



# ONGOING COVID-19 ANXIETY AND STRESS LEVELS IN PATIENTS WHOSE ENDOSCOPY PROCEDURE WAS POSTPONED DUE TO THE PANDEMIC

MELİH CAN GÜL<sup>1</sup> , MERVE AKKUŞ<sup>2</sup> 

## ABSTRACT

**Objective:** The coronavirus disease 2019 (COVID-19) pandemic has caused great fear and stress in both patients and healthy individuals. To investigate attitudes toward and anxieties about and stress levels related to COVID-19 among patients who reappointed elective endoscopy procedures.

**Materials and Methods:** A total of 106 consecutive patients who underwent endoscopy were included. The independent variables were demographic information, previous COVID-19 history, hospitalization history, and death in the family; the dependent variables were the Perceived Stress Scale (PSS-10) score and the Fear of COVID-19 scale (FCV-19S) score.

**Results:** Three quarters of the participants said that the endoscopy procedure could spread COVID-19 and that additional measures were needed to prevent spread. The same group also stated that the disease could be transmitted from the materials used in the procedure. According to FCV-19S, individuals over the age of 65 and individuals with a history of hospitalisation due to COVID-19 and working individuals with a university degree are most afraid of the procedure, while according to PSS-10, individuals who have lost relatives due to COVID-19 and/or who frequently wear masks are afraid of the contagious risk of the procedure. FCV-19S and PSS-10 show statistically significant correlations positively with age and number of previous Covid-19s and negatively with educational level.

**Conclusions:** Although the frequency of the pandemic has decreased, according to this study, anxiety and fear related to COVID-19 continue in individuals who re-applied after the elective endoscopy procedure was postponed by hospitals during the pandemic period, and we think that this situation will pave the way for patients to apply to endoscopy units delayed in case of a pandemic again.

**Keywords:** Anxiety, COVID-19, Endoscopy, Fear.

## PANDEMİ NEDENİYLE ENDOSKOPİ İŞLEMİ ERTELENEN HASTALARDA DEVAM EDEN COVID-19 KAYGI VE STRES DÜZEYLERİ

### ÖZET

**Amaç :** Covid-19 pandemisi hem hastalarda hem de sağlıklı bireylerde büyük korku ve strese neden olmuştur. Çalışmamızda salgının yoğun olarak yaşandığı dönemde elektif endoskopi işlemi ertelendikten sonra tekrar başvuran hastalarda Covid-19'a yönelik bilgi, tutum, kaygı ve stres düzeyleri araştırılması amaçlanmıştır.

**Gereç ve Yöntemler:** Endoskopi işlemi yapılan ardışık 106 hasta çalışmaya dahil edildi. Bağımsız değişkenler demografik özellikler, geçirilmiş Covid öyküsü, covid sebebiyle hastaneye yatış ve ailede covid'e bağlı ölüm; bağımlı değişkenler ise Algılanan Stres Ölçeği (ASÖ-10) ve Covid-19 Korkusu Ölçeği (CKÖ-19S) idi.

**Bulgular:** Katılımcıların dörtte üçü endoskopi işleminin Covid-19'u yayabileceği ve yayılımı engellemek için ek tedbirlere ihtiyaç olduğu; ayrıca işlemde kullanılan malzemelerden hastalığın bulaşabileceği yönünde görüş bildirmiştir. CKÖ-19S'ye göre işlemden en çok 65 yaş üzeri bireyler ile Covid-19 sebebiyle hastaneye yatış öyküsü olan, üniversite mezunu çalışan bireyler korkmakta iken; ASÖ-10'a göre işlemin bulaşıcılık riskinden Covid-19 nedeniyle yakınlarını kaybetmiş ve/veya sık maske değiştirmekte olanlar bireyler endişe duymaktadır. CKÖ-19S ve ASÖ-10 yaş ve geçirilmiş Covid-19 sayısı ile pozitif yönde, eğitim düzeyi ile negatif yönde istatistiksel olarak anlamlı korelasyon göstermektedir.

**Sonuç:** Pandemi sıklığı azalsa da, bu çalışmaya göre pandemi döneminde elektif endoskopi işlemi ertelenip tekrar başvuran bireylerde COVID-19 ile ilişkili anksiyete ve korku devam etmekte olup bu durumun tekrar pandemi yaşanması halinde hastaların endoskopi ünitelerine gecikmiş şekilde başvurmasına zemin hazırlayacağını düşünmekteyiz.

**Anahtar Kelimeler:** Anksiyete, Covid-19, Endoskopi, Korku.

<sup>1</sup> AFYONKARAHİSAR STATE HOSPITAL GENERAL SURGERY DEPARTMENT, AFYONKARAHİSAR, TURKEY

<sup>2</sup> KUTAHYA EVLİYA CELEBİ TRAINING AND RESEARCH HOSPITAL PSYCHIARTY DEPARTMENT, KUTAHYA, TURKEY

**Sorumlu Yazar:** MELİH CAN GÜL

AFYONKARAHİSAR STATE HOSPITAL GENERAL SURGERY DEPARTMENT, AFYONKARAHİSAR, TURKEY

**Telefon:** +905356512402

**E-mail:** melihcan6537@hotmail.com

## INTRODUCTION

Coronaviruses are important human and animal pathogens. After appearing in Wuhan, China, in 2019, a new coronavirus was identified, causing an increasing number of cases in other countries. The declaration of coronavirus disease 2019 (COVID-19) as a pandemic by the WHO in 2020 and its effectiveness worldwide since 2019 have led to important public health problems. The contagiousness of the virus, the underpredictability of its clinical course, and the inability to fully clarify the treatment protocol have caused disruptions in the health system and serious problems. Due to this unpredictable course, an increase in the public's concerns about the pandemic process has been observed (1).

Endoscopic procedures include visualization of the gastrointestinal tract with real-time evaluation and interpretation of findings. Persons working in the endoscopy unit and patients undergoing procedures are at increased risk due to the scattering of aerosols by being in close contact with the oral cavity (2). For this reason, elective endoscopic procedures were postponed for a certain period during the COVID-19 outbreak to reduce the transmission of SARS-CoV-2, protect unit workers from urgent necessity, and use clinical resources properly. The decision to perform endoscopic procedures was governed by local and institutional guidelines and the guidance of the professional community (3).

The COVID-19 pandemic has caused great fear and stress not only in patients but also in healthy individuals worldwide. Our study aimed to investigate the knowledge, attitudes, anxieties and stress levels toward COVID-19 in patients whose elective endoscopy procedure was postponed and reapplied due to the pandemic.

## MATERIALS AND METHODS

### Study Design and Participants

After Afyonkarahisar Health Sciences University Clinical Research Ethics Committee approval (Date: 03.06.2022 and Number: 2022/7), 120 consecutive patients were included in the study; elective endoscopy procedures were postponed, and patients were readmitted to the Afyonkarahisar State Hospital unit between June 6 and August 6, 2022. Informed written consent was obtained from all patients who participated in the study. The Helsinki Declaration was used to comply with the study. A total of 106 consecutive patients completed the study

because 6 of them were illiterate, 5 of them completed the questionnaires incompletely, and 3 of them refused to participate in the study.

In this study, the data were collected by using the Questionnaire Form, the Coronavirus-19 (COVID-19) Fear Scale, and the Perceived Stress Scale-10 after validity and reliability tests. The questionnaire included a total of 39 questions: 5 questions about demographic and health-related characteristics (gender, age, education and employment status), 6 questions about history, number and hospitalization of past COVID-19 patients, loss of relatives due to COVID-19, number of mask changes in the period of the pandemic, and vaccination status; 11 questions asking that the endoscopy procedure transmit COVID-19, the guards used by the unit personnel are sufficient, the requirement of additional precautions, additional information before the procedure, a sufficient break between consecutive procedures, precautions taken during the procedure do or do not do the process, worrying about COVID-19 contagion in procedures, COVID-19 contamination from materials, worrying about anesthesia, hesitation to come back if the process fails, and finally, following the social distancing rules; and 10 questions for PSS-10 and 7 questions for FCV-19S.

### COVID-19 Fear Scale

Ahorsu et al. (2020) developed the Coronavirus (COVID-19) Fear Scale, a 5-point Likert-type rating system. The individual's overall score on the scale was a reflection of how much fear they were experiencing. The Cronbach's alpha internal consistency coefficient of the original scale was 0.82. The total score is calculated by summing the scores of 7 items (7-35 points). In our study, the COVID-19 fear scale, which was adapted for the Turkish population by Dr. Satici, was used (4).

### Perceived Stress Scale-10

The PSS-10 was developed by Cohen in 1983 to measure how individuals perceive certain situations in their lives (5). The scale has different forms, consisting of 4, 10, and 14 items. A 10-item scale was used in our study. The items are evaluated with 5-point Likert-type scales ranging from "never (0)" to "very often (4)". The total score that can be obtained from the scale ranges between 0 and 40, and a high score indicates that the person has a high perception of stress. In the study of Eskin et al., the internal consistency coefficient for the

PSS-10 was calculated to be 0.820, and the test-retest reliability coefficient was 0.880 (6).

### Statistical Analysis

The SPSS 24.0 statistical package was used for the analysis of the data. Descriptive statistics are shown as numbers and percentages for categorical variables, whereas means, standard deviations, medians, and min-max values are shown for numerical variables. Comparisons of numerical variables were analyzed with the Mann-Whitney U test between two independent groups and with the Kruskal-Wallis test among three or more independent groups. A Bonferroni post hoc multiple comparison test was used to identify the significant pairs after each statistically significant Kruskal-Wallis test. A Spearman correlation test was used to determine the correlations between the variables determined by the measurements (PSS-10 score, FCV-19S score, age, education status, and the number of past COVID-19 cases). A value of  $p < 0.05$  was considered to indicate statistical significance.

### RESULTS

A total of 106 patients who met the criteria for inclusion in the study were enrolled. The sociodemographic data of the participants are given in Table 1. The vast majority (71.7%) of the respondents were aged between 26 and 65 years. The percentage of women was greater than that of men (52.8%). Nearly two-thirds of them were married, more than half (59.4%) were university graduates, and more than two-thirds were actively employed in a job. (Table 1). According to Table 1, 51.9% of the participants had had COVID-19 at least once before the survey, 10.4% had a history of inpatient treatment, 38.7% had died from a relative due to COVID-19, 48.1% of whom were changing their mask every day, and 94.3% of the participants had been vaccinated. The vast majority of the individuals (74.5%) said that the endoscopy procedure could spread COVID-19, while just over half (56.6%) said that the equipment used by staff was adequately protective; about three-quarters thought that additional precautions were needed during endoscopy, information was provided in terms of contamination, the period between procedures was sufficient, and COVID-19 could be transmitted from materials; 67.9% of them were worried that the procedure would be performed under anesthesia; three-quarters (74.5%) were afraid to come back after a failed procedure; and 83.0% stated that social distancing rules were followed in the endoscopy unit (Table 1).

Parameter	(n)	(%)	
<b>Age Groups</b>	18-25	9	8.5
	26-40	25	23.6
	41-50	21	19.8
	56-65	30	28.3
	>65	21	19.8
<b>Gender</b>	Female	56	52.8
	Male	50	47.2
<b>Education Status</b>	Literate	4	3.8
	Primary School	10	9.4
	Middle School	6	5.7
	High School	23	21.7
	University	63	59.4
<b>Covid-19 infection per person</b>	None	51	48.1
	One time	37	34.8
	More than one	18	17.1
<b>A history of hospitalisation due to Covid</b>	Yes	11	10.4
	No	95	89.6
<b>Death of a relative due to Covid</b>	Yes	41	38.7
	No	65	61.3
<b>Covid vaccination status</b>	Yes	100	94.3
	No	6	5.7
<b>Does the endoscopy procedure transmit Covid?</b>	Yes	79	74.5
	No	27	25.5
<b>The equipment used by the staff in endoscopy are sufficient.</b>	Yes	60	56.6
	No	46	43.4
<b>No additional precautions are required during endoscopy</b>	Yes	28	26.4
	No	78	73.6
<b>I'm worried about covid transmission in endoscopy procedure</b>	Yes	83	78.3
	No	23	21.7
<b>I'm worried that covid contamination from materials</b>	Yes	81	76.4
	No	25	23.6
<b>I'm worried that it's being done under anesthesia</b>	Yes	34	32.1
	No	72	67.9
<b>I hesitate to come back, if the process fails</b>	Yes	79	74.5
	No	27	25.5

When the participants' perceived stress scale and COVID-19 fear survey scores were evaluated, there was no significant difference between the groups according to sex, age group, COVID-19 history, number of past COVID-19 infections, education level, employment, marital status, vaccination status, or endoscopy's opinion on COVID-19 spread at the level of the PSS-10; however, a statistically significant difference was found between the patients whose relatives died due to COVID-19 and the patient group whose symptoms changed their mask more than twice a day during the COVID-19 period and the group whose symptoms changed it twice a week ( $p = 0.000$ ,  $p = 0.039$ ). Differences in the FCV-19S scores between individuals in different age groups were found between the 18-25 and 26-40 years old, 26-40 and 56-65 years old, 26-40 and >65 years old, and 56-65 and >65 years old subgroups. A statistically significant difference was found between the FCV-19S scores of individuals with different education levels, and this difference was mostly attributable to university graduates. In terms of COVID-19-related fear, while there were no significant differences according to sex, the number of past COVID-19 cases per person, the number of COVID-related deaths in relatives, the frequency of mask use, marital status, vaccination status, or the opinion of endoscopy about spreading COVID-19, fear of COVID-19 was found to be statistically significant in terms of questionnaire scores (FCV 19S) among the groups determined by having a history of COVID-19 and hospitalization ( $p = 0.032$ ,  $p = 0.007$ ,  $p = 0.017$ )(Table 2).

Considering the participants' perceived stress scale (PSS-10) and COVID-19 fear scale (FCV-19S) scores, it was found that there was a positive and significant correlation between the two scale scores ( $p = 0.002$ ). In addition, there was a positive correlation between the COVID-19 fear scale (FCV-19S) score and age and between the number of past COVID-19 cases per individual; significant negative correlations were found with education status ( $p = 0.000$ ,  $p = 0.038$ , and  $p = 0.000$ , respectively). There was no significant correlation between PSS-10 score or age, education status, or the number of past COVID-19 cases per individual ( $p > 0.05$  for all)(Table 3).

## DISCUSSION

Elective surgeries and endoscopic procedures have been postponed for a certain period of time due to the rapid spread and intense course of COVID-19 (7). With the increase in experience in treating COVID-19, the

acceleration of vaccination, and the decrease in virulence, a gradual return to normal in health services has begun. The workload of patients who are postponed while the pandemic continues shows its presence in many countries, such as the United Kingdom, in clinical practice (8). In the literature, numerous studies examining the effects of the COVID-19 pandemic on different patient groups and healthcare professionals have been conducted. On the other hand, this study is the first to examine the effects of the pandemic on patients whose elective endoscopy procedure was postponed due to the COVID-19 pandemic. According to our study, patients whose endoscopy procedure was postponed due to the pandemic believe that the procedure may have a role in the transmission and spread of COVID-19 infection. During the endoscopy procedure, 78.3% of the patients answered "yes" to the expression "I am worried about the transmission of COVID-19." Concerns that there may be contamination with materials have been observed at a similar rate. Again, 73.6% of the patients stated that additional precautions were needed during endoscopy. These data suggested that a large proportion of patients had concerns about COVID-19 infection and transmission. The PSS-10 is a psychometric tool used not for diagnosis but for comparing an individual score with a normative value. Higher scores indicate greater perceived stress. There are no studies in the literature that have analyzed the median PSS-10 score among patients admitted for endoscopy. Because not only the PSS-10 score but also the FCV-19 score are accepted as ordinal data and according to statistical rules, ordinal data should always be written and specified as the median (min-max). These data are used to indicate why we considered and described the ordinal data as both mean and median PSS and FCV values together with min and max and subsequently evaluated them in health studies, students, and community-based studies in Turkey during the pandemic period. A study conducted in 2022 determined that the average score on the Perceived Stress Level Scale of Health Workers during the pandemic was  $16.6 \pm 5.1$  (9). In another study investigating the perceived stress level among students in Turkey, the mean PSS-10 score was 22.47 (10). These values reflect a moderately high stress level. This score reflects a moderately high stress level, in line with the literature. In our study, the mean PSS-10 and FCV-19 scores were 29.8 (median: 30.0) and 19.5 (median: 20.0), respectively. The greater proportions of patients in our study than in the literature may be because our patients received anesthesia, and their previous appointments were postponed.

Table 2. Perceived Stress Scale (PSS-10) and Fear of COVID-19 Scale Scores (FCV-19S) According to Subgroups

		PSS-10 (Mean±SD) (Median; Min-Max)	p-value and different pairs	FCV-19S (Mean±SD) (Median; Min-Max)	p-value and different pairs
Age Groups (year)	18-25(1)	33.6±9.9(31.0;23-50)	0.399	21.0±5.1(21.0;15-30)	<b>0.000</b> 1-2; 2-4; 2-5; 4-5 different pairs
	26-40(2)	30.1±3.6(30.0;22-41)		14.8±4.5(14.0;7-22)	
	41-50(3)	27.2±7.1(29.0;10-35)		18.5±5.9(20.0;7-25)	
	56-65(4)	28.8±4.6(30.0;14-36)		20.0±5.4(20.0;9-31)	
	>65 (5)	31.6±5.5(31.0;21-47)		25.0±3.6(25.0;19-31)	
Personal Covid history *	Yes	30.2±5.2(30.0;10-50)	0.995	20.9±5.4(21.0;7-31)	<b>0.032</b>
	No	29.2±6.7(30.0;11-50)		18.1±6.5(18.0;7-31)	
No. of covid infections past for individual	None	29.2±6.7(30.0;11-50)	0.614	18.1±6.5(18.0;7-31)	0.113
	One time	30.6±4.0(30.0;25-47)		20.7±5.5(20.5;12-31)	
	More than one	29.3±7.2(28.0;10-50)		21.4±4.3(20.5;14-30)	
Education Status	Literate(1)	28.5±1.7(28.0;27-31)	0.506	27.0±0.8(27.0;26-28)	<b>0.000</b> 1-5; 2-5; 4-5 different pairs
	Primary School(2)	30.0±6.5(31.0;14-39)		23.0±6.1(22.5;15-31)	
	Middle School(3)	30.3±2.7(30.0;28-35)		23.3±2.9(24.0;19-27)	
	High School(4)	31.1±5.4(31.0;23-50)		21.7±4.9(22.0;13-31)	
	University(5)	29.2±6.4(30.0;10-50)		17.4±5.7(18.0;7-29)	
Working Status	Worker	29.3±5.8(30.0;10-47)	0.637	18.6±5.9(19.5;7-31)	<b>0.017</b>
	Workless	30.7±6.2(30.0;19-50)		21.6±5.6(21.0;9-31)	
History of hospitalisation	Yes	30.6±3.2(30.0;28-39)	0.739	24.4±5.0(27.0;17-31)	<b>0.007</b>
	No	29.6±6.2(30.0;10-50)		19.0±5.8(20.0;7-31)	
Relative death of Covid	Yes	32.0±6.2(31.0;14-50)	<b>0.000</b>	20.9±5.5(21.0;7-31)	0.088
	No	28.3±5.3(29.0;10-41)		18.7±6.2(20.0;7-31)	
Endoscopy transmits covid	Yes	29.2±5.6(30.0;10-47)	0.298	19.6±6.2(20.0;7-31)	0.825
	No	31.4±6.5(31.0;22-50)		19.4±5.4(20.0;7-30)	
Frequency of mask change during Covid period	>2 times/d(1)	31.2±7.0(31.0;14-50)	<b>0.039</b> 1-4 different pairs	18.2±5.8(18.0;7-30)	0.304
	Every day(2)	28.8±5.1(29.0;10-39)		20.5±6.1(20.0;7-31)	
	Every other day (3)	31.6±4.0(31.0;27-41)		20.9±5.7(21.0;11-29)	
	2 times/w(4)	24.8±5.1(25.0;19-30)		19.3±2.5(19.5;16-22)	
	1 times/w (5)	27.5±7.8(27.5;22-33)		14.0±9.9(14.0;7-21)	
Covid vaccination status	Yes	29.5±5.7(30.0;10-50)	0.541	19.6±5.7(20.0;7-31)	0.737
	No	33.8±9.0(29.5;27-50)		18.2±10.0(17.0;7-30)	
All individuals		29.8±5.9(30.0;10-50)	-	19.5±6.0(20.0;7-31)	-

**Table 3. Correlation of Perceived Stress (PSS-10) and Fear of COVID-19 Scores (FCV-19S) with other parameters**

	PSS-10		FCV-19S	
	Spearman's rho	p Value	Spearman's rho	p Value
<b>FCV-19S</b>	0.299	0.002	-	
<b>Age</b>	0.017	0.862	0.460	0.000
<b>Education Status</b>	-0.900	0.356	-0.457	0.000
<b>The number of past Covid-19 per individual</b>	-0.046	0.637	0.202	0.038

When the relationship between the Perceived Stress Scale score and fear of COVID-19 was examined in our study, it was found that there was a statistically significant positive correlation between them. Studies have shown that fear of COVID-19 is associated with increased levels of perceived stress. For example, a study conducted in Italy during the early stages of the pandemic revealed that fear of COVID-19 was an important determinant of perceived stress (11). Similarly, a study conducted in Turkey showed that fear of COVID-19 is associated with increased levels of perceived stress, anxiety, and depression (10). Fear of COVID-19 can lead to a sense of uncertainty, and loss of control increases people's stress levels (4). It may not be healthy to associate the high level of stress perceived by patients only with COVID-19 infection during these periods when the intense impact of the pandemic has decreased. Current health conditions, the anxieties brought about by the procedure, and individual factors may be effective at reducing the level of perceived stress. Many studies have been conducted before the COVID-19 pandemic, and they have investigated the anxiety levels of patients before endoscopy. Jones et al., in their study on elective gastrointestinal endoscopy and patient anxiety, found a significant relationship between diagnostic gastrointestinal endoscopy and patients' state-trait anxiety (12). Similarly, in another study conducted with patients before gastrointestinal endoscopy, it was reported that most patients experienced anxiety, and the level of anxiety was greater in women than in men (13). According to studies investigating the relationship between anxiety and age in patients undergoing endoscopy, younger patients reportedly have a greater level of anxiety than elderly patients do, but there is no relationship between age and anxiety level (13, 14). In our study, the perceived stress scale scores did not differ according to sex. While the COVID-19 fear scores did not differ according to sex, they differed in terms of age. The greater difference in

mortality in individuals older than 55 years was thought to be related to the greater mortality of COVID-19 infection in elderly individuals and those with comorbid diseases. Our results for FCV-19S are compatible with the literature. Additionally, according to our study, the perceived stress scores of individuals with a relative who died due to COVID-19 were found to be significantly greater. The associations of deaths related to COVID-19 with genetic factors, the loss of relatives, and the mortality of the infection during the pandemic process explain this situation. A statistically significant increase in the Covid-19 fear score was found in patients who received Covid-19 treatment in the hospital, although they had previously had Covid-19. Since inpatient treatment is associated with a more serious infection picture, it is possible to create a fear response in people in the literature. As the level of education increased, a decrease in the COVID-19 fear scale score was associated with an increase in knowledge about the disease, which is in line with the literature.

### CONCLUSIONS

There are still concerns about COVID-19 infection in patients whose endoscopy procedure was postponed due to the pandemic. These concerns can have an impact on the stress that individuals experience. In this period of the impact of the pandemic, it is important to consider that patients may have concerns related to the COVID-19 infection. This is especially true for people of advanced age who have lost a relative due to COVID-19 and who have comorbid diseases. Approaches to managing COVID-19 fear and stress may be useful.

### DECLARATIONS

All participants were required to sign an informed voluntary consent form before the survey. The authors declare that the study was conducted in accordance with

the Helsinki Declaration and complied with the ethical standards of the country of origin.

### Funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

### Author Contributions

All the authors confirm that they meet the current International Committee of Medical Journal EDITORS (ICMJE) CRITERIA FOR AUTHORSHIP.

### Disclosure of Interest

The authors declare that they have no competing interests. Conflict of interest: None.

### Ethical Approval

Afyonkarahisar Health Sciences University Clinical Research Ethics Committee approval (Date: 03.06.2022 and Number: 2022/7).

## REFERENCES

- Guan WJ, Ni ZY, Hu Y., Liang WH, Ou CQ, He JX, et al. Clinical characteristics of coronavirus disease 2019 in China. *NEJM*. 2020;382(18): 1708-1720. <https://doi.org/10.1056/NEJMoa2002032>
- Chiu PWY, Ng SC, Inoue H, Reddy DN, Hu EL, Cho JY, et al. Practice of endoscopy during COVID-19 pandemic: position statements of the Asian Pacific Society for Digestive Endoscopy (APSDE-COVID statements). *Gut*. 2020;69(6): 991-996. <http://dx.doi.org/10.1136/gutjnl-2020-321185>
- Podboy A, Cholankeri G, Cianfichi L, Guzman E, Ahmed A, Banerjee S. Implementation and impact of universal preprocedure testing of patients for COVID-19 before endoscopy. *Gastroenterology*. 2020;159(4): 1586-1588. <https://doi.org/10.1053/j.gastro.2020.06.022>
- Satici B, Gocet-Tekin E, Deniz ME, Satici SA. Adaptation of the Fear of COVID-19 Scale: Its association with psychological distress and life satisfaction in Turkey. *International journal of mental health and addiction*. 2021;19:1980-1988. <https://doi.org/10.1007/s11469-020-00294-0>
- Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. *JHSB*. 1983;24(4):385-396. <https://doi.org/10.2307/2136404>
- Eskin M, Harlak H, Demirkiran F, Dereboy Ç. The adaptation of the perceived stress scale into turkish: a reliability and validity analysis. *New Symposium Journal*. 2013;51(3):132-140. [https://www.researchgate.net/profile/Mehmet-Eskin/publication/235946078\\_The\\_adaptation\\_of\\_the\\_Perceived\\_Stress\\_Scale\\_into\\_Turkish\\_A\\_reliability\\_and\\_validity\\_analysis/links/546330440cf2c0c6aec1e4f2/The-adaptation-of-the-Perceived-Stress-Scale-into-Turkish-A-reliability-and-validity-analysis.pdf](https://www.researchgate.net/profile/Mehmet-Eskin/publication/235946078_The_adaptation_of_the_Perceived_Stress_Scale_into_Turkish_A_reliability_and_validity_analysis/links/546330440cf2c0c6aec1e4f2/The-adaptation-of-the-Perceived-Stress-Scale-into-Turkish-A-reliability-and-validity-analysis.pdf)
- Gok AFK, Eryılmaz M, Ozmen MM, Alimoglu O, Ertekin C, Kurtoglu MH. Recommendations for Trauma and Emergency General Surgery Practice During COVID-19 Pandemic. *J Turk Travma Acil Surg J*. 2020;26:335-342. <https://doi.org/10.14744/tjtes.2020.79954>
- Rees C, Penman I. Has the COVID-19 pandemic changed endoscopy in the UK forever?. *J Lancet Gastroenterol Hepatol*. 2023;8(1):6-8. [https://doi.org/10.1016/S2468-1253\(22\)00387-9](https://doi.org/10.1016/S2468-1253(22)00387-9)
- Celik A, Mertoglu S. COVID-19 determination of the perceived stress status of healthcare workers due to the COVID-19 pandemic: The sample of Izmir. *Forbes J Med*. 2022;3(1):51-58 <https://doi.org/10.4274/forbes.galenos.2022.84856>
- Aslan I, Ochnik D, Cinar O. Exploring perceived stress among students in Turkey during the COVID-19 pandemic. *Int J Environ Res Public Health*. 2022;17(23):8961. <https://doi.org/10.3390/ijerph17238961>
- Canestrari C, Bongelli R, Fermani A, Riccioni I, Bertolazzi A, Muzi M, Burro R. Coronavirus disease stress among Italian healthcare workers: The role of coping humor. *Front Psychol*. 2021;11:601574. <https://doi.org/10.3389/fpsyg.2020.601574>
- Jones MP, Ebert CC, Sloan T, Spanier J, Bansal A, Howden CW, Vanagunas AD. Patient anxiety and elective gastrointestinal endoscopy. *J Clin Gastroenterol*. 2004;38(1):35-40. [https://journals.lww.com/jcge/Abstract/2004/01000/Patient\\_Anxiety\\_and\\_Elective\\_Gastrointestinal.9.aspx](https://journals.lww.com/jcge/Abstract/2004/01000/Patient_Anxiety_and_Elective_Gastrointestinal.9.aspx)
- Eberhardt J, Van WA, Van SP, Cann P. Information, social support and anxiety before gastrointestinal endoscopy. *Br J Health Psychol*. 2006;11(4):551-559. <https://doi.org/10.1348/135910705X72514>
- Soma Y, Saito H, Kishibe T, Takahashi T, Tanaka H, Munakata A. Evaluation of topical pharyngeal anesthesia for upper endoscopy including factors associated with patient tolerance. *Gastrointest Endosc*. 2001;53:14-8. <https://doi.org/10.1067/mge.2001.111773>