Clinical Research

The Relationship Between the Level of COVID-19 Fear and Anxiety-Depression Levels in Individuals with Cardiovascular Disease

Pınar ŞEN GÖKÇEİMAM[1,a], Kübra Ceren CESUR[1], Göksel GÜZ[2]

[1]*Erenköy Psychiatric Hospital, Psychiatry Clinic, İstanbul, Turkey*
[2]*Medicana International Istanbul Hospital, Cardiology Clinic, İstanbul, Turkey*

ABSTRACT

Objective: The psychological effect of the COVID-19 pandemic has been high among at-risk groups. The main aim of this study is to identify the association between the fear of contracting COVID-19 among individuals with cardiovascular system diseases and anxiety/depression.

Material and Method: It is a cross-sectional and descriptive study. Included in the study were 170 patients with a history of cardiovascular system disease for at least one year. Excluded from the study were those with mental diseases that would prevent them from filling out the scale and taking part in an interview, those with regular alcohol, substance use and those with psychological diseases. The COVID-19 Fear, Beck Anxiety, Beck Depression Scales were applied to each of the respondents.

Results: The scores recorded from the COVID-19 Fear Scale, Beck Depression Scale and Beck Anxiety Scale were 20 (7-34), 7 (0-31) and 6 (0-47), respectively. The scored from the COVID-19 Fear Scale were significantly higher among the respondents who were employed than those who were unemployed. A weak and positive correlation was found between the COVID-19 Fear Scale points and age, and between the Beck Depression Scale points and the Beck Anxiety Scale points.

Conclusion: People with cardiovascular disease are prone to experiencing high levels of fear, anxiety and depression during viral outbreaks. Patients in high-risk groups should be evaluated accordingly, and psychological counseling should be provided when needed. The results of the present study draw attention to this requirement during such outbreaks, and so can be considered as contributing to the body of related literature.

Keywords: Cardiovascular Disease, COVID-19 Fear, Anxiety, Depression.

ÖZ

Kardiyovasküler Sistem Hastalığı Olan Bireylerde COVID 19 Korkusu ile Anksiyete Depresyon Düzeyleri Arasındaki İlişki

Amaç: COVİD-19 salgın sürecinde risk grubunda olan bireylerin psikiyatrik açıdan etkilenme olasılığı yüksektir. Bu çalışmada temel olarak kardiyovasküler sistem hastalığı olan bireylerdeki COVİD-19 korkusu ile anksiyete ve depresyon düzeyleri arasındaki ilişkinin çalışılması amaçlanmıştır.

Gereç ve Yöntem: Çalışmaya en az bir yıldır kardiyovasküler sistem hastalığı bulunan 170 birey dahil edilmiştir. Ölçek doldurma ve görüşmeyi engelleyecek düzeyde bir mental hastalığının, düzenli alkol madde kullanımının ve bilinen bir psikiyatrik hastalığının olması dışlama kriteri olarak kabul edilmiştir. COVİD-19 korkusu, Beck Anksiyete ve Beck Depresyon Ölçekleri uygulanmıştır.

Bulgular: COVİD-19 Korkusu Ölçeği puanının ortanca değerinin 20 (7-34), Beck Depresyon Ölçeği puanı ortanca değerinin 7(0-31), Beck Anksiyete Ölçeği puanı ortanca değerinin ise 6 (0-47) olduğu görüldü. Çalışmayanların COVİD-19 korku puanı çalışanlara göre anlamlı olarak yüksekti. COVİD-19 Korkusu Ölçeği puanı ile yaş, Beck Depresyon ve Beck Anksiyete puanı arasında zayıf düzeyde pozitif yönlü korelasyon mevcuttu.

Sonuç: Kardiyovasküler hastalığı olan bireyler salgın döneminde yüksek korku düzeyi ile anksiyete ve depresyon açısından risk altındadırlar. Risk grubundaki bireyler bu yönde değerlendirilmeli, gerekirse psikiyatri konsültasyonu düşünülmelidir. Çalışma sonuçlarımızın salgın döneminde bu gerekliliğe dikkat çekecek verileri literatüre kazandıracağını, risk grupları ile ilgili yapılacak daha geniş çaplı çalışmalara ışık tutacağını düşünüyoruz.

Anahtar Sözcükler: Kardiyovasküler Hastalık, COVİD-19 Korkusu, Anksiyete, Depresyon.

There have been many outbreaks of infectious diseases in the past that have led to high morbidity and mortality. The ongoing outbreak of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) that first emerged in 2019, known also as (COVID-19), has affected millions of people globally as a result of its rapid spread (1). An evaluation of the data obtained from a large case series charting the progression of the pandemic found that elderly patients with known cardiovascular disease were at the greatest risk of morbidity and mortality (2). The pandemic may have an indirect impact on patients with cardiovascular disease, possibly due to virus exposure concerns, increased pressure on healthcare systems, and the avoidance of hospitals due to deferred outpatient and procedural care (3). Many psychological reactions have been reported,

[a]Yazışma Adresi: Pınar ŞEN GÖKÇEİMAM, Erenköy Psychiatric Hospital, Psychiatry Clinic, İstanbul, Turkey
Tel: 0216 302 5959   e-mail: dr_psen@hotmail.com

including phobias, anxiety disorders, suicide attempts and despair (4). The fear of COVID-19 can probably be linked to the uncertain character of the disease and its unpredictable course, and also due to the intolerance to uncertainty and the perception of the risk of infection. This fear can lead to negative psychological reactions, including inappropriate behaviors, emotional problems and avoidance response (5). An association between depression and an increased risk of cardiac events and death has been identified in patients with cardiovascular disease, and anxiety would appear to be an adequate predictor of such diseases when presenting in conjunction with depression (6). Aside from depression, symptoms of anxiety are also known to be significantly associated with both the initiation and progression of cardiovascular disease (7).

The likelihood of developing the depressive symptoms associated with a sedentary lifestyle, limitation and anxiety might be predicted to be high, since patients with cardiovascular disease, who are among the highest risk groups, frequently experience anxiety.

Considering that anxiety and depression levels will be effective in many issues such as drug compliance, seeking treatment, and prognosis in individuals with cardiovascular system disease, all kinds of factors that may be associated with these psychiatric symptoms should be evaluated in these patients. The primary aim of this study is to evaluate the fear of COVID-19 and the possible anxiety and depressive symptom levels in this particular patient group, in which mortality and morbidity has been high during the current outbreak. As a secondary goal, the study seeks to identify any association between the fear of COVID-19 and disease diagnosis in patients with cardiovascular disease. Another secondary goal is to determine this relationship in the presence of other conditions (like presence of comorbid disease) that may be associated with anxiety, depression levels. In our study, we hypothesized that as fear of COVID-19 increases, anxiety and depression levels will also increase. The data garnered from this study will raise awareness of the psychological conditions and their possible consequences that may develop in this high-risk group during such outbreaks.

MATERIAL AND METHOD

This cross-sectional and descriptive study included 170 consecutive patients who met the inclusion criteria of the study and who presented to the Cardiology Outpatient Clinics of the Medicana International Istanbul Hospital between November 2020 and May 2020.

A total of 196 consecutive patients who came to the outpatient clinic were interviewed. Of these patients, 24 were covered by the exclusion criteria. There were 2 patients who filled in the scales incompletely. Participants who met the inclusion criteria and filled out the scales completely were studied. The study was terminated when the specified number of patients exceeded.

All participants signed an informed consent form, and

ethics board approval for the study was obtained from the same hospital where the study was conducted. (Approval no: 016, Date of approval: November 2, 2020). The Ministry of Health of the Republic of Turkey also provided approval for the study, in which the Principles of the Helsinki Declaration were followed at every stage. The sample size was made for the ANOVA test using the G*power 3.1 program. A =0.05, power (1-β) =0.80, and the effect size was taken as 0.25 (moderate) according to the Cohen table, since there was no similar study done before, and the sample number was found to be 159 for the 3 groups. Considering that there may be 5% loss, it was decided to recruit 167 patients. Convenience sampling method (non-probabale sampling) was used to select patients. Convenience sampling method (non-probabale sampling) was used to select patients.

The primary output variables of the study were the fear of COVİD-19, anxiety and depression scores. The sociodemographic data form, COVID-19 Fear Scale, Beck Depression Scale and Beck Anxiety Scale measuring our primary output variables were applied to all participants.

Inclusion and exclusion criteria:

Included in the study were literate patients aged 18-65 years with a minimum 1-year history of cardiovascular disease who agreed to take part. This age range was chosen to rule out age-related mental weakness. Patients with known/diagnosed psychiatric disease, those with regular alcohol substance use, those who use psychiatric drugs, and those with mental illness who prevent them from meeting with and filling out the scale forms were excluded from the study.

Statistical Analysis

SPSS version 21 ((Statistical Package for the Social Sciences-IBM®, Chicago, IL, USA) was used for statistical analysis. Continuous variables were presented as mean ±sd and median, 25.-75. Percentiles or minimum-maximum, categorical variables were presented with frequency and percentage. The variables were investigated using visual (histograms, Q-Q plots) and analytical methods (Shapiro-Wilk test/Kolmogorov-Simirnov) to determine whether or not they are normally distrubuted. Comparisons of the groups for continuous variables were made by Mann-Whitney U test for two groups and Kruskal-Wallis test for more than two groups. Post-hoc analyzes were performed to test significance differences for multiple comparisons. While investigating the associations between non-normally distributed variables, the correlation coefficients and their significance were calculated using the Spearman test. Spearman correlation analysis was used to model relationships between variables. All tests are two-sided and significance level was accepted as p <0.05.

Data Collectıon Tools

Sociodemographic data form: This form has been developed by the authors for thev garnering of socio-

demographic data, in line with the aim of the study.

Beck Depression Scale: The BDS was developed by Beck et al. in 1961 for the measuring of the behavioral findings of depression in adolescents and adults (8). The BDS is a self-reported scale comprising 21 items, and measures the emotional-, somatic-, cognitive- and motivation related findings seen in depression. The scale is used to objectively determine the degree of depression symptoms, rather than to diagnose depression. BDS scores of 17 and above indicate differentiate depression requiring treatment with more than 90% accuracy. Each item is scored on a scale of 0–3, and the score from each item is totaled to find the depression score (Max. 63).

Beck Anxiety Scale: The BAS was developed in 1988 by Beck et al. and is a self-evaluation scale that is used to determine the anxiety symptoms of individuals (9). It is composed of 21 items, all of which are scored on a scale of 0-3. The highest possible score on the scale is 63, with higher total scores indicating a high level or severity of anxiety.

COVID-19 Fear Scale: This scale was developed by Ahorsu et al. in 2020 (10) and is composed of seven questions, all of which are scored positively on a 5-point Likert-type scale. Total scores are in the 7-35 range, with higher scores indicating a "high" level of fear associated with COVID-19.

RESULTS

Demographics and Clinical Characteristics

The mean age of the 170 patients included in the study was 56.03±12.45 years, and 65.9% were males (n =112). Among the patients, 84.1% (n =144) were married, while 76.5% (n =130) were residing with their elementary families (Table 1). For the level of education, 35.9% (n =61) had a university degree or higher, while 44.7% (n =76) were employed (Table 1). An evaluation of the cardiac diseases present in the patient group revealed 39.4% (n =67) had hypertension, 42.9% (n=73) had coronary artery disease and 17.6% (n =30) had other cardiac diseases (heart failure and rhythm disorders). Comorbid diseases along with cardiac conditions were identified in 42.4% (n =72) of the sample (Table 1).

Table 1. Demographic characteristics of patients.

	mean±std	Median (min-max)
Age	56.03±12.45	57 (24–80)
	n	**%**
Gender		
Female	58	34.10%
Male	112	65.90%
Marital Status		
Married	144	84.70%
Single	26	15.30%
Family		
Elementary family	130	76.50%
Extended family	27	15.90%
Living alone	13	7.60%
Level of Education		
Primary School	54	31.80%
Secondary School Graduate	55	32.40%
University or higher education	61	35.90%
Employment Status		
Employed	76	44.70%
Unemployed	94	55.30%
Cardiac disease		
Hypertension	67	39.40%
Coronary artery disease	73	42.90%
Other	30	17.60%
Comorbid Diseases		
Present	72	42.40%
None	98	57.60%
Cigarette Smoking		
Present	36	21.20%
None	134	78.80%

*n: number, %:percentage, **Mean±SD**: mean±standard deviation, **median (min-max)**: median (minimum–maximum).*

The median scores from the COVID-19 Fear, Beck Depression and Beck Anxiety Scales were 20 (7-34), 7 (0-31) and 6 (0-47), respectively (Table 2).

Table 2. COVID-19 Fear Scale, Beck Depression Scale and Beck Anxiety Scale scores.

	Mean ±SD	Median (min-max)
COVID-19 Fear Scale	18.9±6.95	20 (7-34)
Beck Depression Scale	8.87±7.35	7 (0-31)
Beck Anxiety Scale	9.5±9.80	6 (0-47)

***Mean±SD**: mean±standard deviation, **median (min-max)**: median (minimum-maximum).*

COVID-19 Fear Scale Findings

A comparison of the scores from the scale with demographic characteristics revealed similar COVID-19 Fear scale scores among those of different gender, marital status, level of education and characteristics of the family (p =0.163, p =0.422, p =0.097 and p =0.272, respectively). When the COVID-19 Fear Scale scores of the participants were compared with respect to employment status, those who were unemployed scored significantly higher than those who were employed (p =0.020) (Table 3).

No significant difference was identified in the COVID-19 Fear Scale scores of those with different cardiovascular diseases (p=0.054), as well as of the participants with and without comorbid diseases (p =0.721) (Table 4).

Beck Depression and Beck Anxiety Scale Findings

An assessment of the Beck Depression Scale and Beck

Anxiety Scale scores of different genders revealed significantly higher scores in women than in men (p =0.034 and p <0.001), while no significant differences were identified in the Beck Depression Scale and Beck Anxiety Scale scores in terms of marital status, education level and employment status (p =0.135, p =0.581 and p =0.652, respectively for the Beck Dep-

ression Scale, and p =0.196, p =0.760 and p =0.601, respectively for the Beck Anxiety Scale). The Beck Depression Scale scores of participants living with their extended families were found to be significantly lower than those living alone or with their elementary families (p =0.001) (Table 3).

Table 3. Comparison of scale scores and demographic features.

	COVID-19 Fear Scale			Beck Depression Scale			Beck Anxiety Scale		
	Mean ±SD	Median (25.-75.p.)	p	Mean±SD	Median (25.-75.p)	p	Mean±SD	Median (25.-75.p)	p
Gender									
Female	19.91±7.54	21(14.75-27)	0.163[*]	10.79±8.27	10.5(4.5-16)	0.034[*]	13.10±11.18	10.5(4-18.25)	0.0004*
Male	18.38±6.60	18(13.25-23)		7.88±6.64	6(2-13)		7.63±8.48	4.5(1-12)	
Marital Status									
Single	19.88±6.01	20(16-26.25)	0.422[*]	11.27±8.78	9.5(3-16.25)	0.135[*]	12.65±13.11	6.5(4-20.5)	0.196[*]
Married	18.72±7.10	19(13.25-25)		8.44±7	7(2.25-14)		8.93±9.02	6(2-13)	
Level of Education									
Primary School	20.48±7.71	23(14-27)		8.72±7.47	6.5(2-14.25)		10.65±10.99	6(3-15.75)	
Secondary School	18.44±6.28	18(14-22)	0.097[**]	9.89±8.05	9(3-15)	0.581[**]	9.33±9.88	6(2-13)	0.76[**]
University or higher	17.91±6.69	18(13-23.5)		8.08±6.53	7(2.5-11.5)		8.64±8.62	6(2-13)	
Employment status									
Employed	17.51±6.97	17(12-22.75)	**0.02**[*]	8.55±7.25	6(2.25-14)	0.652[*]	9.28±10.03	5(2-13.75)	0.601[*]
Unemployed	20.02±6.77	21(14.75-26.25)		9.13±7.45	8.5(3-14.25)		9.68±9.66	7(2.75-14)	
Family									
Extended	19.67±6.65	20(14-26)		4.81±6.25	3(1-6)[a]		6.41±9.81	3(1-11)[a]	
Elementary	18.50±7.04	18(13-24)	0.272[**]	9.39±7.04	9(3-14)[b]	**0.001**[**]	9.61±9.36	6.5(2.75-14)[a,b]	**0.015**[**]
Living alone	21.31±6.50	20(17-27.5)		12.08±9.58	14(4-20)[b]		14.76±12.22	9(4-24)[b]	

[*]*Mann-Whitney U test,* [**]*Kruskal-Wallis Test,* **Mean±SD:** *mean ± standard deviation,* **median (25.-75.p):** *median (25th and 75th percentile). Each different character in the same column means the groups are different from each other at a p level of =0.05.*

The Beck Depression Scale scores of the participants with a coronary artery disease were found to be significantly lower than those with other cardiovascular diseases, and the Beck Anxiety Scale scores were significantly lower among those with coronary artery disease whencompared to those with hypertension and with other cardiovascular diseases (p =0.021 and p <0.001)

(Table 4). The Beck Depression Scale scores of the participants with comorbid diseases were found to be significantly higher than those without comorbid diseases (p =0.036), while no significant difference was noted between the Beck Anxiety Scale scores of the two groups (p =0.087) (Table 4).

Table 4. Comparison of scale scores of patients and clinical features.

	COVID-19 Fear Scale			Beck Depression Scale			Beck Anxiety Scale		
	Mean ±SD	Median (25.-75.p)	p	Mean ±SD	Median (25.-75.p)	p	Mean ±SD	Median (25.-75.p)	p
Cardiac disease									
HT	20,24±6,93	20(15-27)		9,70±7,64	9(3-15)[a,b]		10,61±9,35	7(3-18)[a]	
CAD	17,41±6,66	17(12-22)	0,054[*]	7,07±6,20	6(2-11)[b]	**0,021**[*]	6,56±7,57	4(1-11)[b]	**0,001**[*]
Other	19,53±7,22	21(15-25.5)		11.4±8.34	10(4.5-18.5)[a]		14.17±13.10	11(3-22.25)[a]	
Comorbid Diseases									
Present	19.10±6.72	20(14-24.75)	0.721[**]	10.11±7.09	10(4-15)	**0.036**[**]	11.06±10.54	8.5(3-18)	0.087[**]
None	18.76±7.15	19.50(13-25)		7.96±7.43	6(2-12)		8.36±9.11	5(2-13)	
Cigarette Smoking									
Present	17.83±8.17	20.5(8.25-24.75)	0.445[**]	9.06±7.64	6(3-15)	0.805[**]	10.28±11.06	5(3-17.75)	0.725[**]
None	19.19±6.59	19.5(14-25)		8.82±7.29	7(2-14)		9.29±9.47	6(2-13.25)	

HT: Hypertension, CAD: Coronary Artery Disease, [*]*Kruskal-Wallis Test,* [**]*Mann-Whitney U test,* **Mean±SD:** *mean±standard deviation,* **median (25.-75.p):** *median (25th and 75th percentile).*

A weak and positive correlation was found between the COVID-19 Fear Scale scores, and the age and Beck Depression Scale scores of the patients (r =0.221 p <0.01; and r =0.282 p <0.01; respectively). A weak and positive correlation was found between the COVID-19 Fear Scale scores and the Beck Anxiety Scale scores (r =0.304 p <0.01) (Table 5). Furthermore, an intermediate and positive correlation was found between the Beck Depression Scale scores and Beck

Anxiety Scale scores of the participants (r =0.650 p <0.001) (Table 5).

Table 5. *Association between the COVID-19 Fear Scale scores, and the age, Beck depression and Beck Anxiety scale scores.*

	COVID-19 Fear Scale points	Beck Depression Scale points	Beck Anxiety Scale points
Age	0.221**	0.051	-0.016
COVID-19 Fear Scale points		0.282**	0.304**
Beck Depression Scale points			0.650**

Spearman correlation coefficients are given in the table, **p <0.01.

DISCUSSION

This present study evaluates a number of factors that may be associated with COVID- 19 fear and depression-anxiety levels in individuals with cardiovascular disease.

Covid-19 Fear, Anxiety and Depression and the Association with Demographic Variables

Studies have shown that the effects of fear are significantly greater among women than men, and women significantly more often report the development of fear into anxiety disorder than men (11). Women were observed to report a higher level of fear than men in a study carried out in the COVID-19 era (12). In the present study, however, the level of fear associated with COVID-19 was found to be similar among men and women with cardiovascular disease. This difference may be attributable to the higher proportion of men in the present study population, and may also be linked to their membership of a high-risk group related to COVID-19. Studies conducted during the pandemic have revealed higher anxiety levels among women than men, which has been attributed to the greater perception of the disease as contagious and fatal among women (13). The risk of anxiety and the development of depressive symptoms was reported to be significantly more common in women than men in another study of cardiac patients (14). In the present study of patients with cardiovascular disease, women were found to experience higher levels of anxiety than men, which concurs in general with the gender-related anxiety and depression scores reported in literature. The COVID-19-linked anxiety levels of young people with a high level of education were found to be higher in a study conducted in the United States (15). In a systemic study evaluating the research performed during the COVID-19 pandemic, young age was reported to be a risk factor for the development of psychological symptoms (16). A positive correlation was found between age and fear of COVID-19 fear in the present study, which is a finding that contradicts the findings of the general population, and might be explained by the fact that both advanced age and cardiovascular disease are risk factors for COVID-19. The results of studies involving patients with cardiovascular disease have shown that the lower the level of education, the greater the risk of anxiety. A high level of education may lower the likelihood of some forms of anxiety given the greater opportunity to access favorable employment, good social environments and a higher income. A high

level of education was shown to prevent anxiety and depression in a study (17), while a lower level of education was found to be associated more frequently with depression and anxiety in a study of patients with coronary artery disease (18). No significant association was found between education level and COVID-19 fear, anxiety or depression in those with cardiovascular disease in the present study, and it was thus concluded that the level of education comes out not to be preventive in individuals in the risk group during the period of an outbreak. This may be attributed to the fact that the effects of social support, easy access to help and higher income normally associated with a high level of education may have decreased during the current outbreak. Indeed, the reduction in social contact and financial losses have been reported to be associated with mental health problems in a review (19).

The social support that is perceived to be at a high level was shown to be associated with depressive symptoms and anxiety in a lower level in a study of patients with coronary heart disease. (20). No significant difference was identified in the recorded COVID-19 fear, depression and anxiety levels of those with different marital statuses in the present study. This positive association is observed to be decreased in some sociodemographic features that were found to be correlated with a lower anxiety and depression level in the general population in individuals with a high risk during the COVID-19 pandemic era according to the results of this present study. In the present study, the respondents who live with their extended families were found to have significantly lower levels of anxiety and depression than those who live alone, which highlights the importance of social support during the COVID-19 pandemic in high-risk groups. Fear of COVID-19 was found to be significantly higher among the unemployed than those who were employed in the present study. Being unemployed might have presented an opportunity for the standing isolation and prevention of the disease in individuals in the high-risk group. The social isolation associated with unemployment may lead to more time being spent at home preoccupied with COVID-19, leading to a greater fear of the outdoors and the potential for contamination. Being employed may ease the internalization associated with living under the precautions put in place to counter COVID- 19, even among those in high-risk groups, and may also ease any financial concerns and serve as a source of social support to the individual.

Association Between Covid 19 Fear and Anxiety/Depression Levels

The challenges and stresses associated with pandemics are known to trigger such mental problems as anxiety, depression and suicidal thoughts. Early studies in China reported that anxiety, depression and stress symptoms had increased in the community during the pandemic (21). Any factor that emerges as a stressor in the general population can be expected to have a greater effect on those in high-risk groups, and anxiety and

depression levels were found to be statistically significantly increased in a study of patients with cardiovascular disease evaluating the effect of COVID-19 on health-based quality of life (22). In a study carried out in China, the likelihood of the development of psychiatric symptoms was found to be higher among those with existing mental and physical health problems (23). Patients with chronic disorders were found to experience higher levels of stress than the general population given the greater risk of poor health outcomes in the event of COVID-19 infection in a cross sectional study carried out in the United States (24). In another study, individuals with poor health status and a history of chronic disease more commonly reported experiencing psychological effects linked to the pandemic, as well as greater levels of stress, anxiety and depression severity during the COVID-19 outbreak (25). Considering these results, individuals with cardiovascular disease can be understood to be at greater risk during the COVID-19 pandemic, and that how important the psychobiological outcome of this risk perception would be. The present study also identified a positive correlation between COVID-19 fear and the anxiety and depression scale scores, as expected, in individuals with cardiovascular disease. In addition to the burden of the anxiety and depression itself, it should be kept in mind that these symptoms can also have a detrimental effect on the clinical outcome of the present risk factor, and that the participants in the present study all presented to the cardiology outpatient clinic. The possibility of higher levels of anxiety and depression associated with COVID-19 fear among high-risk individuals who have difficulty accessing healthcare services due to being housebound, secondary to the fear of contamination during the pandemic, is an important issue that should be taken into account when evaluating the findings of the present study. In a recent study evaluating general stress levels among cardiology patients during the COVID-19 pandemic, 47.4% of patients reported increased stress levels, with the fear of infection being identified as a significant factor affecting their decisions whether or not to seek medical help (26). This highlights the importance of ensuring the continuation of medical-psychiatric check-ups and support in high-risk cases, either by phone or online, within their home environment. Elderly adults and individuals with severe comorbidities, when left defenseless against COVID-19 and other potential sources of risk, have been reported to experience significant fear (27). No significant difference was found in the COVID-19 fear and anxiety levels of patients with and without comorbidities among those with cardiovascular diseases, while depression scores were found to be significantly higher in those with comorbidities. The level of fear and anxiety experienced by patients might be changed in this present study since the study was conducted not in the acute phase of the pandemic, but after it had reached an advanced stage. That said, the challenges associated with living under the pandemic may be greater among those with comorbid diseases, which

may have contributed to the findings related to depression. The intermediate level and positive correlation found between anxiety and depression levels in the present study is an expected result. Increased anxiety levels were identified as predictors of depression among those in the high-risk groups, and the development of anxiety and depression contributes to morbidity and mortality rates in the presence of cardiovascular disease. Accordingly, the mental health of people with cardiovascular disease should be preserved and their treatment and follow-up should be maintained during such outbreaks. Factors such as the fear of catching the infectious disease and death, social isolation, limited access to medical treatment/aid due to the risk of contamination, and the unclear nature of the process increase the risk of anxiety and depression in those with cardiovascular disease, and this risk has been associated with vital results. An observable decline has been recorded in the number of emergency service admissions and non-hospital deaths among patients with cardiac problems (28), which would seem to be associated with COVID-19 fear, and the depressive moods associated with anxiety may also contribute to the avoidance of health services. The present study was conducted with patients who were able to present to the outpatient clinic, and so our findings should be interpreted accordingly. The prevalence of depression among those with cardiovascular disease has been reported in literature to vary based on the type and severity of the disease. Some 15-20% of patients with coronary artery disease experience depression (29), and depression and anxiety have a higher prevalence among those with heart failure when compared to the general population (30). The cardiovascular disease patient group in the present study was categorized into those with coronary artery disease, hypertension and other diseases (heart failure and arrhythmia), and their COVID-19 fear, anxiety and depression scores were compared. To the best of our knowledge, there have been no previous studies garnering such data during a viral outbreak. No significant difference was noted in the COVID-19 fear levels of the three groups, leading us to conclude that that the perceived threat from COVID-19 is similar regardless of the type of disease among patients with cardiovascular disease. It is also notable that the depression and anxiety scores of the patients with coronary artery disease were significantly lower than those with other cardiac diseases. This may be due to the fact that patients with cardiovascular diseases such as hypertension, heart failure and arrhythmia experience more perceivable symptoms than those with coronary artery disease, or that there is a higher perceived risk in this group.

Individuals with a high level of fear and anxiety avoid seeking medical help, and this can be identified as a limitation of the present study, given that the universe comprised only patients who presented to the outpatient clinics. This prevents the generalization of the study findings to all those with cardiovascular disease. That said, the results of the study can still be conside-

red significant when this limitation is taken into account. The development of the pandemic may also have affected the findings of the study. Studies comparing data obtained from the acute and advanced phases of an outbreak may provide an understanding of the acute and long-term effects of the outbreak. Comparing the same variables with a control group will make the results of the study more valuable. The absence of a control group is therefore another limitation. The presence of comorbid diseases was studied. However, the diseases are not specified. The differences in the probability of each disease affecting the anxiety and depression levels is another limitation. Although the sample size in the present study is not low, a larger sample would provide more accurate results related to the different groups. As an additional limitation, the study data were garnered from self-reported scales, and although those with a known psychiatric disease were excluded from the study, the status of the patients prior to the outbreak was an unknown factor. Clinical variables such as disease severity and duration could not be evaluated in the present study, but it would be meaningful to include these variables in future studies as

factors that increase the risk perception associated with COVID-19 fears. Individuals with cardiovascular diseases are at risk of developing anxiety and depression as a result of the high levels of fear experienced during viral outbreaks such as COVID-19. Certain demographic factors that are known to reduce anxiety and depression in the general population may be ineffective during such outbreaks due to the many added stressors associated with the outbreak itself. It is vital to ensure the continued provision of medical and psychiatric aid to housebound patients in high-risk groups, and to make multidimensional evaluations of those who have reached treatment. Consultations with psychiatry specialists should be considered for individuals with cardiovascular disease. We believe that the present study contributes to literature in its garnering of data that underlines the importance of such psychological requirements during an outbreak, its raising of awareness of the need for psychiatric evaluations and consultations, and its enlightening of larger-scale studies of patients in high-risk groups in the future.

Conflict of Interest: The authors declare no conflict of interest.

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