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The Relationship between COVID-19 Anxiety and Preoperative Anxiety in Pandemic

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Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

Conflict of interest

The content of the paper has not been yet published or under consideration for publication elsewhere. We stated that there are no conflicts of interest regarding the publication of this article.

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AUTHOR CONTRIBUTIONS

F.Ç and K.S.U.A undertook the data collection, data analysis, and prepared the manuscript; F.Ç and K.S.U.A, supervised the analysis and research process; all the authors read and approved the final manuscript.

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Abstract

Purpose: The aim of this study was to determine the relationship between COVID-19 anxiety levels and preoperative anxiety in patients who will undergo elective surgery during the pandemic period.

Design: This study was an analytical cross-sectional study.

Methods: The study was carried out with 228 patients between May and December 2021 in the surgical clinics of a training and research hospital. The data were collected using patient information form, CAS and APAIS.

Findings: The patients' APAIS total score level was 15.86±6.44, and the CAS score was 6.63±3.61. A positive, moderate and statistically significant relationship was found between the CAS score and the APAIS total score (r=0.547; p=0.000) also CAS score and anxiety due to anesthesia surgery (r=0.545; p=0.000) and information (r=0.501; p=0.000) sub-dimensions.

Conclusion: The results of this study showed that the preoperative anxiety level increased in individuals with increased coronavirus anxiety levels.

Keywords: Covid-19, anxiety, preoperative anxiety.

Introduction

Coronavirus disease 2019 (COVID-19) that affected the whole world, was first seen in Wuhan, China in December 2019. The first COVID-19 case in Turkey was officially detected on March 11, 2020, and a pandemic was declared by the World Health Organization (WHO) on March 12, 2020. In the global pandemic, the case records in Turkey reported the number of

cases is 12,910,321 and the number of death is 90,542.[1] This virus, which is rapidly transmitted from person to person, especially with serious respiratory tract involvement, can be mortal.[2] The high mortality rates caused by the COVID-19 pandemic, the lack of clear information about the mode of transmission and treatment, the inability to control the virus and being at potential risk cause fear, anxiety and increase stress levels in individuals.[3-6] The increase in the number of patients infected with the coronavirus and the number of people suspected of being infected, as well as the number of countries affected by the epidemic, has raised concerns and concerns about being infected both nationally and globally.[7] Anxiety, which is defined as a disturbing and negative emotion in the face of uncertainty, also increases various psychological symptoms.[8,9] It is stated that during this epidemic process, psychological problems, including anxiety, depression and stress, increase in individuals.[4] A number of measures and measures have begun to be taken in the fight against increasing concerns and the epidemic.[10] Necessary steps were taken to ensure the safety of patients and healthcare professionals by the Covid-19 Scientific Committee, which was established on January 10, 2020, under the leadership of the Ministry of Health.[11] In Turkey, as in the rest of the world, there have been changes in the health system due to the pandemic, elective surgical operations have been postponed first, and after the decrease in the number of cases, the elective surgeries have been restarted by taking COVID-19 precautions in the operating rooms. Patients who will undergo surgery during the pandemic process experience the anxiety of being infected with COVID-19 during hospitalization.[12] There is not much information about the effects of the COVID-19 pandemic in vulnerable patient groups.[13] The fear of being infected from the hospital can also increase the anxiety level of patients before surgery. The anxiety experienced by the patients before the surgery makes it difficult for them to cope with the stress of the surgery. It is important to evaluate the anxiety level before the surgery for the postoperative stress management of the patients. The aim of this study is to determine the

relationship between COVID-19 anxiety levels and preoperative anxiety in patients who will undergo elective surgery during the pandemic period.

Research Questions

The research questions of this study were:

1. What is the COVID-19 anxiety and preoperative anxiety of surgical patients?

2. Do the descriptive characteristics of surgical patients affect their CAS and APAIS?

3. Is there a relationship between CAS and APAIS?

Methods

Design

This analytical cross-sectional study was conducted in the surgical clinics of X Training and Research Hospital between May and December 2021.

Sampling and setting

No sample selection was made in the study, and were 398 patients approached to participate in the study and 228 met criteria. Inclusion criteria for the study were determined as individuals who are 18 years of age or older, literate, do not have a psychiatric disease, do not use psychiatric drugs, hospitalized for at least one day before and after surgery, and can speak Turkish and agree to participate in the study. Exclusion criteria from the study; were determined as individuals who were scheduled for emergency surgery and were diagnosed as psychotic, using anxiety medications.

Measures

This study data were collected using the patient identification form, the Coronavirus Anxiety Scale and the Amsterdam Preoperative Anxiety and Information Scale. The data of the study were collected in patient rooms in the clinic before surgery. It took about 10-15 minutes to fill out the forms.

Patient Information Form: This form contains information about the sociodemographic characteristics of patients who will undergo elective surgery.

Coronavirus Anxiety Scale (CAS): CAS was developed by Lee (2020) to identify the possible level of anxiety associated with the COVID-19 crisis.[14] The scale is in 5-point likert type. CAS is a total of 5 questions and a one-dimensional scale. Scoring of the scale was evaluated as "0 never", "1 Rarely, less than one or two days", "2 A few days", "3 more than 7 days" and "4 almost every day in the last two weeks". A total CAS score of 9 or above indicates coronavirus-related dysfunctional anxiety. (Lee 2020). Biçer et al. (2020) conducted a Turkish validity and reliability study. The Cronbach's alpha value of its scale is 0.832.[6] The Cronbach's alpha value in this study was calculated as 0.890.

Amsterdam Pre-operative Anxiety and Information Scale (APAIS): This scale was developed by Moerman et al. in 1996 to evaluate preoperative anxiety.[15] The Turkish validity and reliability of the scale was performed by Çetinkaya et al. (2019). The scale is divided into 6 items and two subscales investigating three aspects of preoperative anxiety. The subscale consists of fear of anesthesia and surgery (items 1,2,4, and 5) and need for information (items 3 and 6). Each question is evaluated with a five-point Likert scale, where a value of 1 is considered "not at all alarming" and a value of 5 "quite alarming". Higher scores indicate higher levels of anxiety and desire for information. Cronbach's α-coefficients of the APAIS anxiety and information requirement subscales were 0.897 and 0.786, respectively. [16] This study the Cronbach's alpha value APAIS anxiety and information requirement subscales were 0.874 and 0.798, respectively.

Ethical considerations

The study was conducted in accordance with the principles of the Declaration of Helsinki. Before starting the research, written permission was obtained from the ethics committee (protocol no: 2020/08-08) and the institution where the research was conducted. All

participants were informed about the purpose and design of the study and their consent was obtained.

Data analysis

Statistical analyzes were performed using the SPSS (IBM SPSS Statistics 24) package program. Mean and percentage statistical values were used to interpret the findings. The Mann-Whitney U test was used to compare the measurement values of two independent groups with the data that did not have normal distribution, and the Kruskall-Wallis test (χ2-table value) was used for the comparison of three or more independent groups. Spearman correlation coefficient was used to examine the relationships of two quantitative variables that do not have a normal distribution.

Results

Information on the descriptive characteristics of the patients is given in Table 1. In the study, largest percentage of participants were in the 18-44 age group (n=79, 34.6%). It was determined that 115 (50.4%) of the patients were female, 183 (80.3%) were married, 143 (62.7%) were primary school graduates and 123 (53.9%) had previous surgery. In addition, it was determined that 135 (59.2%) of the patients did not have a chronic disease, 138 (60.5%) did not have a regular medication, and 145 (63.6%) had fear of surgery.

The patients' APAIS total score level was 15.86±6.44, and the CAS score was 6.63±3.61. The comparison of the mean scores of the APAIS and CAS according to the descriptive characteristics of the patients is given in Table 2.

According to the APAIS total score averages ($p > 0.05$), there was no statistically significant difference between age, marital status, education level, and the state of using medication for any disease. However, there was a statistically significant difference between APAIS total score and gender, presence of chronic disease, clinical and preoperative fear ($p< 0.05$).

According to the CAS total score averages ($p > 0.05$), there was no statistically significant difference between age, gender, marital status, education level, presence of chronic disease, continuous drug use and clinical. However, there was a statistically significant difference between CAS total score and preoperative fear ($p< 0.05$).

A positive, moderate and statistically significant relationship was found between the CAS score and the APAIS total score and sub-dimensions ($p<0.05$). As the coronavirus anxiety scale scores increase, the scores of the APAIS total score, anesthesia-surgery anxiety, and information request sub-components increase (Table 3).

Discussion

Most patients awaiting surgery experience anxiety, which is widely accepted as an expected response. If the patient's fear of surgery is high, the individual may experience physical symptoms such as heart palpitations, nausea and chest pain.[17] Surgical intervention and type of anesthesia have an important place among the causes of preoperative anxiety.[18] Matthias et al. (2012)[19] determined anxiety levels as 15.60 ± 7.08 in APAIS, and Saraçoğlu et al. (2016)[20] stated that the anxiety level was 15.26±5.41 in the APAIS, and in the study of Karadağ Arlı (2017)[21], the APAIS score was 15.8± 5.9. In this study, the mean APAIS anxiety level was found to be 15.86±6.44, which is consistent with the literature. The results show that patients experience moderate anxiety about anesthesia and surgery.

In this study, we identified four factors affecting patients' anxiety scores. These are gender, the patient's presence of chronic disease, the patient's clinical and preoperative anxiety. There are studies showing that the anxiety level of women is higher than men in the preoperative period[19,21], and that the level of preoperative anxiety is higher in male patients.[22] In this study, female APAIS scores were found to be higher than male patients. The presence of chronic disease can increase the anxiety level of patients. In the literature, it is stated that the rate of preoperative anxiety is higher in patients with chronic disease than in those

without.[23,24] The study, the APAIS value of individuals with chronic diseases was found to be high, in line with the literature. It can be defined as a determinant of clinical preoperative anxiety that patients are hospitalized for surgery. In a previous study, it was stated that the anxiety levels of the patients varied according to the clinics (orthopedics, urology and ENT clinic) that the patients were hospitalized.[21] In the current study, the level of anxiety differs according to the clinics where the patients are hospitalized, and it is also seen that there is a significant difference between the APAIS scores between the orthopedics and urology clinics. All diseases that require surgical intervention affect individuals physically, psychologically and socially, and cause preoperative anxiety.[25] Study, it was observed that individuals who experienced fear before surgery experienced more anxiety than individuals who did not experience fear.

The COVID-19 pandemic has created a serious etiological, global problem that affects every aspect of life and disrupts the social structure. Individuals experience varying levels of psychological distress during pandemics, and this is commonly seen in the form of fear, stress, sleep disturbances, and anxiety.[26] Among the most important problems in this pandemic period are the knowledge of the patients who are planned to undergo surgical intervention, their fear levels, and the relationship between the data on surgical treatment and care processes and their COVID-19 fear levels. Worrying about being infected with COVID-19 during hospitalization is a strong factor for the level of preoperative anxiety. Hospitalization carries a high risk of transmission of COVID-19, as the pandemic hospitals continue their normal functioning and care for patients with COVID-19. For this reason, fear of COVID-19 transmission during hospitalization can cause intense anxiety in patients in the preoperative period.[12,27] Balkaya et al. (2021) stated in their study that the preoperative anxiety level of patients who have fear of being infected with the corona virus is high.[12] In another study conducted in patients with liver transplantation, it was stated that as the fear of

COVID 19 increased, patients avoided being in crowded environments, preferring public transportation, and going to the doctor for examination.[8] In the current study, the APAIS scores of patients with high coronavirus anxiety levels at hospitalization were high. The level of anxiety of patients before surgery can be affected by many factors. COVID-19 is one of the factors affecting this anxiety. Informing patients about the surgery [18,27] and COVID-19 measures can be effective in reducing the anxiety levels of patients.[12]

Limitations

This study has some limitations. First, the data were limited to the surgical clinics of a hospital. Therefore, it limits the generalization of the results to all patients undergoing elective surgery. Second, measures of anxiety were limited by the scale tool, and detailed causes of COVID-19 anxiety were not evaluated in this study.

Conclusion

The results of this study showed that the preoperative anxiety level increased in individuals with increased coronavirus anxiety levels. Nurses play a vital role in assessing the factors affecting the patient's pre-operative anxiety to care for and support the patient before surgery. Clinical nurses should evaluate patients in the clinic in terms of fear, anxiety and stress levels. The first of the recommendations within the scope of the research findings is that the patients should be evaluated in terms of fear and anxiety before the surgery and appropriate service delivery should be planned considering their individual suitability. Secondly, it is necessary to reduce the anxiety level of the patients in the preoperative period (eg, informing the patients, or aromatherapy, massage, music, etc.) and to direct the health personnel to the preoperative period care.

Conflicts of Interest

The authors declare that they have no conflict of interest.

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Table 1. Distribution of descriptive findings of the patients

Variable (N=228)	n	%
Age [$\bar{X} \pm$ S.D.→51.31±18.02 (years)]		
18-44	79	34.6
45-54	36	15.8
55-64	52	22.8
≥65	61	26.8
Gender		
Female	115	50.4
Male	113	49.6
Marital status		
Married	183	80.3
Single	45	19.7
Education level		
Primary education	143	62.7
High school	58	25.4
Associate degree	27	11.9
Surgery experience		
Yes	123	53.9
No	105	46.1
Chronic disease		
Yes	93	40.8
No	135	59.2
The state of using medication for any disease		
Yes	90	39.5
No	138	60.5
Clinic		
Orthopedics	105	46.1
Urology	47	20.6
Cardiovascular surgeon	14	6.1
Brain surgeon	13	5.7
General surgery	22	9.6
ENT(Ear –Nose- Throat)	7	3.1
Plastic surgery	17	7.5
Eye surgery	3	1.3
Fear of surgery		
Yes	145	63.6
No	83	36.4

All values are expressed as number (percentage) or mean ± standard deviation; SD, standard deviation

Table 2. Comparison of APAIS and CAS mean scores according to some descriptive characteristics of the participants

Variable		*Anxiety due to anesthesia surgery*		*Information*		**APAIS**		**CAS**	
		$\overline{X} \pm S.D.$	**Medyan [IQR]**	**$\overline{X} \pm S.D.$**	**Medyan [IQR]**	**$\overline{X} \pm S.D.$**	**Medyan [IQR]**	**$\overline{X} \pm S.D.$**	**Medyan [IQR]**
Age*									
18-44	79	8.39±1.08	9.0 [1.5]	4.57±1.13	5.0 [2.0]	12.45±1.09	13.5 [1.3]	4.05±3.99	3.0 [7.0]
45-54	36	8.54±0.97	9.0 [1.5]	4.86±1.20	5.0 [2.0]	12.65±1.02	13.5 [1.6]	5.28±4.33	4.0 [7.8]
55-64	52	8.74±1.07	12.0 [1.7]	4.83±1.18	6.0 [2.0]	12.77±1.07	14.5 [1.6]	5.29±4.72	4.0 [8.0]
≥65	61	8.68±1.14	10.0 [1.9]	4.98±1.29	6.0 [2.0]	12.78±1.16	14.5 [2.1]	4.95±4.24	4.0 [7.0]
		χ^2=4.854		χ^2=4.181		χ^2=4.328		χ^2=3.504	
		p=0.183		p=0.243		p=0.228		p=0.320	
Gender**									
Famale	115	8.77±1.13	11.0 [1.8]	4.96±1.23	6.0 [2.0]	12.83±1.13	16.5 [1.8]	5.01±4.26	4.0 [6.0]
Male	113	8.38±0.99	10.0[1.5]	4.61±1.15	5.0 [2.3]	12.46±0.98	13.5 [1.7]	4.52±4.34	3.0 [6.5]
		Z=-2.627		Z=-2.135		Z=-2.545		Z=-1.142	
		p=0.009		**p=0.033**		**p=0.011**		p=0.254	
Marital status**									
Married	183	8.59±1.05	10.0 [1.8]	4.81±1.21	5.0 [2.0]	12.67±1.07	16.2 [1.8]	4.98±4.31	4.0 [7.0]
Single	45	8.49±1.20	10.0 [2.0]	4.69±1.16	5.0 [2.5]	12.56±1.11	14.5 [1.9]	3.91±4.16	2.0 [5.0]
		Z=-0.703		Z=-0.581		Z=-0.644		Z=-1.607	
		p=0.482		p=0.561		p=0.520		p=0.108	
Education level*									
Primary education	143	8.62±1.11	10.0 [1.8]	4.89±1.24	6.0 [2.0]	12.71±1.10	16.2 [1.7]	4.92±4.51	3.0 [8.0]
High school	58	8.58±1.06	10.0 [1.8]	4.69±1.13	5.0 [2.0]	12.62±1.03	15.0 [1.9]	4.50±4.14	3.5 [6.3]
Associate-Bachelor's	27	8.33±0.99	8.0 [1.3]	4.41±1.07	4.0 [1.5]	12.36±0.95	14.0 [1.3]	4.52±3.46	4.0 [4.0]
		χ^2=1.772		χ^2=4.069		χ^2=2.344		χ^2=0.285	
		p=0.412		p=0.131		p=0.310		p=0.867	
Chronic disease**									
Yes	93	8.74±1.08	11.0 [1.5]	6.01±1.20	6.0 [2.0]	12.83±1.09	16.5 [1.7]	5.29±4.36	4.0 [7.0]
No	135	8.46±1.07	10.0 [1.8]	4.63±1.18	5.0 [2.5]	12.52±1.05	13.5 [1.7]	4.41±4.22	3.0 [7.0]
		Z=-1.978		Z=-2.277		Z=-2.180		Z=-1.758	
		p=0.048		**p=0.023**		**p=0.029**		p=0.079	

Table 2. Comparison of APAIS and CAS mean scores according to some descriptive characteristics of the participants (continuation)

Variable		*Anxiety due to anesthesia surgery*		*Information*		**APAIS**		**CAS**	
		$\bar{X} \pm S.D.$	**Medyan [IQR]**	**$\bar{X} \pm S.D.$**	**Medyan [IQR]**	**$\bar{X} \pm S.D.$**	**Medyan [IQR]**	**$\bar{X} \pm S.D.$**	**Medyan [IQR]**
Continuous drug use**									
Yes	90	8.65±1.14	10.0 [1.8]	4.92±1.24	6.0 [2.0]	12.74±1.14	16.5 [1.8]	4.88±4.27	4.0 [7.0]
No	138	8.52±1.04	10.0 [1.5]	4.70±1.17	5.0 [2.0]	12.58±1.03	15.0 [1.8]	4.70±4.32	3.0 [7.0]
		Z=-0.910 p=0.363		Z=-1.340 p=0.180		Z=-1.100 p=0.271		Z=-0.455 p=0.649	
Clinic*									
Orthopedics [1]	105	8.83±1.14	12.0 [1.8]	6.03±1.24	6.0 [2.0]	12.90±1.13	18.0 [1.8]	4.94±4.59	3.0 [8.0]
Urology [2]	47	8.23±0.94	8.0 [1.5]	4.48±1.09	5.0 [1.5]	12.31±0.95	12.6 [1.5]	4.59±4.16	3.0 [6.0]
Cardiovascular surgeon [3]	14	8.23±0.86	8.4 [1.5]	4.50±1.21	5.0 [2.1]	12.42±0.89	13.3 [1.5]	4.14±3.95	3.0 [7.3]
Brain surgeon [4]	13	8.83±1.16	10.0 [2.0]	6.27±1.18	6.0 [2.0]	12.97±1.08	13.5 [1.9]	7.00±2.91	8.0 [4.5]
General Surgery [5]	22	8.49±1.00	9.2 [1.5]	4.80±1.18	5.0 [2.0]	12.59±1.02	13.5 [1.5]	4.23±4.27	3.0 [6.8]
ENT (Ear-Nose-Throat) [6]	7	8.79±1.10	8.8 [1.8]	2.57±0.61	3.0 [1.0]	12.72±0.76	14.0 [1.7]	1.00±0.81	1.0 [0.0]
Plastic surgery [7]	17	8.35±0.95	8.8 [1.5]	4.50±1.00	5.0 [1.5]	12.40±0.94	14.1 [1.4]	4.88±4.06	3.0 [6.0]
		χ^2=16.296 **p=0.012 [1-2]**		χ^2=19.091 **p=0.004 [6-1.4]**		χ^2=18.606 **p=0.005 [1-2]**		χ^2=12.407 p=0.053	
Fear of surgery**									
Yes	145	12.06±0.94	12.0 [1.3]	6.22±1.10	7.0 [1.5]	18.12±0.94	17.2 [1.4]	6.10±4.38	5.0 [8.0]
No	83	4.71±0.72	6.0 [1.0]	4.04±0.98	4.0 [1.5]	6.85±0.76	10.2 [1.0]	2.45±2.95	1.0 [4.0]
		Z=-9.245 **p=0.000**		Z=-7.215 **p=0.000**		Z=-8.887 **p=0.000**		Z=-6.579 **p=0.000**	

* "*Kruskal*-Wallis H" test (χ2-table value) statistics for comparison of three or more independent groups

** "Mann-Whitney U" test (Z-table value) for comparison of measurement values of two independent groups in data not having normal distribution

Bold values provide statistical significance p < .05. APAIS, Amsterdam Pre-operative Anxiety and Information Scale; CAS, Coronavirus Anxiety Scale; SD, standard deviation

Table 3. Examining the relationships between APAIS and CAS scale

Correlation* (N=228)**		**CAS**
APAIS	*r*	0.547
	p	**0.000**
Anxiety due to anesthesia surgery	*r*	0.545
	p	**0.000**
Information	*r*	0.501
	p	**0.000**

***Spearman correlation coefficient was used to analyze the relationships between two quantitative variables that do not have a normal distribution; Statistical significance $p < 0.05$