

# Surgical Fear and Related Factors Before Total Knee Arthroplasty

## ABSTRACT

**Objective:** The aim of this descriptive study was to determine the level of surgical fear and related factors in patients undergoing total knee arthroplasty.

**Methods:** The study sample consisted of 181 patients undergoing total knee arthroplasty in a training and research hospital in Izmir. The data were collected between April 1 and September 1, 2023 via the "Patient Identification Form" and the "Surgical Fear Scale". Descriptive statistics, Mann Whitney U test, Kruskal Wallis test and Spearman correlation analysis were used to evaluate the data.

**Results:** The mean score on the Surgical Fear Scale was found to be  $28.35 \pm 16.89$  (out of 80 points), indicating that the level of fear experienced by patients scheduled for total knee arthroplasty was relatively low. The mean scores for the short-term and long-term fear subscale of the Surgical Fear Scale ( $16.10 \pm 9.91$  and  $12.24 \pm 9.44$  out of 40, respectively) also indicated that the short-term and long-term fear levels were low. The factors associated with the level of surgical fear were found to be previous knee surgery history and type of anesthesia ( $p: .001$ ).

**Conclusion:** The study findings showed that patients undergoing total knee arthroplasty experienced low levels of fear and that previous knee surgery experience and type of anesthesia were associated with this fear. surgical fear levels.

**Keywords:** Fear, patient, total knee arthroplasty.

Esra KUŞÇU<sup>1</sup>

<sup>1</sup>Republic of Türkiye Ministry of Health, İzmir Provincial Health Directorate Bakırçay University, Çiğli Training and Research Hospital, İzmir, Türkiye



Aliye OKGÜN ALCAN<sup>2</sup>

<sup>2</sup>Izmir Bakırçay University, Faculty of Health Sciences, Surgical Nursing Department, İzmir, Türkiye



Received 22.05.2024  
Accepted 06.05.2025  
Publication Date 13.07.2025

Corresponding author:

Aliye OKGÜN ALCAN

E-mail: aliyeokgun@gmail.com

Cite this article: Kuşçu, E., & Okgün Alcan, A. (2025). Surgical Fear and Related Factors Before Total Knee Arthroplasty. *Journal of Midwifery and Health Sciences*, 8(2), 82-90.



Content of this journal is licensed under a Creative Commons Attribution-Noncommercial 4.0 International License.

## Introduction

Total knee arthroplasty (TKA) is a surgical procedure that involves the implantation of prostheses on the weight-bearing surfaces of the knee joint. The primary objective of this procedure is to alleviate severe pain and disability in the knee region caused by advanced osteoarthritis, rheumatoid arthritis, post-traumatic osteoarthritis, neuropathic joint diseases or failure of high tibial osteotomy (OECD, 2021). TKA is regarded as one of the most successful surgical procedures in the field of orthopaedics at present. Its application to an increasing number of patients each year is attributable to the rising global incidence of degenerative knee diseases (OECD, 2021). Nevertheless, it is important to note that this surgical procedure can be regarded as a crisis or a potentially traumatic event for patients (Sürme & Çimen, 2022).

Surgical fear is defined as an emotional reaction initiated on the determination of the date on which the patient is to undergo surgery. This reaction may continue to intensify until the patient's surgical procedure (Bağdigen & Karaman Özlü, 2018). A significant proportion of patients report experiencing surgical fear despite being aware that these are medically necessary for their treatment (Bağdigen & Karaman Özlü, 2018). Ruhaiyem et al. found that a significant majority of patients (88%) undergoing surgical procedures reported experiencing surgical fear (Ruhaiyem et al., 2016).

While experiencing a state of ill-health and subsequent hospitalisation, irrespective of the underlying cause, can engender feelings of fear, the prospect of undergoing an surgical procedure can evoke an even greater sense of fear (Theunissen et al., 2014). Surgical fear is an umbrella term encompassing a multitude of individual fears, which can be considered either in isolation or collectively. The predominant concern among patients is the anticipation of significant discomfort during the postoperative recovery period, often stemming from the fear of pain tolerance (Theunissen et al., 2014). Patients may also experience a range of other fears, including uncertainty, the prospect of anaesthesia, the possibility of being bedridden, the potential loss of consciousness, the risk of loss of body integrity, the prospect of blood transfusions, the discomfort of injections, and the possibility of death (Şahin Altun et al., 2017; Theunissen et al., 2014).

In the vast majority of cases, the fear expressed by patients prior to undergoing surgery is considered to be a natural response (Bağdigen & Karaman Özlü, 2018). Nevertheless, a high level of surgical fear has been demonstrated to have a detrimental effect on the postoperative recovery process (Bağdigen & Karaman Özlü, 2018; Theunissen et al., 2014).

The psychological stress response elicited by the surgical fear has been shown to induce an imbalance in the hemostatic system (Bağdigen & Karaman Özlü, 2018; Sürme & Çimen, 2022). Consequently, the postoperative recovery period is prolonged (Sürme & Çimen, 2022). It is important to note that the psychological stress response triggered by this fear can lead to various physiological complications. These include hyperglycaemia, heightened protein catabolism, and hypertension. (Bağdigen & Karaman Özlü, 2018; Sürme & Çimen, 2022). It has been documented that patients who experience surgical fear in the preoperative period demonstrate a decline in overall quality of life, accompanied by an escalation in postoperative hospital stay, morbidity and mortality rates (Bağdigen & Karaman Özlü, 2018). It has also been documented that a patient's surgical fear can lead to an increased consumption of anaesthetic agent during the procedure, as well as a heightened requirement for analgesics in the postoperative period (Bağdigen & Karaman Özlü, 2018).

The determination of the level of fear is an inadequate method for the management of the undesirable effects caused by surgical fear. Elimination of the fear will not be possible without identification of the underlying causes of surgical fear. In the context of surgical fear management, it is imperative to ascertain the factors that precipitate fear, in addition to the extent of the fear experienced (Taylan & Çelik, 2022). Determining the level of surgical fear and the factors affecting fear in the preoperative period is of great importance in order to provide the necessary data to improve surgical care and to plan targeted interventions. It has been demonstrated that this will also assist in the enhancement of patient outcomes, satisfaction and adherence to treatment (Theunissen et al., 2014; Sürme & Çimen, 2022; Taylan & Çelik, 2022).

A substantial number of studies have been conducted to investigate patients' levels of surgical fear prior to surgery (Demir & Yılmaz, 2022; Engel et al., 2023; Karabulut et al., 2023; Kaya & Karaman Özlü, 2019; Kılınc & Karaman Özlü, 2023; Sürme & Çimen, 2022; Şahin Altun et al., 2017; Taylan & Çelik, 2022 ). A significant proportion of these studies were undertaken in the domain of neurosurgery, caesarean section, mastectomy, day surgery and geriatric surgery (Can & Beydağ, 2023; Çolak & Vural, 2023; Engel et al., 2023; Karabulut et al., 2023; Sürme & Çimen, 2022 ). Moreover, a range of studies are conducted on all patients scheduled to undergo elective surgery, irrespective of the surgical procedure (Kaya & Karaman Özlü, 2019; Kılınc & Karaman Özlü, 2023; Şahin Altun et al., 2017). The extent of surgical fear in patients was reported as low in some studies, and as moderate in others. Nevertheless, the number of studies that have been conducted in order to ascertain the level of

fear experienced by individuals prior to undergoing TKA is limited (Dinç & Yılmaz Güven, 2023; Mete & Avcı Işık, 2020). In the aforementioned studies, the potential factors that may have influenced the degree of surgical fear were not thoroughly evaluated. The objective of this study was to ascertain the extent of surgical fear and its associated factors in patients undergoing TKA. The identification of this fear and the factors associated with it will provide a more complete understanding of the role of surgical nurses in ensuring the safety of patients.

The aim of this study was to determine the level of surgical fear and the factors affecting it in patients undergoing TKA.

## Methods

### Study Design

This study is a descriptive, cross-sectional study.

### Setting

The study was conducted between 1 April 2023 and 1 September 2023 in the orthopaedics and traumatology clinic of a training and research hospital in Izmir.

### Population and Sample of the Study

The population of the study consisted of 200 patients who were admitted to the orthopaedics and traumatology clinic between 1 April and 1 September 2023 to undergo TKA. The study was concluded with the participation of 181 patients. A total of 19 patients were excluded from the study due to their failure to consent to participate. The sample size of the study was determined by a priori power analysis. For this, the data in Dinç and Yılmaz Güven's (2023) study were taken as basis (Dinç & Yılmaz Güven, 2023). Assuming a Type I error of 0.05, a test power of 0.95 and an effect size of 0.64, the minimum required sample size was determined to be 166. However, in consideration of the potential for data loss, the target sample size was set at 180. In this direction, the study's sample size can be considered adequate.

### Tools

The research data were collected with the "Patient Introduction Form" and "Surgical Fear Scale".

**Patient Introduction Form:** The researchers prepared the form in accordance with the literature review, and it was subsequently divided into two sections. The first comprised socio-demographic information, while the second section incorporated clinical characteristics. (Bağdigen & Karaman Özlü, 2018; Dinç & Yılmaz Güven, 2023; Theunissen et al., 2014). Socio-demographic characteristics included six questions aiming to determine the age, gender, marital status, educational level, employment and income status of the patients. In the clinical characteristics section, there

were questions about the duration of hospital stay in the preoperative period, having a chronic disease, previous hospitalisation, history of surgery and TKA surgery, type of anaesthesia to be administered, American Society of Anaesthesiologists (ASA) Physical Status Classification System score, knowledge about TKA, source of information, pain intensity, and support received from relatives and nurses. Pain intensity was determined by visual analogue scale (VAS). Patients were asked to rate their pain intensity on a 10 cm long horizontal line between zero (no pain) and ten (unbearable pain).

**Surgical Fear Scale (SFS):** SFS was developed in 2014 by Theunissen et al (2014). The scale comprises eight questions with the objective of ascertaining the level of fear experienced by patients who are scheduled to undergo elective surgery. It consists of two sub-dimensions: fear of short-term (SFS-S) and long-term (SFS-L) consequences of the surgery. Fear of the short-term consequences of surgery includes fear of surgery, anaesthesia, postoperative pain and unpleasant side effects such as nausea and vomiting. The long-term consequences of the operation include fear of deteriorating health after the surgery and not being able to recover completely, fear that the surgery will be unsuccessful and that the recovery period will be long. Items 1 to 4 on the scale are indicative of the patient's fear of the short-term consequences of the surgery, while items 5 to 8 are indicative of the patient's fear of the long-term consequences of the surgery. The total score that can be obtained from each sub-dimension of the scale varies between 0-40. The scale is an 11-point Likert-type scale ranging from zero (I am not afraid at all) to 10 (I am very afraid). The total score that can be obtained from the scale varies between 0-80. An increase in the score is indicative of an increase in the level of surgical fear experienced by patients. The internal consistency Cronbach's alpha coefficient of the scale was 0.89, 0.86 for the short-term outcomes (SFS-S) sub-dimension, was found to be 0.87 for the long-term outcomes (SFS-L) sub-dimension. The Turkish validity and reliability study of SFS was conducted by Bağdigen and Karaman Özlü in 2017. In the adaptation study, Cronbach's alpha value was calculated as 0.93 for the total scale, 0.96 for SFS-S and 0.90 for SFS-L (Bağdigen & Karaman Özlü, 2018). In this study, the Cronbach alpha reliability coefficient of the total scale was calculated as 0.81.

### Procedure

The data were collected via face-to-face interviews, held one day prior to the operation, when the patients were in a state of comfort. It took approximately 7-10 minutes for the patients to fill out the forms.

## Data Analysis

Descriptive statistics (number, percentage, mean, standard deviation, minimum and maximum) were used to evaluate the data obtained from the study. Normality assumption was checked by Shapiro Wilk test. Mann Whitney U, Kruskal Wallis test and Spearman Correlation analysis were used to evaluate the data obtained from the study. Analyses were performed using IBM SPSS 25 (IBM Corp. Released 2017. IBM SPSS Statistics for Windows, Version 25.0. Armonk, NY: IBM Corp.) programme.

## Ethical Consideration

Ethics committee approval was received for this study from the ethics committee of Izmir Bakircay University (Date: March 15, 2023, Number: 920). Written permission was obtained from the chief physician of the hospital where the study would be conducted and from the patients. The study was conducted in accordance with the Declaration of Helsinki. In order to use the SFS in the study, permission was obtained by e-mail from the authors involved in the adaptation of the scale into Turkish.

## Results

The mean age of the patients included in the study was  $68.54 \pm 7.06$  (min: 43 max: 88) years (Table 1).

Characteristics	Number	Percentage
<b>Gender</b>		
Man	37	20.4
Woman	144	79.6
<b>Marital status</b>		
Single	48	26.5
Married	133	73.5
<b>Education level</b>		
Illiterate	32	17.7
Primary education	102	56.4
Secondary education	18	9.9
High school	17	9.4
Licence	12	6.6
<b>Employment status in a regular job</b>		
Yes	47	26.0
No	134	74.0
<b>Income status</b>		
Income less than expenditure	77	42.5
Income equals expenditure	88	48.6
Income more than expenditure	16	8.8
<b>Total</b>	<b>181</b>	<b>100</b>

The mean preoperative hospital stay of the patients was  $1.7 \pm 1.23$  (min: 0 max: 9) days. The mean preoperative pain intensity of the patients was  $6.88 \pm 2.77$  (min: 0 max: 10) out of ten. The mean support score of the patients received from their relatives in the preoperative period was  $9.02 \pm 1.62$  (min: 0 max: 10) and the mean support score of the patients received from nurses was  $9.02 \pm 1.33$  (min: 0 max: 10). The distribution of the patients according to their clinical characteristics is shown in Table 2.

Variable	Number	Percentage
<b>Having comorbidities</b>		
Yes	144	79.6
No	37	20.4
<b>Comorbidity*</b>		
Neurological Diseases	8	4.4
Chronic obstructive pulmonary disease/asthma	11	6.1
Cardiovascular Diseases	16	8.8
Diabetes	49	27.1
Hypertension	120	66.3
<b>History of hospitalization</b>		
Yes	142	78.5
No	39	21.5
<b>History of surgery</b>		
Yes	122	67.4
No	59	32.6
<b>History of total knee arthroplasty</b>		
Yes	63	34.8
No	118	65.2
<b>Type of anesthesia planned for the surgery</b>		
Spinal	17	9.4
Combined	24	13.3
Epidural	59	32.6
General	81	44.8
<b>ASA score</b>		
1	6	3.3
2	141	77.9
3	34	18.8
<b>Knowledge of the surgery to be performed</b>		
Yes	161	89.0
No	20	11.0
<b>Source of information about the surgery*</b>		
Television	4	2.2
Internet	9	5.0
Family members/friends	36	19.9
Physician	131	72.4
Nurse	131	72.4
*It was indicated that multiple responses were provided.		

<b>Table 3.</b> <i>Distribution of Surgical Fear Scale Mean Scores According to Different Socio-demographic Variables</i>			
<b>Variable</b>	<b>Short Term Fear Subscale Mean ± SD</b>	<b>Long-term Fear Subscale Mean ± SD</b>	<b>SFS Total Score Mean ± SD</b>
<b>Gender</b>			
Woman	16.94±9.89 (min:0 max: 40)	12.17±9.42 (min:0 max: 40)	29.11±16.97 (min:0 max: 72)
Man	12.86±9.39 (min:0 max: 40) U: 2012.5 p: 0.022	12.51±9.65 (min:0 max: 36) U: 2609.0 p: 0.846	25.38±16.50 (min:0 max: 72) U: 2351.5 p: 0.271
<b>Marital status</b>			
Single	15.48±9.68 (min:0 max: 40)	12.35±9.42 (min:0 max: 40)	27.83±16.73 (min:0 max: 71)
Married	17.83±10.41 (min:0 max: 40) U: 2847.0 p: 0.267	11.96±9.60 (min:0 max: 32) U: 3154.5 p: 0.904	29.79±17.45 (min:1 max: 72) U: 3063.0 p: 0.678
<b>Education level</b>			
Illiterate	12.88±8.68 (min:0 max: 29)	11.88±10.78 (min:0 max: 35)	24.75±18.25 (min:0 max: 62)
Primary education	16.82±9.68 (min:0 max: 40)	13.25±9.47 (min:0 max: 40)	30.07±17.16 (min:0 max: 72)
Secondary education	13.89±5.20 (min:7 max: 29)	11.56±8.38 (min:0 max: 36)	25.44±9.55 (min:10 max: 45)
High school	17.94±12.43 (min:0 max: 40)	10.35±7.10 (min:0 max: 25)	28.29±17.71 (min:0 max: 65)
Licence	19.33±14.39 (min:0 max: 40) X <sup>2</sup> : 6.001 p: 0.199	8.42±9.70 (min:0 max: 23) X <sup>2</sup> : 4.189 p: 0.381	27.75±18.76 (min:0 max: 53) X <sup>2</sup> : 3.701 p: 0.448
<b>Employment status in a regular job</b>			
Yes	16.81±8.28(min:3 max: 40)	11.98±7.31 (min:0 max: 32)	28.79±14.56 (min:6 max: 72)
No	15.86±10.43 (min:0 max: 40) U: 2976.5 p: 0.576	12.34±10.11 (min:0 max: 40) U: 3096.5 p: 0.865	28.19±17.69 (min:0 max: 71) U: 3089.50 p: 0.967
<b>Income status</b>			
Income less than expenditure	16.73±9.52 (min:0 max: 40)	13.82±9.71 (min:0 max: 40)	30.55±16.76 (min:0 max: 72)
Income equals expenditure	15.50±10.24 (min:0 max: 40)	11.13±9.14 (min:0 max: 32)	26.63±17.19 (min:0 max: 72)
Income more than expenditure	16.44±10.31 (min:3 max: 40) X <sup>2</sup> : 0.745 p: 0.689	10.81±9.25 (min:0 max: 30) X <sup>2</sup> : 3.170 p: 0.205	27.25±15.60 (min:6 max: 54) X <sup>2</sup> : 2.077 p: 0.354
<b>Having comorbidities</b>			
Yes	15.72±9.51 (min:0 max: 40)	12.22±9.44 (min:0 max: 40)	27.94±16.56 (min:0 max: 71)
No	17.62±11.32 (min:0 max: 40) U: 2476.5 p: 0.509	12.32±9.60 (min:0 max: 35) U: 2628.5 p: 0.900	29.95±18.29 (min:0 max: 72) U: 2587.5 p: 0.788
<b>History of hospitalization</b>			
Yes	16.19±9.86 (min:0 max: 40)	12.59±9.92 (min:0 max: 40)	28.78±17.17 (min:0 max: 72)
No	15.79±10.18 (min:0 max: 40) U: 2686.0 p: 0.774	10.97±7.44 (min:0 max: 32) U: 2563.0 p: 0.476	26.77±15.96 (min:0 max: 72) U: 2577.5 p: 0.509
<b>History of surgery</b>			
Yes	15.70±9.98 (min:0 max: 40)	11.57±9.92 (min:0 max: 40)	27.28±17.16 (min:0 max: 71)
No	16.93±9.78 (min:0 max: 40) U: 3352.5 p: 0.455	13.63±8.28 (min:0 max: 32) U: 3057.0 p: 0.100	30.56±16.25 (min:0 max: 72) U: 3244.0 p: 0.282
<b>History of total knee arthroplasty</b>			
Yes	13.30±9.49 (min:0 max: 40)	8.56±9.22(min:0 max: 40)	21.86±16.09 (min:0 max: 65)
No	17.60±9.83 (min:0 max: 40) U: 2784.5 p: 0.005	14.21±9.00 (min:0 max: 36) U: 2300.0 p: 0.0001	31.81±16.34 (min:0 max: 72) U: 2427.0 p: 0.0001
<b>Type of anesthesia planned for the surgery</b>			
General	15.62±6.99 (min:0 max: 35)	13.93±6.86 (min:0 max: 36)	29.54±10.90 (min:6 max: 63)
Spinal	12.71±10.61 (min:1 max: 36)	8.82±11.74 (min:0 max: 14)	21.53±17.71 (min:1 max: 36)
Epidural	18.68±11.86 (min:0 max: 40)	12.34±10.02 (min:0 max: 33)	31.02±19.82 (min:0 max: 72)
Combined	13.83±11.53 (min:0 max: 30) X <sup>2</sup> : 6.022 p: 0.111	8.75±12.41 (min:0 max: 35) X <sup>2</sup> : 14.450 p: 0.002	22.58±22.80 (min:0 max: 62) X <sup>2</sup> : 8.231 p: 0.041
<b>ASA score</b>			
1	13.00±11.42 (min:0 max: 28)	9.00±10.26 (min:0 max: 28)	22.00±20.07 (min:0 max: 54)
2	16.16±9.85 (min:0 max: 40)	11.73±9.13 (min:0 max: 35)	27.89±16.83 (min:0 max: 72)
3	16.41±10.10 (min:0 max: 40) X <sup>2</sup> : 0.872 p: 0.647	14.94±10.30 (min:0 max: 36) X <sup>2</sup> : 3.916 p: 0.141	31.35±16.64 (min:0 max: 65) X <sup>2</sup> : 2.197 p: 0.333
<b>Knowledge of the surgery to be performed</b>			
Yes	15.93±9.60 (min:0 max: 40)	12.09±9.41 (min:0 max: 40)	28.02±16.70 (min:0 max: 72)
No	17.50±12.31 (min:0 max: 40) U: 1555.5 p: 0.805	13.50±9.88 (min:0 max: 33) U: 1512.0 p: 0.656	31.00±18.60 (min:3 max: 71) U: 1497.0 p: 0.609

In this study, the total score of the SFS was  $28.35 \pm 16.89$  (min: 0 max: 72), the SFS-S subscale score was  $16.10 \pm 9.91$  (min: 0 max: 40) and the SFS-L subscale score was  $12.24 \pm 9.44$  (min: 0 max: 40). These scores showed that the surgical fear level of the patients was low (not shown in the Table).

A statistically significant difference was obtained between the mean total scores of the Short-Term Fear subscale according to gender ( $p < .05$ ). The mean score of women was higher than the mean score of men (Table 3).

In this study, a statistically significant difference was found between the mean scores of the subscale and total scores of the SFS according to the status of previous knee surgery ( $p < .05$ ). The mean scores of SFS sub-dimension and total scores of people who had not had knee surgery before were higher than the mean scores of people who had knee surgery (Table 3).

A statistically significant difference was determined between the type of anaesthesia planned to be

administered in the surgery and the mean total score of the Surgical Fear scale ( $p < .05$ ). According to Bonferroni tests, statistically significant differences were found between combined and spinal anaesthesia types and general and epidural anaesthesia types. The mean scale scores of general and epidural anaesthesia types were higher than the mean scale scores of combined and spinal anaesthesia types (Table 3).

The relationship between the Surgical Fear scale and its sub-dimensions and the scores of age, length of hospital stay, pain intensity, and support from relatives and nurses is shown in Table 4. A statistically significant, negative and low-level relationship was found between the mean score of the long-term fear subscale and the duration of hospital stay ( $r: -0.184$   $p: .013$ ), the support provided by relatives ( $r: -0.195$   $p: .009$ ) and the support provided by nurses ( $r: -0.242$   $p: .001$ ). A statistically significant, positive and low-level relationship was determined between the preoperative pain intensity and the mean score of the long-term fear subscale ( $r: 0.176$   $p: .018$ ).

**Table 4.**  
*The Relationship Between Surgical Fear Scale and Its Subscales and Age, Length of Hospital Stay, Pain Severity, Relative and Nurse Support Ratings*

Age	r	-0.041	0.0001	-0.020
	p	0.588	0.998	.789
Duration of hospitalization	r	0.001	-0.184	-0.112
	p	0.986	0.013	.135
Pain intensity	r	-0.035	0.176	0.087
	p	0.636	0.018	.244
Support from relatives	r	-0.062	-0.195	-0.116
	p	0.408	0.009	.119
Support from nurses	r	-0.003	-0.242	-0.102
	p	0.966	0.001	.172

## Discussion

Surgical fear is an emotional reaction that has been observed in a significant number of patients prior to undergoing surgery (Bağdigen & Karaman Özlü, 2018). It is an anticipated response that patients will experience feelings of surgical anxiety during the preoperative period. However, elevated levels of fear can result in numerous complications, including increased mortality and morbidity rates, prolonged recovery periods, and extended hospitalisation durations (Bağdigen & Karaman Özlü, 2018). In this study, it was found that patients undergoing TKA experienced a mild level of surgical fear ( $28.35 \pm 16.89$ ). In similar studies conducted with patients undergoing TKA, it was determined that the level of surgical fear of patients was low (Dinç & Yılmaz Güven, 2023; Mete & Avcı Işık, 2020). The present findings are consistent with the conclusions of previous research. However, the surgical fear levels of patients who will undergo general surgery

( $56.27 \pm 18.18$ ), caesarean section ( $51.14 \pm 8.88$ ), septorhinoplasty ( $46.8 \pm 23.4$ ), elective surgery ( $37.5 \pm 21.11$ ) are higher than the fear level obtained in this study (Can & Beydağ, 2023; Demir & Yılmaz, 2022; Karabulut et al., 2023; Kaya & Karaman Özlü, 2019 ). The period between the decision being made about TKA surgery and the operation being performed is longer than for similar elective surgical procedures. Furthermore, patients have been found to experience prolonged periods of discomfort. The performance of stair-climbing, walking and bending movements is impaired in patients due to pain. Patients regard TKA as being a last resort for the alleviation of pain and the enhancement of autonomy in movement. It is hypothesised that all of these factors may have an impact on the level of fear experienced by patients.

The mean short-term surgical fear levels ( $16.10 \pm 9.91$ ) were observed to be higher than the long-term fear levels ( $12.24 \pm 9.44$ ) of the patient cohort prior to TKA surgery. As

indicated in the relevant literature, studies have demonstrated that patients experience elevated levels of short-term surgical fear in comparison to long-term fear levels, irrespective of the surgical intervention (Akutay & Ceyhan, 2023; Can & Beydağ, 2023; Dinç & Yılmaz Güven, 2023; Engel et al., 2023; Kaya & Karaman Özlü, 2019; Taylan & Çelik, 2022). This indicates that patients experience heightened levels of fear with regard to surgery, anaesthesia, postoperative pain and potential side effects. This is an expected finding. Because it is known that patients who will undergo surgery have higher short-term fear levels due to reasons such as uncertainty, loss of control, pain expectation and having previous negative experiences. In this study, it is thought that the feeling of uncertainty about the intraoperative and postoperative period may have increased the short-term surgical fear levels of the patients. Encouraging patients to express their fears in the preoperative period and planned trainings in this direction may help to reduce patients' fears.

Short-term fear levels of female patients were significantly higher than those of male patients. As indicated by the extant literature, female patients exhibit elevated mean short-term fear scores in the preoperative period when compared to male patients (Demir & Yılmaz, 2022; Kılınc & Karaman Özlü, 2023; Sürme & Çimen, 2022). This phenomenon may be attributable to the hypothesis that females exhibit heightened levels of emotionality and fragility, consequent to variations in estrogen and progesterone hormonal levels. In addition, it has been stated that being away from home and family, especially children, during the surgical process may cause more fear in women (Kaya & Karaman Özlü, 2019; Kılınc & Karaman Özlü, 2023). The present situation indicates that further interventions are required in order to address the issue of short-term surgical fears experienced by female patients. In addition, it is thought that the fact that male patients hesitate to express their fears due to the structure of Turkish society may also cause this result. In this context, it is recommended that male patients receive more intensive encouragement to articulate their fears regarding surgery during the preoperative period. The establishment of a relationship based on trust with patients and the ensuring of open communication are prerequisites for this. Patients may be posed open-ended questions with a view to encouraging the expression of their feelings. Patients' awareness that surgical fear is a prevalent condition has the potential to engender a sense of increased ease and comfort.

In the present study, it was determined that the history of surgery did not have any significant impact on the manifestation of surgical fear. In addition, it was

determined that the mean scores of the subscale and total scores of the SFS were significantly higher in patients who had not undergone TKA before. Similar to this study, Can and Beydağ determined that having undergone the planned surgery before decreased the level of surgical fear (Can & Beydağ, 2023). This finding indicates that patients who have previously undergone the same surgical procedure may exhibit reduced levels of fear, potentially attributable to enhanced comprehension of the anticipated experience, encompassing the recovery process and potential outcomes. In this regard, it is recommended that patients undergoing TKA for the first time receive enhanced support to facilitate their navigation of the fear of uncertainty.

As demonstrated in extant literature, the level of surgical fear has been shown to increase in direct proportion to the duration of hospitalisation in the preoperative period (Kaya & Karaman Özlü, 2019; Sürme & Çimen, 2022). In this study, on the contrary, it was determined that the long-term surgical fear levels of the patients decreased statistically significantly as the duration of hospital stay increased in the preoperative period. In this study, patients' long-term surgical fear may have decreased with prolonged preoperative hospital stay due to various factors. It can be hypothesised that increased time spent in the hospital environment may have reduced patients' fears by providing an opportunity for familiarisation with the surroundings, staff and procedures. Furthermore, extended stays may have afforded patients more opportunities for interaction with healthcare professionals, enabling them to solicit guidance and address concerns. Conversely, as the duration of hospitalisation increases, the efficacy of preoperative patient preparation and education may be enhanced. The combination of these factors may have contributed to patients feeling more informed, supported, and prepared for surgery, thereby reducing their fears.

The present study revealed a statistically significant negative and low-level relationship between the support provided to patients by relatives and nurses and the long-term fear subscale mean scores. This finding suggests that the provision of support from relatives and nurses of patients scheduled to undergo TKA is associated with a reduction in long-term surgical fear. It is also stated in the literature that an increase in preoperative social support is associated with a decrease in surgical fear levels among patients (Kaya & Karaman Özlü, 2019; Koivula et al., 2002). Our findings are parallel to the literature. These findings show that social support is an important factor in reducing surgical fear.

There are some limitations that should be taken into

consideration in this study. The first limitation is that the study was conducted in a single center and only with patients who would undergo TKA. Therefore, the results cannot be generalized to all patients. The study includes descriptive and disease-related findings that affect the surgical fear levels of the patients. Another limitation is that physical, environmental, psycho-spiritual or socio-cultural parameters that may affect surgical fear were not included in the study. This should not be ignored when evaluating the results of the study.

### Conclusion and Recommendations

This study showed that patients undergoing TKA experienced mild fear. It was determined that gender, history of TKA, type of anesthesia, length of hospital stay before surgery, pain intensity, support from patient relatives and nurses were factors associated with short-term or long-term surgical fear levels. Establishing protocols and organizing educational programs to control these factors associated with surgical fear will contribute to patient safety and desired patient outcomes by reducing surgical fear. In addition, providing psychosocial support is also important in reducing long-term surgical fear.

**Ethics Committee Approval:** Ethics committee approval was received for this study from the ethics committee of Izmir Bakircay University (Date: March 15, 2023, Number: 920).

**Informed Consent:** Written consent was obtained from patients.

**Peer-review:** Externally peer-reviewed.

**Author Contributions:** Concept – AOA, EK; Design - AOA, EK; Supervision - AOA; Resources - AOA, EK; Materials - AOA, EK; Data Collection and/or Processing - EK; Analysis and/or Interpretation - AOA, EK; Literature Search - AOA, EK; Writing Manuscript - AOA, EK; Critical Review - AOA

**Conflict of Interest:** The authors have no conflicts of interest to declare.

**Financial Disclosure:** The authors declared that this study has received no financial support.

### References

- Akutay, S., & Ceyhan, Ö. (2023). The relationship between fear of surgery and affecting factors in surgical patients. *Perioperative Medicine*, *12*(1), 1–8. <https://doi.org/10.1186/s13741-023-00316-0>
- Bağdigen, M., & Karaman Özlü, Z. (2018). Validation of the Turkish version of the surgical fear questionnaire. *Journal of Perianesthesia Nursing*, *33*(5), 708–714. <https://doi.org/10.1016/j.jopan.2017.05.007>
- Can, E., & Beydağ, K. D. (2023). Sezaryen hastalarının cerrahi korku düzeyini etkileyen faktörler. *Bandırma Onyedi Eylül Üniversitesi Sağlık Bilimleri ve Araştırmaları Dergisi*, *5*(2), 121–131. <https://doi.org/10.46413/boneyusbad.1247968>
- Çolak, S., & Vural, F. (2023). Determination of surgical fear levels of patients undergoing day surgery: Cross sectional and descriptive study. *Turkiye Klinikleri Journal of Nursing Sciences*, *15*(3), 599–606.
- Demir, P., & Yılmaz, M. (2022). Septorinoplasti öncesi cerrahi korku ile ameliyat sonrası ağrı şiddeti arasındaki ilişki: Prospektif tanımlayıcı bir çalışma. *Turkiye Klinikleri Journal of Nursing Sciences*, *14*(2), 311–320. <https://doi.org/10.5336/nurses.2021-85111>
- Dinç, G., & Yılmaz Güven, D. (2023). Total diz artroplastisi ameliyatı yapılan hastaların cerrahi korku düzeyleri ile ameliyat sonrası anksiyete ve mobilizasyon düzeyleri arasındaki ilişkinin incelenmesi: Tanımlayıcı ve ilişki arayıcı çalışma. *Turkiye Klinikleri Journal of Nursing Sciences*, *15*(2), 299–307. <https://doi.org/10.5336/nurses.2022-94552>
- Engel, S., Jacobsen, H. B., & Reme, S. E. (2023). A cross-sectional study of fear of surgery in female breast cancer patients: Prevalence, severity, and sources, as well as relevant differences among patients experiencing high, moderate, and low fear of surgery. *PLoS ONE*, *18*(6), e0287641. <https://doi.org/10.1371/journal.pone.0287641>
- Karabulut, N., Gürçayır, D., Abi, Ö., Kızıoğlu Ağgöl, B., & Söylemez, N. (2023). Does surgery cause anxiety, stress and fear in geriatric patients? *Psychogeriatrics*, *23*(5), 808–814. <https://doi.org/10.1111/psyg.13000>
- Kaya, M., & Karaman Özlü, Z. (2019). Elektif cerrahi bekleyen hastalarda cerrahi korkunun sosyal destek algısı ilişkisinin belirlenmesi. *Journal of Anatolia Nursing and Health Sciences*, *22*(4), 281–290. <https://doi.org/10.17049/ataunihem.550029>
- Kılınç, T., & Karaman Özlü, Z. (2023). Elektif cerrahi planlanan hastalarda cerrahi korku, uyku ve uykusuzluk durumu arasındaki ilişkinin belirlenmesi. *Sağlık Bilimleri Üniversitesi Hemşirelik Dergisi*, *5*(3), 205–212. <https://doi.org/10.48071/sbuhemşirelik.1268416>
- Koivula, M., Paunonen-Ilmonen, M., Tarkka, M. T., Tarkka, M., & Laippala, P. (2002). Social support and its relation to fear and anxiety in patients awaiting coronary artery bypass grafting. *Journal of Clinical Nursing*, *11*(5), 622–633. <https://doi.org/10.1046/j.1365-2702.2002.00653.x>
- Mete, Z., & Avcı Işık, S. (2020). Total diz protezi ameliyatı planlanan hastaların cerrahi korku düzeyleri ile ameliyat sonrası ağrı düzeyleri arasındaki ilişkinin belirlenmesi. [Yüksek Lisans Tezi, Başkent Üniversitesi Sağlık Bilimleri Enstitüsü].
- OECD. (2021). Hip and knee replacement. In *Health at a Glance 2021: OECD Indicators* (pp. 132–134). Paris: OECD.
- Ruhaiem, M. E., Alshehri, A. A., Saade, M., Shoabi, T. A., Zahoor, H., & Tawfeeq, N. A. (2016). Fear of going under general anesthesia: A cross-sectional study. *Saudi Journal of Midwifery and Health Sciences*



- Journal of Anaesthesia*, 10(3), 317–321. <https://doi.org/10.4103/1658-354X.179094>
- Şahin Altun, Ö., Karaman Özlü, Z., Olçun, Z., & Kaya, M. (2017). Does the fear of surgery prevent patients from sleeping? *Anadolu Hemşirelik ve Sağlık Bilimleri Dergisi*, 20(04), 260–266.
- Sürme, Y., & Çimen, Ö. (2022). Preoperative surgical fear and related factors of patients undergoing brain tumor surgery. *Journal of Perianesthesia Nursing*, 37(6), 934–938. <https://doi.org/10.1016/j.jopan.2022.04.006>
- Taylan, S., & Çelik, G. K. (2022). The effect of preoperative fear and related factors on patients' postcataract surgery comfort level: A regression study. *Journal of Perianesthesia Nursing*, 37(3), 398–403. <https://doi.org/10.1016/j.jopan.2021.08.014>
- Theunissen, M., Peters, M. L., Schouten, E. G. W., Fiddelaers, A. A. A., Willemsen, M. G. A., Pinto, P. R., ... Marcus, M. A. E. (2014). Validation of the surgical fear questionnaire in adult patients waiting for elective surgery. *PLoS ONE*, 9(6), 1–9. <https://doi.org/10.1371/journal.pone.0100225>