

RESEARCH / ARAŞTIRMA

# Assessing the Fear of the COVID-19 Pandemic in Patients with Undergoing Gastrointestinal Endoscopy: Online Cross-Sectional Survey

## Gastrointestinal Endoskopi Yapılan Bireylerin Koronavirüs Hastalığına Yönelik Korku Düzeyleri ve Etkileyen Faktörler: Online Kesitsel Araştırma

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Abstract

**Objective:** This study was carried out to determine the level of COVID-19 pandemic fear and the contributing factors in patients undergoing gastrointestinal endoscopy.

**Material and Method:** This study was conducted online using a descriptive and cross-sectional approach. A Personal Information Form and the Fear of COVID-19 Scale were employed as measurement instruments. One day before the scheduled endoscopic surgery, the data collecting form was prepared on Google Forms and distributed to the patients over WhatsApp.

**Results:** The study consisted of 155 patients. The mean age of the patients was 42.9±15.2, and 55.4% of them were female. The mean score of the Fear of COVID-19 Scale was 2.66±0.95. Also, 55.4% of the patients were very afraid of COVID-19, 91.6% were afraid of transmitting COVID-19 to their relatives. 35.5% of them reported they gave up going to the hospital for endoscopy procedure at least once due to fear of COVID-19 despite having symptoms that require endoscopy. The level of fear of COVID-19 was higher in patients who stated they were afraid of going to the hospital for the endoscopy procedure due to COVID-19 (p=0.000).

**Conclusion:** One of the most important results of this study is that the fear induced by COVID-19 leads individuals to forgo medical treatments and necessary care procedures. This may cause delays in the early diagnosis, treatment, and care of diseases. It may be recommended to evaluate the patients' fear of COVID-19 and to carry out preventive and therapeutic practices related to fear.

**Keywords:** COVID-19, endoscopy, fear.

Öz

**Amaç:** Bu araştırma gastrointestinal endoskopi yapılan hastaların COVID-19 korku seviyelerini ve etkileyen faktörleri belirlemek amacı ile yapılmıştır.

**Gereç ve Yöntem:** Bu araştırma kesitsel araştırma deseninde gerçekleştirilmiştir. Araştırma verileri Kişisel Bilgi Formu ve COVID-19 Korku Ölçeği kullanılarak elde edilmiştir. Verilerin toplanması için Google Formlar'da online veri toplama formu oluşturulmuş ve form hastalara WhatsApp aracılığı ile gönderilmiştir.

**Bulgular:** Araştırmanın örneklemini 155 hasta oluşturmuştur. Örneklemin yaş ortalaması 42,9±15,2'dir ve %55,4'ü kadındır. COVID-19 Korku Ölçeği'nin puan ortalaması 2,66±0,95'tir. Örneklemin %55,4'ünün COVID-19 korku seviyesi yüksektir ve %91,6'sı COVID-19'u yakınlarına bulaştırmaktan korkmaktadır. Gastrointestinal endoskopi gerektiren semptomları olmasına rağmen örneklemin %35,5'i COVID-19'dan korktukları için en az bir kez hastaneye gitmekten vazgeçmiştir. COVID-19 nedeniyle endoskopi işlemi için hastaneye gitmekten korktuğunu belirten hastalarda COVID-19 korkusu düzeyi daha yüksektir (p=0,000).

**Sonuç:** Bu çalışmanın en önemli sonuçlarından birisi COVID-19 korkusunun tıbbi tedavi ve bakım prosedürlerinde vazgeçmeye neden olmasıdır. Bu durum hastalıkların erken teşhisinde, tedavi ve bakımında gecikmelere neden olabilir. Hastaların COVID-19 korkusunun değerlendirilmesini ve korku ile ilgili önleyici ve tedavi edici uygulamaların yapılması önerilebilir.

**Anahtar Kelimeler:** COVID-19, endoskopi, korku.

## 1. Introduction

General symptoms of the new type of coronavirus infection (COVID-19) include typical symptoms, such as fever, cough, joint pain, pneumonia, as well as frequently observed symptoms of the gastrointestinal system (GIS), such as loss of appetite, diarrhea, nausea, vomiting, abdominal pain, and elevated liver enzymes (1-3). Although it is known that COVID-19 is transmitted by respiratory droplets, it is reported that infection can also develop through the fecal-oral route (4-6). The use of the anal swab method for COVID-19 testing is one of the situations that support the claim that the infection can be transmitted through the fecal-oral route. Endoscopy units and endoscopy procedures are considered to present a risk for COVID-19 due to the risk of the spread of coronavirus during the endoscopy aerosolization and the inhalation of airborne droplets in gastrointestinal endoscopy units (5,7,8). Therefore, individuals scheduled for endoscopic procedures are considered at risk of COVID-19 transmission due to these factors. (9).

Fear of COVID-19 can be experienced due to known or unknown causes, such as the threat it poses to the physical health and lives of individuals by affecting the whole world, the high contagiousness of the disease, increased number of cases, high morbidity and mortality rates, deficiencies in treatment, fear of getting and transmitting the disease, uncertainty, and strict protection measures (10-13) Fear can develop into a chronic and harmful state when the threat is continual and ominous, as it was during the COVID-19 pandemic. Understanding the precise causes of individuals' fear and developing predictions about it is required in order to explain the personal and societal repercussions of the COVID-19 pandemic (14). GIS symptoms, such as loss of appetite, nausea, vomiting, or diarrhea are similar to the symptoms of COVID-19, and gastrointestinal endoscopy units are risky places for infection; for this reason, it is thought that patients who will undergo gastrointestinal endoscopy may have high levels of fear of COVID-19.

The aim of this study was to determine fear of COVID-19 and factors affecting COVID-19 related fear on patients having gastrointestinal endoscopy.

## 2. Methods

### 2.1. Study Design and Participants

This study used a descriptive, cross-sectional design and was carried out online. The data of the study was collected between November 2020 and January 2021 from patients who were scheduled to undergo an endoscopy procedure for their medical diagnosis and treatment. Participants were those who agreed to take part in the study, were aged 18 or over, were literate, and could use the WhatsApp application. On the day when the endoscopy appointment was made, the patients were provided with written information about the study. The measurement tools used in the study were created on Google Forms (<https://www.google.com/forms/about/>) web page, and the research link was created. The link to the data form was first checked by the researchers and then shared with patients via WhatsApp one day before the endoscopy procedure. Participants who reached the data form via the link were first provided with an introduction page involving information about the name and purpose of the study

and an explanation that participation in the study was voluntary, and then they checked a confirmation box to give consent for participation in the research in the digital environment. It took approximately 5-10 minutes to fill out the form. The CHERRIES (Checklist for Reporting Results of Internet E-survey) guideline used in studies conducted on the Internet was taken as a framework for reporting (15).

#### 2.1.1. Data Collection

The online data form consisted of two parts: a personal information form and the Fear of COVID-19 Scale.

##### The Personal Information Form

The researchers developed the personal information form in accordance with the literature.<sup>16,17</sup> The form consists of 22 questions evaluating the patients' descriptive and endoscopy-related characteristics, and their thoughts about COVID-19.

##### The Fear of COVID-19 Scale

The Fear of COVID-19 Scale was generated by Ahorsu et al. (18). The scale contains a dimension and seven items assessing individuals' fear of COVID-19. The total score that is determined after adding up the results from each of the scale's elements reveals how much the person fears the COVID-19. The scale yields results ranging from 7 to 35 points. High scores on the measure suggest that COVID-19 dread is widespread. Bakioglu et al. translated the scale into Turkish and detected a Cronbach's alpha coefficient of 0.88 (10). Bakiolu et al. gave their consent for the use of the scale via email. The scale's Cronbach's alpha coefficient in our study was 0.85.

### 2.2. Statistical Methods

The answers given by the participants to questions in the online data form were transferred from the Google Forms application to the Microsoft Excel software by the researchers, and then these data were transferred to IBM SPSS Statistics for Windows Version 23.0 (IBM Corp. Armonk, NY, USA) software package which was used in the present study for statistical analyses. Descriptive data were presented as numbers, mean scores, and percentage analyses, the independent samples t-test, and One-Way ANOVA analysis were employed to analyze the relationships between the socio-demographic characteristics of the patients and their fear of COVID-19, and the multiple linear regression analysis was used to evaluate the factors affecting fear of COVID-19.  $p < 0.05$  was considered statistically significant.

### 2.3. Ethical Aspect of the Research

At the outset, written permission of the COVID-19 Scientific Research Evaluation Commission (<https://bilimselarastirma.saglik.gov.tr>), University Ethics Committee (KA EK-704, 09.09.2020), the Provincial Health Directorate Public Health Unit (11/11/2020-41307), and the patients who agreed to participate in the study was obtained. Patients who needed gastrointestinal endoscopy for medical treatment were provided with written information about the study on the day when they made an endoscopy appointment. Participants submitted their consent that they voluntarily accepted to participate in the study by checking a box

in the online form. During the research, universal ethical principles, including the Declaration of Helsinki, as well as scientific principles were followed.

### 3. Results

The results are presented under three headings: patients' descriptive and endoscopy-related characteristics and their thoughts about COVID-19, the assessment of fear of COVID-19, and the factors affecting fear of COVID-19.

#### 3.1. Patients' Descriptive and Endoscopy-related Characteristics and Their Thoughts about COVID-19

The sample of the study consisted of 155 patients. The mean age of the patients included in the study was  $42.9 \pm 15.2$ , 55.4% of them were female, and 74.2% were living in a province. Patients of 91.6% were afraid of transmitting the virus to their relatives (Table 1). 38.7% of patients stated that they were afraid of going to the hospital for an endoscopy because of COVID-19, and 35.5% of them reported they gave up going to the hospital for an endoscopy procedure at least once due to fear of COVID-19 despite having symptoms that required endoscopy. 47.7% of the sample stated that fear of COVID-19 transmission increased their anxiety about the endoscopy procedure, and 41.3% of the patients in our sample stated that the severity of the disease symptoms escalated during the period when non-emergency endoscopy procedures were

postponed. Due to the similarity of COVID-19 symptoms to the symptoms of the existing disease requiring endoscopy, such as diarrhea, nausea, vomiting, and abdominal pain, 15.5% of the sample said they felt as if they were infected with COVID-19 (Table 2).

#### 3.2. Assessment of Fear of COVID-19

The comparison of the descriptive characteristics of the patients and their fear of COVID-19 indicated that participants who were female ( $p=0.000$ ) and were living in a province ( $p=0.011$ ) had significantly higher levels of fear of COVID-19. It was found that the level of fear was higher in those who used medication constantly ( $p=0.008$ ). Those who were afraid of infecting their relatives with COVID-19 had a higher fear level ( $p=0.000$ ). It was determined that the level of fear was higher in those who personal hygiene behaviors increased due to COVID-19 ( $p=0.000$ ) (Table 1).

It was found that the level of fear of COVID-19 was higher in patients who stated they were afraid of going to the hospital for the endoscopy procedure due to COVID-19 ( $p=0.000$ ), thought that they would get infected with COVID-19 while waiting in the endoscopy unit on the day of the procedure ( $p=0.000$ ), were undecided about whether the sterilization in the endoscopy unit was adequate ( $p=0.005$ ), thought that they would get COVID-19 from endoscopy devices ( $p=0.000$ ), had concerns about endoscopy due to the

**Table 1. Relationship Between Descriptive Characteristics and Fear of COVID-19 (N=155)**

Variables	n	(%)	The Fear of COVID-19 Scale ( $\bar{X} \pm SD$ ) 2.66±0.95	t/F	P
<b>Age (year) (<math>\bar{X} \pm SD</math>): 43.08±15.25</b>					
18-40	71	44.7	2.65±0.93	-0.135	0.89
41-79	84	<b>52.8</b>	2.67±0.97		
<b>Sex</b>					
Female	86	<b>55.4</b>	2.97±0.93	4.872	<b>0.000</b>
Male	69	44.6	2.27±0.84		
<b>Living place</b>					
Rural	5	3.2	1.66±0.36	4.693	<b>0.011</b>
Town	35	22.6	2.44±0.90		
Province	115	<b>74.2</b>	2.77±0.95		
<b>Presence of chronic disease</b>					
Yes	83	<b>53.5</b>	2.73±1.08	1.094	0.276
No	72	46.5	2.57±0.78		
<b>Used medication constantly</b>					
Yes	84	<b>54.2</b>	2.84±0.99	2.681	<b>0.008</b>
No	71	45.8	2.44±0.86		
<b>Think of being in the risk group for COVID-19</b>					
Yes	54	34.8	2.88±1.05	2.364	0.097
No	68	<b>43.9</b>	2.52±0.96		
Undecided	33	21.3	2.57±0.67		
<b>Having been diagnosed with COVID-19</b>					
Yes	44	28.4	2.43±0.6	-1.899	0.059
No	111	<b>71.6</b>	2.75±0.97		
<b>Afraid of infecting their relatives with COVID-19</b>					
Yes	142	<b>91.6</b>	2.77±0.90	5.439	<b>0.000</b>
No	13	8.4	1.40±0.40		
<b>Changing personal hygiene behaviors due to COVID-19</b>					
Personal hygiene behaviors increased	133	<b>85.8</b>	2.79±0.92	4.394	<b>0.000</b>
Personal hygiene behaviors unchanged	22	14.2	1.88±0.73		

Abbreviations: SD: Standard Deviation, : Mean

likelihood of COVID-19 contamination ( $p=0.000$ ), thought symptoms of their disease increased due to the delayed procedures in the gastrointestinal endoscopy unit due to COVID-19 ( $p=0.002$ ), felt as if they were infected with COVID-19 ( $p=0.007$ ) because of having similar to COVID-19 symptoms (Table 2).

The overall Fear of COVID-19 Scale mean score for this study was  $2.66 \pm 0.95$ . After combining the "agree" and "strongly agree" responses for each items on the scale, it was found that 55.4% of the patients said they were extremely afraid of COVID-19, 54.2% said that thinking about COVID-19 disturbed them, 41.3% reported feeling anxious as a result of reading stories and information on COVID-19 on social media, and 36.8% said they were afraid of dying from COVID-19 (Table 3).

### 3.3. Factors Affecting Fear of COVID-19

Multiple linear regression analysis was used to assess the factors influencing COVID-19 fear. According to the summary of the linear regression model, 58% ( $R^2$ ) of the fear of COVID-19 was explained by the descriptive and endoscopy-related characteristics. The regression model explaining the fear of COVID-19 by descriptive and endoscopy-related characteristics was statistically significant ( $p<0.001$ ). Sex ( $p=0.001$ ), place of residence ( $p=0.048$ ), fear of transmitting COVID-19 to relatives ( $p=0.003$ ), changing personal hygiene behaviors due to COVID-19 ( $p=0.002$ ), thinking that endoscopy devices would cause COVID-19 transmission ( $p=0.033$ ), and increased anxiety about the endoscopy procedure due to the possibility of COVID-19 transmission ( $p=0.000$ ) were among the factors influencing COVID-19 fear (Table 4).

**Table 2. Relationship Between Endoscopy-Related Characteristics and Fear of COVID-19 (N=155)**

Variables	n	(%)	The Fear of COVID-19 Scale (X $\pm$ SD)	t/F	P
<b>Endoscopy experience</b>					
Yes	83	<b>53.5</b>	2.69 $\pm$ 0.99	0.522	0.603
No	72	46.5	2.61 $\pm$ 0.91		
<b>Type of endoscopy procedure</b>					
Upper GI endoscopy	73	<b>47.1</b>	2.66 $\pm$ 0.93	0.764	0.468
Lower GI endoscopy	35	22.6	2.51 $\pm$ 0.96		
Both upper and lower GI endoscopy	47	30.3	2.77 $\pm$ 0.98		
<b>Being afraid of going to the hospital for endoscopy because of COVID-19</b>					
Yes	60	38.7	3.25 $\pm$ 0.78	-7.007	<b>0.000**</b>
No	95	<b>61.3</b>	2.29 $\pm$ 0.86		
<b>Giving up going to the hospital for endoscopy procedure at least once due to fear of COVID-19</b>					
Yes	55	35.5	3.10 $\pm$ 0.87	4.582	<b>0.000**</b>
No	100	<b>64.5</b>	2.41 $\pm$ 0.91		
<b>Think of getting COVID-19 while waiting in the endoscopy unit</b>					
Yes	43	27.7	3.06 $\pm$ 0.98	9.769	<b>0.000**</b>
No	49	31.6	2.24 $\pm$ 0.93		
Undecided	63	<b>40.6</b>	2.71 $\pm$ 0.82		
<b>Think of sterilization procedures in the endoscopy unit were enough</b>					
Yes	87	<b>56.1</b>	2.44 $\pm$ 0.9	5.393	<b>0.005*</b>
No	5	3.2	2.86 $\pm$ 0.93		
Undecided	63	40.6	2.94 $\pm$ 0.96		
<b>Think of getting COVID-19 from the devices used during endoscopy</b>					
Yes	20	12.9	3.23 $\pm$ 0.79	9.859	<b>0.000**</b>
No	70	<b>45.2</b>	2.33 $\pm$ 0.88		
Undecided	65	41.9	2.83 $\pm$ 0.96		
<b>Fear of COVID-19 transmission increased their anxiety about the endoscopy procedure</b>					
Yes	74	47.7	3.14 $\pm$ 0.81	6.837	<b>0.000**</b>
No	81	<b>52.3</b>	2.22 $\pm$ 0.86		
<b>Thinking that the severity of disease symptoms increase in the period when non-emergency endoscopy procedures were postponed</b>					
Yes	64	41.3	2.94 $\pm$ 0.99	3.139	<b>0.002*</b>
No	91	58.7	2.46 $\pm$ 0.88		
<b>Felt as if they were infected with COVID-19, due to the similarity of COVID-19 symptoms to the symptoms of the patients' existing disease requiring endoscopy</b>					
Yes	24	15.5	3.14 $\pm$ 1.06	2.744	<b>0.007*</b>
No	131	84.5	2.57 $\pm$ 0.91		

Abbreviations: SD: Standard Deviation, : Mean

\* p-value less than 0.05 is statistically significant. \*\* p-value less than 0.001 is statistically significant.

**Table 3. Assessment of Fear with Fear of COVID-19 Scale (N=155)**

Items	Strongly disagree		Disagree		Neither agree nor disagree		Agree		Strongly agree	
	n	%	n	%	n	%	n	%	n	%
I am most afraid of COVID-19	18	11.6	13	8.4	38	24.5	32	<b>20.6</b>	54	<b>34.8</b>
It makes me uncomfortable to think about COVID-19	15	9.7	15	9.7	41	26.5	23	<b>14.8</b>	61	<b>39.4</b>
My hands become clammy when I think about COVID-19	87	56.1	23	14.8	28	18.1	10	<b>6.5</b>	7	<b>4.5</b>
I am afraid of losing my life because of COVID-19	45	29	21	13.5	32	20.6	19	<b>12.3</b>	38	<b>24.5</b>
When watching news and stories about COVID-19 on social media, I become nervous or anxious	34	21.9	24	15.5	33	21.3	29	<b>18.7</b>	35	<b>22.6</b>
I cannot sleep because I'm worried about getting COVID-19	99	63.9	26	16.8	24	15.5	3	<b>1.9</b>	3	<b>1.9</b>
My heart races or palpitates when I think about getting COVID-19	87	56.1	27	17.4	19	12.3	9	<b>5.8</b>	13	<b>8.4</b>

**Table 4. Factors Affecting Fear of COVID-19**

Predictor	Unstandardized Coefficients		Standardized Coefficients	t	p
	B	Std. Error	Beta		
Age	0.071	0.076	0.076	0.942	0.348
Sex	-0.432	0.130	-0.227	-3.333	<b>0.001*</b>
Living place	0.238	0.119	0.132	1.995	<b>0.048*</b>
Presence of chronic disease	0.170	0.161	0.090	1.060	0.291
Used medication constantly	-0.264	0.153	-0.139	-1.723	0.087
Think of being in the risk group for COVID-19	-0.063	0.085	-0.049	-0.734	0.464
Having been diagnosed with COVID-19	0.319	0.168	0.152	1.899	0.059
Afraid of infecting their relatives with COVID-19	-0.721	0.241	-0.207	-2.999	<b>0.003*</b>
Changing personal hygiene behaviors due to COVID-19	-0.592	0.191	-0.218	-3.104	<b>0.002*</b>
Endoscopy experience	0.056	0.134	0.030	0.416	0.678
Type of endoscopy procedure	0.063	0.072	0.057	0.872	0.385
Being afraid of going to the hospital for endoscopy because of COVID-19	0.026	0.219	0.009	0.121	0.904
Giving up going to the hospital for endoscopy procedure at least once due to fear of COVID-19	-0.067	0.175	-0.034	-0.384	0.702
Think of getting COVID-19 while waiting in the endoscopy unit	0.039	0.081	0.033	0.475	0.636
Think of sterilization procedures in the endoscopy unit were enough	0.046	0.070	0.047	0.653	0.515
Think of getting COVID-19 from the devices used during endoscopy	-0.208	0.096	-0.152	-2.157	<b>0.033*</b>
Fear of COVID-19 transmission increased their anxiety about the endoscopy procedure	-0.594	0.145	-0.314	-4.100	<b>0.000*</b>
Thinking that the severity of disease symptoms increase in the period when non-emergency endoscopy procedures were postponed	0.101	0.093	0.083	1.087	0.279
Felt as if they were infected with COVID-19, due to the similarity of COVID-19 symptoms to the symptoms of the patients' existing disease requiring endoscopy	-0.016	0.175	-0.006	-0.092	0.927

\* p-value less than 0.05 is statistically significant

#### 4. Discussion

Pandemics in the past (19,20) and the COVID-19 pandemic today cause fear and negative emotional states (21,22). It was found that fear of COVID-19 was significantly higher in patients who were female, were living in a province, and used medication constantly, but there was no significant difference in terms of age and level of education. In a systematic review, it was observed that experiencing psychiatric symptoms due to COVID-19 was associated with the female sex (23), women had more negative attitudes toward COVID-19 (24). Men exhibited fewer protective behaviors against COVID-19 infection and had more positive attitudes toward COVID-19 (16). The level of fear of COVID-19 was measured higher in patients who were living in a province, which can be due to the thought that living in crowded environments can increase the likelihood of transmission in our study. Contrary to our research findings, Yousaf et al. found that urban residents

had more positive attitudes toward COVID-19 (25). During the implementation of measures such as taking protective measures against COVID-19 and the implementation of quarantine, age has been a frequently considered socio-demographic variable (26), and the elderly have been exposed to restrictive measures more than patients in other age groups (27). It is stated that the COVID-19 pandemic affects the elderly more (26), elderly people are more at risk for COVID-19 (28), patients in this group have more hospitalizations, and mortality rates are higher among the elderly (29). It was found that there was a misconception that COVID-19 posed a threat only to older people (4). Contrary to the findings in the literature, age was not among the factors affecting fear of COVID-19 in our study. It is thought that the relationship between the descriptive characteristics and the fear of COVID-19 showed some differences with the literature due to the differences in the study samples.

The possibility of spreading the infection to family members due to the high contagiousness of COVID-19 is among the reasons for fear of COVID-19 (22). In our study, patients' fear of COVID-19 did not differ significantly based on whether they believed they were at risk for COVID-19 or had been diagnosed with COVID-19, the fear levels of the patients who were afraid of transmitting COVID-19 to their relatives were significantly higher. It is stated that the fear of any situation perceived as a threat differs according to whether the threat is against the patient or a loved one (30). It is thought that the conscientious burden stemming from transmitting COVID-19, which has a high level of contamination, to family members may cause fear in patients.

The World Health Organization recommends economical and effective methods, such as personal hygiene, masks, and social distance, among the COVID-19 prevention measures to be implemented (31). According to Ahmed et al., fear of COVID-19 was the most important factor in the adoption of preventive measures and that those who reported that they had a fear of COVID-19 adopted more behavioral preventive practices (32). In our study, 85.8% of the sample stated that their personal hygiene behaviors increased. In a study conducted in our country, it was stated that fear of COVID-19 increased preventive behaviors (33). According to the findings of studies conducted in various countries around the world, it was determined that protective measures against COVID-19 were followed (16,34). It is thought that the high number of COVID-19 cases and the practice of effective, economical, and feasible protective measures have increased compliance with the measures.

The fight against COVID-19 has not only covered quarantine restrictions but has also restricted access to healthcare systems around the world to provide the treatment of infected patients and reduce the spread of COVID-19. The European Society of Gastrointestinal Endoscopy, the European Society of Gastroenterology and Endoscopy Nurses and Associates, and international guidelines have recommended that the need for urgent and elective endoscopy procedures should be determined, and elective gastrointestinal endoscopy procedures should be postponed (35). In our study, 41.3% of the patients stated that the severity of the symptoms of the disease increased during the period when access to the healthcare system was restricted. The levels of fear of COVID-19 in these patients were found to be significantly higher than in other patients. With these measures taken, it is stated that in addition to the decrease in access to the hospital services, the fear of getting infected in the hospital due to COVID-19 can lead to a decrease in health-seeking behaviors (22). In our study, 38.7% of the patients stated that they were afraid of going to the hospital for the endoscopy procedure due to COVID-19, and 35.5% of them said they gave up going to the endoscopy procedure at least once due to the fear of COVID-19 despite having disease symptoms requiring endoscopy. The levels of fear of COVID-19 were found to be significantly higher in these patients. Some of the patients stated that they were undecided about whether they could get COVID-19 during waiting in the hospital for the endoscopy procedure (40.6%), whether the sterilization procedures in the endoscopy unit were enough to prevent the transmission of COVID-19 (40.6%), and whether they could get COVID-19 from the devices used during

endoscopy (41.9%). The fear scores of these patients were found to be significantly higher. Of the participants, 47.7% stated that fear of COVID-19 transmission increased their anxiety levels about the endoscopy procedure. The fear scores of these patients were found to be significantly higher. The similarity of COVID-19 symptoms to GIS symptoms made 15.5% of the sample think they got COVID-19, and the fear scores of these patients were found to be significantly higher. The inability to access the health system due to COVID-19 causes the symptoms of patients with GIS to deteriorate, the similarity of these symptoms to COVID-19 symptoms causes the patients to fear that they will get COVID-19, and the fear of getting COVID-19 from the hospital leads to giving up presenting to the hospital for medical treatment and care procedures. The majority of the sample had an ambivalent attitude regarding the risk for COVID-19 in endoscopy units, and this attitude led to an increase in endoscopy procedure-related fear of COVID-19.

In our study, 55.4% of the sample was found to be afraid of COVID-19. According to a study conducted in India, 86% of the sample was found to be concerned about COVID-19 (25). In the study of Ahmed et al., COVID-19 posed a significant fear for 28% of the sample (32). Wolf et al. found that 24.6% of the individuals making up the sample were concerned due to COVID-19 (28).

The small sample size of this study could be considered as a limitation. We believe that patients' fear of COVID-19 is the reason for this limitation, since they would prefer not to visit the endoscopic unit. However, we confirmed that the sample size was sufficient with appropriate statistical methods by using Danielsooper statistical program (<https://www.danielsoper.com/>).

## 5. Conclusion

In our study, we found that patients undergoing gastrointestinal endoscopy had a high level of fear of COVID-19 and that gastrointestinal endoscopy was one of the factors that increased fear of COVID-19. The inability to access the health system due to COVID-19 causes the symptoms of patients with GIS to worsen, the similarity of these symptoms to COVID-19 symptoms causes patients to fear that they will get COVID-19. One of the most important findings of this study is that the fear of contracting COVID-19 from a hospital leads to giving up medical treatment and care procedures. All of these can cause delays in the early diagnosis and effective treatment of diseases. The vast majority of those in the sample had an ambivalent attitude regarding the risk for COVID-19 in endoscopy units, and this attitude led to an increase in the endoscopy procedure-related fear of COVID-19. We recommend that all necessary measures against COVID-19 should be taken in endoscopy units and that patients should be informed about these measures. It is thought that fear of COVID-19 should be evaluated, and that fear-related preventive and therapeutic applications should be implemented.

## 6. Contribution to the Field

Gastrointestinal endoscopy is a medical procedure frequently used in the diagnosis and treatment of digestive system diseases. The gastrointestinal endoscopy is applied in a wide range from the diagnosis of peptic ulcer, which we can describe as simple, to the diagnosis of life-threatening digestive system cancers (such as stomach, colon etc.).

However, according to our findings, although there was at least one symptom that required gastrointestinal endoscopy in the COVID-19 pandemic, 35% of individuals gave up on having an endoscopy procedure due to fear of COVID-19. Giving up from gastrointestinal endoscopy caused delay the diagnosis and treatment processes.

### Ethical Aspect of the Research

At the outset, written permission of the COVID-19 Scientific Research Evaluation Commission (<https://bilimselarastirma.saglik.gov.tr>), University Ethics Committee (KA EK-704, 09.09.2020), the Provincial Health Directorate Public Health Unit (11/11/2020-41307), and the patients who agreed to participate in the study was obtained. Patients who needed gastrointestinal endoscopy for medical treatment were provided with written information about the study on the day when they made an endoscopy appointment. Participants submitted their consent that they voluntarily accepted to participate in the study by checking a box in the online form. During conducting the research, universal ethical principles, including the Declaration of Helsinki, as well as scientific principles were followed.

### Conflict of Interest

There is no conflict of interest regarding any person and/or institution.

### Authorship Contribution

**Concept:** MA, FC, SK, HB; **Design:** MA, FC, SK, HB; **Supervision:** MA, HB; **Funding:** None; **Materials:** None; **Data Collection/Processing:** FC, SK; **Analysis/ Interpretation:** MA, FC, SK, HB; **Literature Review:** MA, FC, SK, HB; **Manuscript Writing:** MA, FC, SK, HB; **Critical Review:** MA, HB.

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