, although some studies have noted higher average fear scores depending on the surgical population and context. For instance, Bez and Erturhan Türk[20] in 2024 found higher short-term (21.97±6.9), long-term (25.51±7.6), and total fear scores (47.48±13.3) in patients who underwent orthopedic surgery. The findings of this study are consistent with those reported by Çelik et al.[21] in 2024 and Dinç and Yılmaz Güven[22] in 2023, who observed similar short-term (11.69±7.55; 12.0±11.9), long-term (10.70±9.53; 9.2±12.8), and total fear scores (22.40±14.69; 21.2±23.3) in patients scheduled for total knee arthroplasty. Similarly, Teixeira et al.[23] in 2024 also found comparable scores for short-term (9.52±8.67), long-term (15.69±13.73), and total fear (25.22±19.85) in their study on patients undergoing planned surgeries. In the study by Kılınç and Karaman Özlü[19] in 2023, short-term, long-term, and total fear scores in patients scheduled for elective surgery were reported as 15.58±11.35, 15.20±11.71, and 30.78±21.82, respectively. In this study, short-term surgical fear scores were found to be higher than long-term scores, indicating that patients' concerns were more focused on the immediate perioperative period rather than on the long-term consequences of surgery. This may reflect specific anxieties such as unfamiliarity with the operating room environment, insufficient knowledge about surgical and anesthesia processes, or fears of waking up during recovery. These findings underscore the importance of both the content and delivery of preoperative patient education, as well as the need for structured orientation practices to help reduce short-term surgical fear.

Surgical procedures are commonly perceived as threatening experiences, often evoking psychological distress that extends into both the preoperative and postoperative periods.[22] Anxiety is considered both a general disposition and a temporary reaction to specific situations.[14] In the current study, patients' state anxiety levels were found to be moderate and somewhat lower than those reported in similar studies in the literature. In the study by Çalışkan and Aksoy[6] in 2025 on patients undergoing total hip and knee arthroplasty, the mean STAI-S score was reported as 53.95±10.51; in the study by Topal Hançer[24] in 2023 on patients undergoing surgical procedures, it was 48.16±16.31; and in the study by Oh et al.[25] in 2024, it was 43.3±10.8. This variation could be associated with demographic factors such as age or prior exposure to similar procedures. For example, older patients who view surgery as a solution to chronic mobility issues may perceive it with less anxiety.

The findings of this study point to the possibility that prior surgical or hospitalization experiences may have limited influence on preoperative anxiety. This contrasts with literature suggesting that anxiety often begins during hospitalization and is

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Table 3. Comparison of sociodemographic characteristics with the surgical fear questionnaire (SFQ), state-trait anxiety inventory – state subscale (STAI-S), postoperative recovery index (PoRI), and pittsburgh sleep quality index (PSQI) scores

	SFQ-total Mean±SD	STAI-S Mean±SD	PoRI Mean±SD	PSQI			
				Good sleep		Poor sleep	
				n	%*	n	%*
Gender							
Female	30.50±21.79	40.79±9.66	1.88±0.76	13	27.1	35	72.9
Male	19.30±14.86	40.75±11.26	1.36±0.40	8	57.1	6	42.9
p	**0.012**	0.902	**0.016**			0.054	
Test value	**t=2.599**	Z=-0.124	**Z=-2.406**			X^2=0.037	
Marital status							
Married	26.84±20.73	40.77±9.89	1.79±0.72	19	35.8	34	47.9
Single	33.50±21.31	40.83±11.33	1.63±0.79	2	22.2	7	77.8
p	0.331	0.953	0.383			0.705	
Test value	t=-1.004	Z=-0.059	Z=-0.872			X^2=0.425	
Presence of chronic disease							
Yes	27.34±20.48	38.23±9.53	1.74±0.73	14	45.2	17	54.8
No	28.30±21.43	43.52±9.87	1.79±0.74	7	22.6	24	77.4
p	0.837	**0.008**	0.838			0.106	
Test value	t=-0.206	**Z=-2.652**	Z=-0.205			X^2=0.060	
Assistive device use status							
Yes	30.41±21.68	40.65±9.87	1.67±0.63	10	45.5	12	54.5
No	26.40±20.41	40.85±10.15	1.82±0.78	11	27.5	29	72.5
p	0.416	0.912	0.590			0.172	
Test value	t=-0.819	Z=-0.111	Z=-0.539			X^2=0.153	
Previous hospitalization							
Yes	28.50±20.56	40.93±10.24	1.71±0.67	18	36	32	64
No	25.27±22.14	40.22±9.30	1.98±0.95	3	25	9	75
p	0.583	0.522	0.592			0.735	
Test value	t=-0.556	Z=-0.641	Z=-0.536			X^2=0.470	
Previous surgery							
Yes	29.20±20.49	41.46±9.51	1.77±0.68	16	35.6	29	64.4
No	24.17±21.70	39.00±11.19	1.76±0.87	5	29.4	12	70.6
p	0.344	0.286	0.532			0.768	
Test value	t=-0.959	Z=-1.067	Z=-0.625			X^2=0.648	
Type of surgery							
Knee arthroplasty	28.55±20.73	40.88±9.62	1.77±0.71	15	28.8	37	71.2
Hip arthroplasty	24.14±21.64	40.28±12.09	1.76±0.85	6	60	4	40
p	0.474	0.830	0.946			0.075	
Test value	t=-0.720	Z=-0.215	Z=-0.067			X^2=0.057	
				Mean±SD			
Age				64.95±8.71		65.29±6.53	
p	0.785	0.058	0.689			0.412	
Test value	r=-0.030	r=0.209	r=0.052			Z=-0.820	
BMI				31.54±4.69		31.92±5.29	
p	0.699	0.316	0.242			0.783	
Test value	r=0.043	r=0.111	r=-0.151			t=-0.277	

*: Row percentage. SD: Standard deviation, t: Student's t-test, Z: Mann-Whitney U test, X^2: Chi-square test, r: Pearson correlation, BMI: Body mass index

influenced by prior surgical experiences.[4,7,24] A possible explanation is that many participants had uneventful past surgeries, which may have reduced anxiety in subsequent hospitalizations. Additionally, the high proportion of elderly patients, who may view surgery as a necessary step to improve mobility, could have mitigated anxiety.

In the postoperative period, the mean total PoRI score was 1.76±0.73, with the lowest mean score observed in bowel symptoms and the highest in physical symptoms. When compared to other studies in the literature, these results reveal certain differences. In the study by Kulakaç and Aydın Sayılan[26] in 2024,

Table 4. Correlation analysis of the mean scores of the surgical fear questionnaire (SFQ), the state-trait anxiety inventory (STAI-S), and the postoperative recovery index (PoRI)

	SFQ-total	STAI-S	PoRI
SFQ-total			
r	1		
p			
STAI-S			
r	**0.416**	1	
p	**<0.001**		
PoRI			
r	**0.295**	0.202	1
p	**0.020**	0.116	

r: Pearson correlation.

Table 5. Comparison of the pittsburgh sleep quality index (PSQI) with the surgical fear questionnaire (SFQ), the state-trait anxiety inventory – state subscale (STAI-S), and the postoperative recovery index (PoRI) scores

	SFQ Mean±SD	STAI-S Mean±SD	PoRI Mean±SD
PSQI			
Good sleep	19.90±25.27	36.80±12.13	1.32±0.31
Poor sleep	31.53±18.78	41.87±9.08	1.99±0.78
p	**0.007**	0.108	**<0.001**
Test value	**Z=-2.688**	Z=-1.609	**t=-4.809**

SD: Standard deviation, Z: Mann-Whitney U test, t: Student's t-test.

which included all types of surgical procedures, the mean total PoRI score was reported as 3.19±1.07. Similarly, in the study conducted by Dığın and Kızılcık Özkan[27] in 2021 on postoperative day 3 in general surgery and orthopedic-traumatology clinics, the mean total PoRI score was 2.7±0.9.27 Among the subdimensions, the lowest mean score was 2.1±0.9 for bowel symptoms, while the highest was 3.5±1.3 for physical symptoms. In the study by Çakır et al.[28] in 2024, conducted on the discharge day following coronary artery bypass graft surgery, the mean total PoRI score was 2.72±0.42, with the lowest subdimension score reported for bowel symptoms (1.78±0.79) and the highest for physical symptoms (4.33±0.42). The findings of this study indicate that the recovery levels of patients were more encouraging compared to those reported in certain other studies. When the results from this and other studies are examined, it becomes evident that physical symptoms constitute the biggest problem in the postoperative recovery process. It has been demonstrated that physical recovery is a critical factor in determining postoperative comfort and quality of life for patients, regardless of the surgical procedure performed.

The present study established that more than half of the patients exhibited poor sleep quality at the first-month postoperative assessment. This finding is consistent with the extant literature, which demonstrates significant variability in the reported rates of poor sleep quality among similar patient groups. Fatah and Abdulrahman[29] in 2020 reported that 63% of patients had poor sleep quality at the first month following knee arthroplasty. Similarly, Pitaro et al.[30] in 2023 found this rate to be 62.5% at six weeks postoperatively in patients undergoing total hip and knee arthroplasty. Hamai et al.[31] in 2023 reported a lower rate of 54% at 18 months postoperatively following knee arthroplasty. Conversely, Wang et al.[32] in 2024 found a significantly lower rate of 34.2% in their study on patients at the first month after total hip arthroplasty. Although the findings of this study are largely consistent with previous research, they also demonstrate that a considerable number of patients continue to experience poor sleep quality in the postoperative period. This finding aligns with current research showing that postoperative recovery challenges extend beyond physical healing to include psychological stressors—such as anxiety or depression—and environmental factors like sleep disturbances and hospital noise levels.[33–35] Therefore, incorporating targeted strategies to improve sleep quality should be considered an essential component of postoperative care.

This study revealed that female patients scored higher than male patients on both the SFQ-total and PoRI-total scales. This finding aligns with the existing literature on the subject. In the study by Kaya and Karaman Özlü[36] in 2019, preoperative surgical fear levels were reported to be higher in women. Similarly, the study by Bez and Erturhan Türk[20] in 2024 found that short-term surgical fear scores were higher in female patients compared to male patients. The study by Akutay and Ceyhan[37] in 2023 also revealed that female patients had significantly higher short-term, long-term, and total surgical fear scores than their male counterparts. Additionally, the study by Çakır et al.[28] in 2024 reported that women had higher mean PoRI-total scores compared to men. The higher prevalence of negative experiences related to anxiety, fear, and recovery processes in women may be attributed to biopsychosocial factors, hormonal differences, coping mechanisms, and the way health-related experiences are perceived.[4,33] Gender-sensitive approaches to perioperative care may therefore enhance the effectiveness of individualized interventions.

In the present study, previous surgical or hospitalization experiences appeared to have a limited influence on patients' preoperative anxiety levels. This finding indicates that as patients' levels of fear related to surgery increase, their anxiety levels also rise. Surgical procedures are known to cause significant physiological and psychological trauma, which often manifests as fear and anxiety during the preoperative period.[19] Preoperative fear and anxiety have been shown to increase the risk of various postoperative complications—such as higher morbidity and mortality rates, delayed wound healing, sleep disturbances, increased pain and medication use, and prolonged hospital stays—which can collectively have a negative impact on both the surgical process and recovery.[12,38] Despite the preparation process for elective surgeries, high levels of preoperative surgical fear can disrupt the sleep-wake cycle and negatively affect sleep quality.[19] The present study also identified a low-level, positive, and statistically significant correlation between patients' preoperative surgical fear levels and their recovery levels as assessed at the first postoperative month. This finding suggests that increased preoperative fear may negatively impact the postoperative recovery process. Furthermore, the poor sleep quality observed in these patients aligns with findings in the literature regarding the relationship between surgical fear and sleep disturbances.

Strengths and Limitations of the Study

This study employed a prospective design, enabling the evaluation of postoperative outcomes at a defined follow-up point (one month after surgery), which enhanced the temporal validity of the findings. The specific focus on patients undergoing hip and knee arthroplasty allowed for a detailed examination of psychological and recovery-related outcomes in this population. Despite these strengths, several limitations should be noted. Firstly, the research was conducted in a single center with the same surgical team and a limited number of patients, which restricts the generalizability of the findings to other centers or larger populations. Additionally, the data were collected based on patients' self-reports; consequently, the accuracy of the data may have been influenced by patients' perceptions and response tendencies. Future studies are recommended to adopt multicenter designs, increase sample sizes, and incorporate objective assessment methods supported by biophysiological measurements.

Conclusion

This study revealed that preoperative surgical fear and anxiety are common among patients undergoing hip or knee arthroplasty, and these emotional factors are negatively associated with postoperative sleep quality and recovery. As the intensity of preoperative fear and anxiety increases, patients experience greater sleep disturbances and more difficult recovery processes. These findings highlight the importance of evaluating and addressing psychological factors as part of pre-surgical preparation. Interventions such as structured patient education, psychological support, and relaxation strategies may help reduce emotional distress before surgery and improve postoperative outcomes, particularly sleep quality and recovery. Additionally, incorporating gender-sensitive strategies, such as tailoring education and support to address the specific needs of male and female patients, may further enhance outcomes.

Ethics Committee Approval: The study was approved by the Bilecik Seyh Edebali University Non-interventional Clinical Research Ethics Committee (Approval Number: 6/2, Date: 26.10.2021).

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