

RESEARCH ARTICLE

INVESTIGATION OF THE ANXIETY LEVELS OF PATIENTS UNDERGOING SURGERY DURING THE COVID-19 PANDEMIC

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Abstract

Purpose: This study aimed to determine the anxiety levels of patients who underwent surgery during the COVID-19 pandemic. **Methods and material:** The study population consisted of 320 patients who underwent surgery at a university hospital, and the sample included 175 patients. For data collection, a descriptive characteristics form including patients' demographic data and Visual Analog Scale (VAS) fear scores concerning their disease, COVID-19, and hospitalization, the Coronavirus Anxiety Scale (CAS), and the State-Trait Anxiety Inventory-anxiety scale were used. Significance was evaluated at the $p < 0.05$ level. **Results:** It was determined that 50.9% of the participants were female, 50.3% were primary school graduates, and the mean age was 54.37 ± 16.56 years. The patients' mean VAS fear scores concerning their disease, COVID-19, and hospitalization were 3.21 ± 3.31 , 2.93 ± 3.04 , and 2.20 ± 2.81 , respectively. The mean CAS score was 1.38 ± 2.59 , and the mean state anxiety score was 34.50 ± 9.59 . It was determined that the state anxiety scores statistically significantly differed according to educational level, previous hospitalization, and previous surgery ($p < 0.05$). **Conclusion:** In conclusion, the coronavirus anxiety levels of the patients who underwent surgery were low, but their state anxiety was at a higher level.

Keywords: Anxiety, surgical nursing, COVID-19, postoperative period

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ΕΡΕΥΝΗΤΙΚΗ ΕΡΓΑΣΙΑ

ΔΙΕΡΕΥΝΗΣΗ ΤΩΝ ΕΠΙΠΕΔΩΝ ΑΓΧΟΥΣ ΤΩΝ ΑΣΘΕΝΩΝ ΠΟΥ ΥΠΟΒΑΛΛΟΝΤΑΙ ΣΕ ΧΕΙΡΟΥΡΓΙΚΗ ΕΠΕΜΒΑΣΗ ΚΑΤΑ ΤΗ ΔΙΑΡΚΕΙΑ ΤΗΣ ΠΑΝΔΗΜΙΑΣ COVID-19

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Περίληψη

Σκοπός της μελέτης ήταν η διερεύνηση των επιπέδων άγχους των ασθενών που υποβάλλονται σε χειρουργική επέμβαση κατά τη διάρκεια της πανδημίας Covid-19. **Υλικό και μέθοδος:** Το δείγμα της μελέτης ήταν 320 ασθενείς που υποβλήθηκαν σε χειρουργική επέμβαση σε πανεπιστημιακό νοσοκομείο και το δείγμα αποτελούνταν από 175 ασθενείς. Για τη συλλογή των δεδομένων χρησιμοποιήθηκε η κλίμακα «The Coronavirus Anxiety Scale (CAS)» και η κλίμακα «The State-Trait Anxiety Inventory (STAI)» όπως επίσης η κλίμακα «Visual Analog Scale». Η στατιστική σημαντικότητα αξιολογήθηκε στο επίπεδο $p < 0,05$. **Αποτελέσματα:** Διαπιστώθηκε ότι το 50,9% των ασθενών που συμμετείχαν στη μελέτη ήταν γυναίκες, το 50,3% ήταν απόφοιτοι πρωτοβάθμιας εκπαίδευσης και η μέση ηλικία ήταν $54,37 \pm 16,56$ έτη. Διαπιστώθηκε ότι το μέσο επίπεδο φόβου για τον κορονοϊό ήταν $3,21 \pm 3,31$, το μέσο επίπεδο φόβου για τον κορονοϊό ήταν $2,93 \pm 3,04$ και το μέσο επίπεδο φόβου για τη νοσηλεία ήταν $2,20 \pm 2,81$. Επιπλέον, διαπιστώθηκε ότι το μέσο επίπεδο παροδικού άγχους για τον κορονοϊό ήταν $1,38 \pm 2,59$ και το μέσο επίπεδο μόνιμου άγχους ήταν $34,50 \pm 9,59$. Στη μελέτη διαπιστώθηκε ότι η βαθμολογία του παροδικού άγχους παρουσίασε στατιστικά σημαντική διαφορά ανάλογα με την εκπαίδευση, την προηγούμενη νοσηλεία και την προηγούμενη χειρουργική επέμβαση ($p < 0,05$). **Συμπεράσματα:** Τα επίπεδα άγχους των ασθενών που υποβλήθηκαν σε χειρουργική επέμβαση ήταν χαμηλά και τα επίπεδα παροδικού άγχους ήταν υψηλότερα

Λέξεις Κλειδιά: Άγχος, Χειρουργική νοσηλευτική, ιός COVID-19, μετά τη χειρουργική επέμβαση

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INTRODUCTION

The new coronavirus disease (COVID-19), which emerged in 2019 and rapidly spread across the whole world, was soon declared a 'pandemic'. (1) This virus causes respiratory tract infection and affects not only the mental but also the physical health of individuals. It has been observed that individuals' fear, anxiety, and stress levels increased during the emergence of the pandemic and with the growing number of cases. (2,3)

The COVID-19 pandemic has revealed the necessity of making regulations in healthcare similar to other fields, and in line with the measures taken, it was decided to postpone operations other than emergency surgery and some operations in patients with cancer. (4,5)

Undergoing surgery during the pandemic or surgery being postponed due to COVID-19 has increased the anxiety and fear levels of patients and their families. The postoperative period is normally a period when patients are at a high risk of developing complications, and COVID-19 further increased this risk. (6)

It is reported that performing surgery in asymptomatic or symptomatic COVID-19 cases increases perioperative morbidity and mortality rates. (5) Therefore, the implementation of COVID-19 measures in the perioperative period in line with the recommendations of relevant guidelines can reduce morbidity and mortality rates. Among the practices that have been suggested to reduce the negative physiological and psychological effects of COVID-19 are transferring patients with a negative COVID-19 test to normal patient

rooms in the postoperative period, daily evaluation of body temperature and respiratory symptoms, isolating the patient if there is a new onset of fever and cough and performing necessary tests to exclude the suspicion of COVID-19 infection, admission of patients with suspected COVID-19 or those with a positive COVID-19 to single rooms with adequate oxygen supply, and compliance of healthcare professionals with COVID-19 measures. (7, 8)

Although there are studies examining the anxiety and stress status of the general population and healthcare workers in the COVID-19 pandemic, we found no study that investigated the anxiety status of patients undergoing surgery. Therefore, in this study, we aimed to determine the anxiety levels of patients who underwent surgery during the COVID-19 pandemic.

MATERIAL AND METHOD

Research design: The research was descriptive cross-sectional design.

Study population-sample: The study population consisted of 320 patients who underwent surgery at a health application and research hospital between March and June 2021. The power of a study is expressed as $1-\beta$ (β = probability of Type II error), and generally studies should have 80% power. In this study, the number of participants to be included in the sample was determined as 175 to obtain 80% power at the $\alpha = 0.05$ level in total population of 320 people. Patients aged over 18 years, who agreed to participate in the study, were conscious, had no visual and hearing impairment, were literate, had no psychiatric diagnosis, and had no neurological problems were included in the

study. The data of patients who decided to withdraw from the study after providing consent were excluded from the sample.

Data Collection Tools: A descriptive characteristics form developed by the researchers in line with the literature, the Coronavirus Anxiety Scale (CAS), and the State-Trait Anxiety Inventory (STAI) were used to collect data. Prior to commencing the study, a pilot application was undertaken to assess the intelligibility and applicability of the scale items. The patients included in the pilot study were not included in the sample.

Descriptive Characteristics Form: This form included questions on the patients' age, gender, education level, comorbidities, type of surgery, fear level related to the disease, fear level related to COVID-19, and fear level related to hospitalization. The fear levels of the patients concerning their disease, COVID-19, and hospitalization were evaluated using the Visual Analog Scale.

CAS: This instrument was developed by Lee et al., (9) to quickly and reliably identify possible cases of dysfunctional anxiety and determine the severity of anxiety symptoms that may be observed in connection with patients' psychological reactions to COVID-19 during the coronavirus pandemic, which has become a societal crisis. CAS consists of five items scored on a five-point Likert scale and was developed using data collected from 775 adults accessed using an online survey. As a result of analyses, the measurement sensitivity has been calculated as 90% and the diagnostic specificity as 85%. It has been demonstrated that CAS can be used as a highly reliable and thematically and psychometrically consistent measurement tool with a Cronbach alpha value of 0.93 for internal

consistency. (10) In the current study, the Cronbach alpha value was found to be 0.89.

STAI: This inventory developed by Spielberger and Gorsuch in 1964 aims to measure the trait and state anxiety levels in normal and non-normal individuals. The validity and reliability analyses of the Turkish version of STAI were undertaken by Oner and Le Compte. (11, 12) STAI consists of two separate scales including 20 items each to measure state anxiety and trait anxiety levels. In the current study, the state anxiety scale of STAI was used to evaluate the patients to determine how they felt at a certain moment under certain conditions. In responding to the state anxiety scale, individuals are asked to consider the extent to which they experience a feeling, thought, or behavior described in an item and choose one of the four options: not at all, somewhat, moderately so, and very much so. In the trait anxiety scale, the frequency of these feelings, thoughts, or behaviors is evaluated with the options of almost never, sometimes, often, and almost always. In STAI, there are direct and reversed items. In reversed items expressing positive emotions, quadrivalent responses indicate low anxiety and univalent responses indicate high anxiety. While these statements are scored, those with a weight value of 1 are converted to 4, and those with a weight value of 4 are converted to 1. In direct items expressing negative emotions, quadrivalent responses indicate the highest anxiety. In the state anxiety scale of STAI, there are 10 reversed statements (items 1, 2, 5, 8, 10, 11, 15, 16, 19, and 20). Two separate keys are prepared for each of the direct and reversed statements. Thus, the total weight of the direct statements is calcu-

lated using one key and that of the reversed statements is calculated using with the second key. The total weighted score of the reversed items is subtracted from the total weighted score of the direct items. A predetermined constant value is added to this value. For the state anxiety scale, this constant value is 50, and the last obtained value constitutes the individual's anxiety score. A high score indicates a high anxiety level, and a low score indicates a low anxiety level. In the current study, the Cronbach alpha value was determined as 0.89.

Data Collection Method: Data were collected via a face-to-face interview on the postoperative first day using the data collection form prepared by the researchers. Written and verbal consent was obtained from the patients to administer the data collection form.

Data Analysis: The data obtained from the research were evaluated using the Statistical Package for the Social Sciences (IBM SPSS Statistics (IBM SPSS for Windows) v. 25. Descriptive statistical methods (number, percentage, mean, and standard deviation) were used while analyzing the data. The suitability of the data for a normal distribution was checked with the kurtosis-skewness values. In cases where the normal distribution assumption was satisfied, the independent-samples

t-test was used in the comparison of two groups, and analysis of variance was used to compare more than two groups. The reliability of the scales was analyzed with Cronbach's alpha. The results were evaluated at the 95% confidence interval and a significance level of $p < 0.05$.

Ethical Considerations: Before starting the research, written permissions were obtained from the hospital where the study was to be conducted, the Turkish Ministry of Health Scientific Research Commission on COVID-19, and the local ethics committee. The patients were informed that all the information included in the data collection form including their responses to scale items would be kept confidential and used for scientific purposes only. Written and verbal consent was obtained from the patients participating in the study.

RESULTS

Table 1 presents the findings on the demographic characteristics of the patients participating in the study. It was determined that 50.9% of the participants were women, 50.3% were primary school graduates, 78.9% were married, and the mean age was 54.37 ± 16.56 years.

Table 1: Demographic characteristics (n = 175)

Demographic characteristic		n	%
Age	Mean \pm SD 54.37 \pm 16.56		
BMI	Mean \pm SD 28.42 \pm 6.56		
Height	Mean \pm SD 166.88 \pm 8.74		

Weight	Mean ± SD 79.10 ± 18.51		
Gender	Female	89	50.9
	Male	86	49.1
Education level	Illiterate	9	5.1
	Literate	4	2.3
	Primary school	88	50.3
	Middle school	14	8.0
	High school	31	17.7
	University	24	13.7
	Postgraduate	5	2.9
Marital status	Single	37	21.1
	Married	138	78.9
Occupation	Housewife	71	40.6
	Worker	30	17.1
	Civil servant	17	9.7
	Other	57	32.6

SD: standard deviation; BMI: body mass index

When the distribution of the clinical characteristics of the participants was examined, it was determined that 73.1% had been previously hospitalized, 63.4% had a history of surgery, and surgery had been previously postponed due to COVID-19 in 97.1% (Table 2).

Table 2. Clinical characteristics of the patients (n=175)

		n	%
Operation time (min)	Mean ± SD 141.65 ± 71.94		
Previous hospitalization	Present	128	73.1
	Absent	47	26.9
Previous surgery	Present	111	63.4
	Absent	64	36.6
Comorbidities*	Diabetes	51	29.1
	Hypertension	50	28.6
	Heart disease	16	9.1
	Other	106	60.6
Smoking status	Smoker	43	24.6
	Non-smoker	132	75.4
Alcohol consumption	Present	12	6.9
	Absent	163	93.1
Previously postponed surgery due to COVID-19	Present	5	2.9
	Absent	170	97.1
Postoperative complication	Present	16	9.1
	Absent	159	90.9
Length of hospital stay	Less than one week	128	74.0
	One week or longer	47	26.0

*Some patients had more than one comorbidity

SD: standard deviation

The mean fear scores of the patients concerning their disease, COVID-19, and hospitalization were determined as 3.21 ± 3.31 , 2.93 ± 3.04 , and 2.20 ± 2.81 , respectively. The mean CAS score was 1.38 ± 2.59 , and the mean state anxiety score was 34.50 ± 9.59 (Table 3).

Table 3. Descriptive statistics on the scales

	N	Min	Max	Mean \pm SD
VAS fear score concerning the disease	175	0	10	3.21 ± 3.31
VAS fear score concerning COVID-19	175	0	10	2.93 ± 3.04
VAS fear score concerning hospitalization	175	0	10	2.20 ± 2.81
Coronavirus Anxiety Scale score	175	.00	12.00	1.38 ± 2.59
State-Trait Anxiety Scale-state anxiety score	175	20.00	56.00	34.50 ± 9.59

VAS: Visual Analog Scale; SD: standard deviation

The patients' state anxiety scores and VAS fear scores concerning hospitalization statistically significantly differed according to the education level ($p < 0.05$). The multiple comparisons performed to identify the groups that caused significant differences revealed that the primary school graduates had lower anxiety levels than the high school graduates according to the state anxiety scores. In relation to the patients' VAS fear scores concerning hospitalization, those having graduated from high school had lower VAS fear scores than those that had graduated from middle school. The state anxiety scores also statistically significantly differed according to the hospitalization and surgery history of the patients, with those that had not previously been hospitalized or undergone surgery having higher state anxiety levels ($p < 0.05$ for both). There were no statistically significant differences in the patients' state anxiety scores or fear levels concerning the current disease, COVID-19, and hospitalization according to their smoking status ($p >$

0.05 for all). However, when the CAS scores were examined, the non-smokers had higher scores

than the smokers (Table 4).

DISCUSSION

Although surgery is an option in the treatment of many diseases, it can cause mental disorders because it disrupts body integrity and affects daily living activities. Surgical patients may experience unknown anxieties and loss of autonomy. Patients hospitalized for surgical treatment may have negative feelings, thoughts, and behaviors related to their diseases, surgery, and hospital environment. Although patients usually consider that surgery is necessary to regain their healthy condition or improve their quality of life, most have fears related to surgery. With the onset of the pandemic, in addition to the risks of postoperative complications, the anxiety levels of patients also increased due to the fear of contracting COVID-19. While the fear of being infected is a major concern, during the peak

pandemic period when there were delays in medical treatments, the surgical treatment option adversely affected patients and led to an increase in their stress and anxiety levels in the preoperative

Table 4. Comparison of the scale scores according to the descriptive and clinical characteristics of the patients

Table 4. Comparison of the scale scores according to the descriptive and clinical characteristics of the patients

		CAS score	STAI-state anxiety score	VAS fear score concerning disease	VAS fear score concerning COVID-19	VAS fear score concerning hospitalization
		Mean ± SD/med	Mean ± SD/med	Mean ± SD/med	Mean ± SD/med	Mean ± SD/med
Gender	Female	1.64 ± 2.76/0.0	35.54 ± 9.82/35.0	3.64 ± 3.5/3.0	2.91 ± 2.99/2.0	2.39±2.87/1.0
	Male	1.1 ± 2.38/0.0	33.43 ± 9.28/33.5	2.76 ± 3.05/2.0	2.95 ± 3.1/2.0	2±2.75/1.0
Test value		-1.291	1.459	-1.456	-0.034	-1.177
p value		0.197	0.146	0.145	0.973	0.239
Age (years)	≤50	1.63 ± 3.09/0	35.87 ± 9.94/35	2.98 ± 3.28/1.5	2.9 ± 2.94/3	1.88±2.27/1
	51-64	1.1 ± 2.21/0	34.26 ± 9.44/34	3.42 ± 3.56/2	2.66 ± 3.07/2	2.5±3.19/1
	≥65	1.42 ± 2.39/0	33.25 ± 9.35/35	3.21 ± 3.08/2	3.28 ± 3.12/3	2.21±2.9/1
Test value		0.706	1.084	0.727	1.714	0.530
p value		0.703	0.341	0.695	0.424	0.767
Education level	Illiterate/literate ¹	1.54 ± 2.44/0.0	39.08 ± 10.32/39.0	4.23 ± 3.59/3.0	3.38 ± 3.28/3.0	3.77±3.79/2.0
	Primary school ²	1.4 ± 2.58/0.0	32.35 ± 9.18/31.5	2.85 ± 3.22/1.0.5	2.59 ± 3.05/1.0	1.76±2.6/1.0
	Middle school ³	0.71 ± 1.14/0.0	37.5 ± 6.35/38.0	5.21 ± 3.7/6.5	3.93 ± 2.02/4	3.57±3.72/3.0
	High school ⁴	1.68 ± 3.22/0.0	38.19 ± 10.69/40.0	3.55 ± 3.51/4	3.26 ± 3.67/2.0	1.84±2.58/0.0
	University and above ⁵	1.24 ± 2.5/0.0	33.59 ± 8.84/31.0	2.48 ± 2.67/2.0	2.93 ± 2.53/3.0	2.55±2.32/2.0
Test value		0.771	3.605	8.615	6.017	12.204
p value		0.942	0.008*	0.071	0.198	0.016*
Post hoc			2<4			4<3
Marital status	Single	1.92 ± 3.3/0.0	34.7 ± 10.25/35.0	3.3 ± 3/3.0	3.49 ± 3.26/3.0	1.84±2.12/1.0
	Married	1.23 ± 2.35/0.0	34.45 ± 9.44/34.0	3.18 ± 3.4/2.0	2.78 ± 2.97/2.0	2.3±2.97/1.0
Test value		-0.501	0.142	-0.602	-1.185	-0.242
p value		0.616	0.887	0.547	0.236	0.809
Occupation	Housewife	1.85 ± 2.82/0.0	35.18 ± 9.98/34.0	3.65 ± 3.58/3.0	2.89 ± 3.01/2.0	2.34±2.93/1.0
	Worker	1.03 ± 2.65/0.0	32 ± 9.36/30.5	2.7 ± 3.27/1.0.5	3.4 ± 3.55/2.0.5	1.67±2.8/0
	Civil servant	1.41 ± 2.76/0.0	37 ± 9.35/36.0	2.94 ± 2.38/3.0	3.29 ± 2.23/3.0	2.82±2.24/2.0
	Other	0.96 ± 2.14/0.0	34.23 ± 9.23/35.0	3 ± 3.22/2.0	2.63 ± 3.03/1.0	2.12±2.83/1.0
Test value		5.826	1.204	1.803	1.917	6.051
p value		0.120	0.310	0.614	0.590	0.109
Previous hospitalization	Present	1.52 ± 2.78/0.0	33.5 ± 9.14/33.5	3.01 ± 3.11/2.0	2.93 ± 3.04/2.0	2.2±2.77/1.0
	Absent	1 ± 1.96/0.0	37.23 ± 10.33/38.0	3.74 ± 3.77/2.0	2.94 ± 3.05/2.0	2.21±2.96/1.0

	Test value	-1.163	-2.311	-0.877	-0.034	-0.047
	p value	0.245	0.022*	0.381	0.973	0.962
Previous surgery	Present	1.32 ± 2.59/0.0	33.25 ± 8.98/33.0	2.82 ± 3.07/2.0	2.77 ± 2.96/2.0	1.99±2.68/1.0
	Absent	1.47 ± 2.59/0.0	36.67 ± 10.28/37.5	3.88 ± 3.61/3.0	3.22 ± 3.18/3.0	2.56±3.02/1.0
	Test value	-0.529	-2.300	-1.745	-0.869	-1.404
	p value	0.597	0.023*	0.081	0.385	0.160
Operation time (min)	≤120	1.11 ± 2.29/0	35.69 ± 9.83/36	3.04 ± 3.1/2	2.72 ± 2.7/2	2.34±2.81/1
	121-180	2.12 ± 3.04/0	34.02 ± 9.75/33	3.6 ± 3.59/2	3.44 ± 3.32/3	2.4±3.13/1
	≥181	1.19 ± 2.59/0	32.53 ± 8.73/34	3.14 ± 3.47/2	2.86 ± 3.4/1	1.72±2.45/1
	Test value	2.857	1.648	0.867	1.405	1.482
	p value	0.240	0.195	0.648	0.495	0.477
Smoking status	Smoker	0.65 ± 1.76/0.0	33.95 ± 10.19/33.0	2.81 ± 3.22/1.0	2.09 ± 2.47/1.0	2.14±2.87/1.0
	Non-smoker	1.61 ± 2.77/0.0	34.68 ± 9.42/34.0	3.33 ± 3.34/2.0	3.2 ± 3.16/3.0	2.22±2.8/1.0
	Test value	-2.102	-0.431	-0.899	-1.874	-0.197
	p value	0.036*	0.667	0.369	0.061	0.844
Alcohol consumption	Present	0.17 ± 0.39/0.0	33.67 ± 8.41/36.5	4.58 ± 3.4/5.5	4.83 ± 2.86/4.5	2.92±3.15/2.0
	Absent	1.47 ± 2.66/0.0	34.56 ± 9.69/34.0	3.1 ± 3.29/2.0	2.79 ± 3.01/2.0	2.15±2.79/1.0
	Test value	-1.632	-0.312	-1.511	-2.471	-1.147
	p value	0.103	0.755	0.131	0.013*	0.251
Postoperative complication	Present	1.75 ± 2.98/0.0	36.81 ± 8.86/35.5	4.5 ± 4.02/4.5	3.25 ± 2.84/3.0	2.5±2.76/1.0
	Absent	1.34 ± 2.55/0.0	34.27 ± 9.66/34.0	3.08 ± 3.22/2.0	2.9 ± 3.06/2.0	2.17±2.82/1.0
	Test value	-0.396	1.011	-1.301	-0.779	-0.725
	p value	0.692	0.314	0.193	0.436	0.468

CAS: Coronavirus Anxiety Scale; STAI: State-Trait Anxiety Inventory; VAS: Visual Analog Scale; SD: standard deviation

and postoperative periods. (13,14) In the literature, there are studies examining the anxiety and depression levels of patients before surgery. (15,16) However, we found no study that evaluated the postoperative anxiety levels of patients who underwent surgery during the COVID-19 pandemic.

Individuals with experiences involving uncertainties, such as illnesses and hospitalization may develop various feelings, such as fear, anger, helplessness, tension, and depression along with anxiety. (17) In the literature, it has been reported that high postoperative anxiety causes an increase in complication and mortality rates.(14,17,18) In this context, Lei et al., (19) demonstrating how relevant this concern is by reporting a mortality rate of 20.5% in 34 patients diagnosed with COVID-19 after surgery. Therefore, it is very important to evaluate anxiety in the preoperative and postoperative periods. In their respective studies, Akıncı et al., (13) and Sveinsdottir et al., (20) determined high anxiety and depression levels in surgical patients, which they attributed to anxiety related to the operation, fear of the unknown, fear of death, anxiety of being infected with COVID-19, loss of control, pain, isolation, and separation from loved ones and social life. In the current study, the postoperative state anxiety scores of the patients were not low, but their CAS scores were low. This suggests that the high levels of state anxiety may have been caused by surgery-related pain and invasive procedures rather than COVID-19.

Anxiety before and after surgery can be affected by various factors. Patients' reactions to

their disease, hospitalization, and surgical intervention may differ according to their age, developmental period, beliefs, attitudes, and coping skills. Young age and being single have been shown to be factors that increase preoperative anxiety in various cultures. (21) Although it has been stated in the literature that women tend to be more anxious (21), we found no significant relationship between gender and state anxiety scores, similar to Viola et al. (15). This can be interpreted as surgery being a source of anxiety for all age groups.

Education level is another important factor affecting the level of anxiety. (22) Although it is reported in the literature that as education level increases, individuals tend to question more and research more, and as their knowledge increases, they can make more informed decisions and develop effective coping strategies. (23-26) Akıncı et al., (13) reported no significant relationship between education level and anxiety. Contrary to the literature, in the current study, we determined that anxiety was lower in the patients with a low education level. The lower stress and anxiety levels of these patients can be explained by their lower awareness of the process as a result of reading and researching less about their disease, surgery, and COVID-19.

Previous experiences can affect current experiences positively or negatively (17, 27), we determined that the patients who had not been previously hospitalized or undergone surgery had higher state anxiety scores. This can be explained by previous experiences having a positive effect on patients.

Limitations

The sample was limited to the patients who underwent surgery at the general surgery department of a health application and research hospital. Within the scope of the research, it was assumed that the patients had understood and responded to the items in the scales equally and accurately and the results can only be generalized to the group in which the research was conducted, which can be considered as the limitations of the study.

CONCLUSION

It was determined that the coronavirus anxiety levels of the patients who underwent surgery were low, but their state anxiety was at a higher level. In line with these results, it is recommended to preoperatively and postoperatively evaluate surgical patients' levels of anxiety since it can increase the risk of postoperative complications, plan appropriate interventions considering that patients

are biopsychosocial beings to provide high-quality nursing care, adopt a holistic approach to the management of patients, and provide psychological support when necessary.

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Conflict of interest

Concerning this study, the authors and/or their family members do not have any potential conflict of interest in relation to scientific and medical committee membership or relationship with its members, consultancy, expertise, employment in any company, shareholding, or similar situations.

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