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Frequency and predictors of coronavirus anxiety in psychiatric patients and healthy people and its effect on treatment compliance during the pandemic

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Abstract

Coronavirus-19 has caused anxiety around the world. Although anxiety is inherent in pandemics, it can have serious consequences when it is chronic and disproportionate. It is possible situation affect the vulnerable population with mental illness more. This study compares the frequency and predictors of coronavirus anxiety among psychiatric patients and the healthy group and evaluates its effects on treatment compliance. A cross-sectional study was conducted on 285 psychiatric patients who applied to the psychiatry outpatient clinic and 86 healthy people between 15 July – 30 September 2020. Coronavirus Anxiety Scale was applied with a questionnaire that investigated demographic characteristics, experiences with the pandemic and treatment compliance. Coronavirus anxiety was detected in 8.4% of the patients and 9.3% of the healthy group. 34% of the patients didn't come to checkups regularly, the most common reason for this was their fear of the pandemic (56.7%). Their anxiety scores were also high. Female gender, comorbid disease and being quarantined were associated with an increased coronavirus anxiety scale score in patients while advanced age, retirement, divorced/widowed, having children, having comorbid disease, being tested for COVID-19 PCR and losing a relative due to COVID-19 increased the score in healthy group. Coronavirus anxiety disrupts the compliance of psychiatric patients with treatment and may cause the disease to exacerbate. Therefore, there is a need to develop special treatment approaches in the follow-up of psychiatric patients.

Keywords: Coronavirus anxiety, COVID-19, pandemic, mental health, treatment compliance

Introduction

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) [1]. The first case was seen in Wuhan, China's Hubei province, in December 2019. The virus has turned into a pandemic that has spread rapidly since then and it still continues to threaten everyone around the world.

COVID-19 has seriously affected not only the physical health of people, but also their mental health. Despite the increasing number of cases and deaths, the fact that the characteristics of the virus have not been fully discovered, the absence of an effective treatment, the uncertainty about the process and the negative news in the media have caused an increase in people's anxiety [2-4].

A recent study found that more than half of people had fear and anxiety associated with COVID-19 during the pandemic [5].

Fear is generally the flight or fight response that occurs in situations where an internal or external stimulus is perceived as "danger", which is the basis of survival for organisms, whereas anxiety reflects the general expectation of future threat [6]. In fact, anxiety is the common feeling of infectious diseases, and when it is at an optimal level, it can function positively in terms of alerting people and forcing them to take precautions to combat the pandemic [2]. However it can be harmful once it becomes chronic and disproportionate. For example, with insufficient anxiety one may display behaviors such as not obeying the necessary precautions and acting unhealthy that can cause harm to both the individual and the society [7]. On the other hand, anxiety that is difficult to control may be a key component of some biological processes that play a role in the development of mental illness [2]. While concerns of the pandemic increases anxiety and stress levels in healthy individuals, it may intensify the symptoms of those with pre-existing psychiatric disorders [8,9].

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While most of the studies investigating the effects of pandemics on mental health have focused on people infected with COVID-19, healthcare professionals and the general population [10-12]. There are few studies on its effect on individuals with mental illness. However, considering that psychiatric patients carry many risk factors such as difficulties in adapting to self-care, nutrition, sleep and other measures to be taken, inadequacy in impulse and behavior control, cognitive disorders, and risk of developing metabolic diseases due to the side effects of psychiatric treatments, they are more likely to be affected by additional stress [13-15]. In addition, these patients may avoid going to their routine checks and taking their medications because of their exaggerated worries [16-18].

On the other hand, the regulations made in health services due to the pandemic such as reducing the capacity of inpatient services, switching to an appointment system, postponing elective procedures may reduce the chances of patients receiving treatment, which may further increase their fears. For these reasons, it may be vital for the doctors involved in the treatment of these patients to be aware of the increasing fears and concerns in their environment. Recognizing this fear and identifying risky groups may contribute to the planning of treatment services, especially in cases where serious disruptions may occur in health services such as pandemics.

In this study, it was planned to determine the level of dysfunctional anxiety developed against the COVID-19 in patients with psychiatric admissions, its comparison with healthy controls, the factors that may be associated with dysfunctional anxiety, and the effects of this on treatment compliance. To our knowledge, no study related to this issue has been published in the literature so far.

Materials and Methods

This study is cross-sectional and priorly local ethics committee approval was obtained from university faculty of medicine (2020/943). The study was conducted with 309 consecutive patients who were admitted to the adult psychiatry outpatient clinic of university hospital between 15 July and 30 September 2020 and a control group of 86, age- and gender-matched individuals who were not diagnosed with and/or treated for any psychiatric disorder from general population. Patients younger than 18 years of age, with active psychotic episodes, currently taking substance addiction treatment or having organic or neurological pathologies that cause mental retardation and/or serious cognitive loss were not included in the study. The patients were grouped by the psychiatrist as anxiety disorders (generalized anxiety disorder, panic disorder, unspecified anxiety disorder) depressive disorders (major depression, dysthymia, other specified depressive disorder, and unspecified depressive disorder) bipolar and related disorders (bipolar disorder I,II) and schizophrenia spectrum and other psychotic disorders (delusional disorder, schizophrenia, schizoaffective disorder, unspecified schizophrenia spectrum and other psychotic) according to DSM-5 (American Psychiatric Association. 2013) [6]. 24 people from the patient group with missing data were excluded from the analysis.

Sample Size

The number of patients to be included in the study was calculated as at least 52 for sub-groups (psychotic disorders, depressive disorder, anxiety disorders, bipolar disorder, control group) when the alpha value was accepted as 0.05 and the power was 80%, mean CAS score of 6.66 with 2.35 SD for control group and 8.5 with 2.1 SD for patient group and two-tailed hypothesis using WSSPAS [19].

Data form

After informing the patient and control groups about the purpose and the content of the study, written or verbal informed consent was obtained from the participants who agreed to participate in the study, they were asked to fill out a questionnaire consisting of 3 parts. In the first part of the questionnaire there were questions analyzing demographic variables (such as age, gender, marital status education level, having a child, monthly income). In the second part, there were questions investigating the history of comorbid disease (diabetes, hypertension, heart disease, rheumatic diseases, malignancy, etc.), the diagnosis and duration of psychiatric disorders, and the level and reasons of patients' compliance and non-compliance with treatment during the pandemic period (Have you used your medication regularly? What is your reason for not using it regularly?, Have you come to your routine checks regularly?, What is your reason for not coming to the checks regularly?). In the 3rd section there were questions about COVID-19, histories of being infected / tested / quarantined due to COVID-19, and the treatment and / or loss of one of their relatives due to COVID-19. COVID-19 anxiety levels of the participants were evaluated with the Coronavirus Anxiety Scale (CAS).

Coronavirus Anxiety Scale

This scale is a 5-point Likert type scale developed by Lee to describe possible dysfunctional anxiety cases associated with the COVID-19 crisis (3). The scoring of the scale has been carried out as "0 = never", "1 = rare, less than a day or two", "2= a few days", "3=more than 7 days" and "4=almost every day in the last two weeks". This scaling format is consistent with the DSM-5's intersecting symptom scale. A CAS total score of ≥ 9 indicates dysfunctional anxiety associated with coronavirus. Evren et al. translated the scale into Turkish and confirmed its validity and reliability. In the validity and reliability study of the scale, Cronbach's alpha value was 0.80 [20].

Statistical analysis

The analyzes were evaluated in the IBM SPSS Statistics 22.0 for Windows package program.Descriptive data in the study were shown as n and percentage values in categorical data, and mean ± standard deviation (Mean±SD) values in continuous data. Pearson Chi-square test was used to compare categorical variables between groups. The suitability of continuous variables to normal distribution was evaluated with the Kolmogorov-Smirnov test. In comparison of two categories Mann Whitney U test was used for variables that do not show normal distribution. The comparison of more than two groups the Kruskal Wallis test was used for variables that did not show normal distribution. Multiple comparisons were performed using Dunet-adjusted Mann Whitney U test. The statistical significance level in the analysis was accepted as $p < 0.05$.

Results

A Comparison of demographic variables of patient and control groups with CAS scores

A total of 371 people, 285 patients and 86 controls, were included in the study. The patient group has 72 psychosis, 67 depression, 85 anxiety and 61 bipolar diagnoses. The mean age of the patient group was 39.25±12.117 and the mean age of the control group was 39.5 ±13.724 (p = 0.500). All of the participants were aware of the COVID-19 (100%).

The CAS score of women in the patient group was found to be significantly higher than men (p=0.006). In the patient group, the CAS score of those with comorbid diseases was found to be significantly higher than the CAS score of those without any (p=0.025). The CAS score average of those that have been quarantined during the pandemic in the patient group was found to be significantly higher than the score of those who were not quarantined (p = 0.048).

There was a significant difference in CAS scores between the age groups of the control group (p<0.001). CAS scores of retired individuals in the control group were found higher than other occupational groups (p=0.018). There was a significant difference in CAS scores of divorced/widowed individuals in the control group (p<0.001). The CAS scores of those with children in the control group were found to be significantly higher than of those who had no children in the control group (p=0.003).

The CAS score of those with a comorbid disease in the control group was significantly higher than the score of those in the control group who did not have any comorbid disease (p=0.001). The CAS score of those in the control group who had a COVID-19 test was found to be significantly higher than the CAS score of those in the control group who were not tested (p=0.047). The CAS score of those in the control group who lost one of their relatives due to COVID-19 was significantly higher than the score of those in the control group who did not lose one of their relatives due to COVID-19 (p<0.001).

The rate of comorbid physical illness in the patient group was significantly higher than the rate of comorbid physical illness in the control group (p=0.001). The rate of being infected with COVID-19, being quarantined and getting tested in the control group was found to be significantly higher than the rate of those in the patient group (p <0.001).

The CAS score of the patients in the 18-30 age group was significantly higher than the CAS score of the 18-30 age group in the control group (p=0.008). The CAS scores of those in the patient group who were >50 years old were significantly lower than those in the control group who were >50 years old (p=0.022). The CAS score of patients with comorbid disease in the patient group was significantly lower than the CAS score of those with a comorbid disease in the control group (p=0.023). The CAS score of those in the patient group who lost one of their relatives due to COVID-19 was significantly lower than the score of those in the control group who lost one of their relatives due to COVID-19 (p = 0.004) (Table 1).

Distribution of CAS scores between patient and control groups

The CAS average of all participants was found to be 2.11±3.445. The CAS score of the patient group was 2.1±3.5, and the control group was 2.0±3.1, and there was no statistically significant difference between them (p = 0.500). The number of patients who answered ≥ 1 to any question from the CAS scale was 128 (42.1%) and 42 (42.8%) in the control group (p>0.05). When CAS scores are categorized as ≥9 and <9, the number of individuals with a CAS score of ≥9 in all participants was 32 (8.6%). Although the CAS score was ≥9 in 8.4% (n = 24) for the patient group and 9.3% (n = 8) for the control group, the difference between them was not statistically significant (p>0.05). There was no statistically significant difference between all groups included in the study (control, psychosis, depression, bipolar, anxiety) in terms of both CAS categorical (p=0.407) and CAS total score (p=0.783) (Table 2).

Patient groups' treatment compliance rates

17.9% of the patients could not use their medication regularly. The main reason for this is that they felt good. 34% of the patients could not attend their routine checks regularly. The most common reason for this was stated as the fear of the pandemic (56.7%). There was no difference between the patient groups in terms of treatment compliance (p> 0.05) (Table 3).

The relationship between the duration of the disorder and treatment compliance and CAS scores

There was no difference between the disorder duration and CAS scores of the patients (p>0.05). The rate of CAS values of <9 in the patient group who came to their routine checks regularly was significantly higher than the rate of those who did not attend their routine checks regularly (p=0.03). The mean CAS score of those in the patient group who could not attend the checks regularly was found to be significantly higher than those who regularly attended their checks (p<0.001) (Table 4).

Factors affecting the CAS score in all participants

When all participants were evaluated together, the CAS score of women was found to be significantly higher than that of men (p=0.025). There was a significant difference between marital status in terms of CAS score (p=0.02). It has been seen that this difference is only due to the discrepancy between singles and married people. The CAS scores of the participants with children were found to be significantly higher than of those without children (p=0.004). The CAS score of those with comorbid disease was significantly higher than the score of those without comorbid disease (p=0.001). The CAS scores of those who attended the routine checks regularly were found to be significantly lower than those of those who did not attend the routine checks regularly (p<0.001). The CAS scores of those infected with COVID-19 (p=0.017), those who were quarantined (p=0.009), those who had been tested (p=0.022), those whose relatives were treated with COVID-19 (p=0.047), were found to be significantly higher than those who were not (Table 5).

Table 1. The comparison of demographic variables and CAS scores of the patient and control groups

Variables		Patient			Control			p³	p⁴
		n (%)	CAS score mean±SD	p¹	n (%)	CAS score mean±SD	p²		
Total		285(76.8)	2.1±3.5		86 (23.2)	2.0±3.1			0.500
Gender	Female	157 (55.1)	2.6±3.9	0.006	42 (48.8)	1.9±3.0	0.703	0.308	0.548
	Male	128 (44.9)	1.5±2.8		44 (51.2)	2.2±3.3			0.067
Age	18-30 age	84 (29.5)	2.5±3.9	0.503	28 (32.6)	0.4±1.1	<0.001	0.051	0.008
	31-40 age	75 (26.3)	1.6±2.8		15 (17.4)	1.4±2.4			0.684
	41-50 age	69 (24.2)	2.2±3.2		32 (37.2)	2.8±3.2			0.159
	>50 age	57 (20.0)	2.3±4.1		11 (12.8)	5.1±4.7			0.022
Occupation	Unemployed	155 (54.4)	2.2±3.6	0.498	22 (25.6)	1.5±2.7	0.018	<0.001	0.466
	Employed	110 (38.6)	2.1±3.5		60 (69.8)	2.0±3.0			0.451
	Retired	20 (7.0)	1.7±3.2		4 (4.7)	7.0±4.8			0.013
Marital status	Single	111 (38.9)	1.9±3.4	0.484	29 (33.7)	0.4±1.1	<0.001	0.154	0.065
	Married	155 (54.4)	2.4±3.7		55 (64.0)	2.7±3.5			0.111
	Divorced/Widowed	19 (6.7)	1.8±2.8		2 (2.3)	7.0±4.2			0.057
Having children	Yes	125 (43.9)	1.7±3.1	0.09	38 (44.2)	1.1±2.4	0.003	0.957	0.373
	No	160 (56.1)	2.4±3.8		48 (55.8)	2.9±3.5			0.113
Education	Primary	128 (44.9)	2.4±3.8	0.413	7 (8.1)	4.9±4.8	0.180	<0.001	0.108
	High school	88 (30.9)	1.9±3.1		33 (38.4)	2.2±3.3			0.587
	University	69 (24.2)	1.9±3.5		46 (53.5)	1.6±2.6			0.544
Monthly income*	0-2500 ₺	172 (60.4)	2.4±3.7	0.126	34 (39.5)	1.5±2.8	0.023	<0.001	0.243
	2501-4999₺	60 (21.1)	1.3±2.4		16 (18.6)	4.1±4.3			0.002
	≥5000₺	53 (18.6)	2.2±3.9		36 (41.9)	1.7±2.6			0.634
Comorbid disease	No	164 (57.5)	1.9±3.5	0.025	66 (76.7)	1.5±2.7	0.001	0.001	0.876
	Yes	121 (42.5)	2.4±3.5		20 (23.3)	4.1±3.8			0.023
Have you been infected with COVID-19?	No	277 (97.2)	2.0±3.4	0.064	74 (86.0)	2.0±3.2	0.180	<0.001	0.750
	Yes	8 (2.8)	5.4±5.6		12 (14.0)	2.5±3.0			0.427
Have you been quarantined?	No	266 (93.3)	2.0±3.4	0.048	68 (79.1)	1.9±3.1	0.129	<0.001	0.826
	Yes	19 (6.7)	4.2±5.1		18 (20.9)	2.8±3.4			0.775
Have you been tested for COVID-19?	No	235 (82.5)	2.0±3.5	0.185	52 (60.5)	1.7±3.1	0.047	<0.001	0.768
	Yes	50 (17.5)	2.7±3.9		34 (39.5)	2.6±3.2			0.524
Have any of your relatives been treated for COVID-19?	No	207 (72.6)	2.0±3.6	0.147	56 (65.1)	1.7±3.1	0.160	0.179	0.813
	Yes	78 (27.4)	2.4±3.4		30 (34.9)	2.7±3.3			0.561
Have any of your relatives died due to COVID-19?	No	257 (90.2)	2.2±3.6	0.556	73 (84.9)	1.5±2.7	<0.001	0.170	0.517
	Yes	28 (9.8)	1.8±2.8		13 (15.1)	5.2±3.8			0.004

p¹= Comparison of variables in the patient group in terms of mean CAS score. p²= Comparison of variables in the control group in terms of mean CAS score.
p³= Percentage comparison of patient and control group according to variables. p⁴= Comparison of mean CAS scores of the patients and control groups with each other.
*: $1=8.19 Turkish liras (according to the exchange rate by April 21,2021)

Table 2. Distribution of scores among the patient and control groups

	CAS category				p¹	CAS score mean±SD	p²
	<9		≥9				
	n	%*	n	%*			
Control group	78	90.7	8	9.3	0.407	2.1±3.2	0.783
Psychosis group	68	94.4	4	5.6		1.7±2.9	
Depression group	61	91.0	6	9.0		2.0±3.3	
Bipolar group	58	95.1	3	4.9		2.0±2.9	
Anxiety group	74	87.1	11	12.9		2.7±4.5	

* Row percentage has been used. p¹: Comparison of subgroups by CAS category p²: Comparison of subgroups by CAS total score.

Table 3. Comparison of treatment compliance rates between patient groups during the pandemic

	Response	All Patients n %	Psychosis group n %	Depression group n %	Bipolar group n %	Anxiety group n %	p
Have you used your medication regularly?	No	51 (17.9)	13 (18.1)	14 (20.9)	8 (13.1)	16 (18.8)	0.703
	Yes	234 (82.1)	59 (81.9)	53 (79.1)	53 (86.9)	69 (81.2)	
Your reason for not using medication regularly?	I didn't care	20 (39.2)	2 (15.4)	7 (50.0)	4 (50.0)	7 (43.8)	0.291
	I was feeling good	21 (41.2)	8 (61.5)	6 (42.9)	3 (37.5)	4 (25.0)	
	I couldn't provide my medicine	6 (11.8)	2 (15.4)	0 (0.0)	1 (12.5)	3 (18.8)	
	I didn't take them because they would weaken my immunity	1 (2.0)	0 (0.0)	1 (7.1)	0 (0.0)	0 (0.0)	
	Other	3 (5.9)	1 (7.7)	0 (0.0)	0 (0.0)	2 (12.5)	
Have you come to your routine checks?	No	97 (34.0)	21 (29.2)	27 (40.3)	17 (27.9)	32 (37.6)	0.326
	Yes	188 (66.0)	51 (70.8)	40 (59.7)	44 (72.1)	53 (62.4)	
Your reason for not coming to the checks regularly?	I was afraid of the pandemic	55 (56.7)	10 (47.6)	17 (63.0)	10 (58.8)	18 (56.3)	0.875
	I had trouble making an appointment	7 (7.2)	3 (14.3)	3 (11.1)	0 (0.0)	1 (3.1)	
	Private reasons	10 (10.3)	2 (9.5)	2 (7.4)	3 (17.6)	3 (9.4)	
	I didn't care	9 (9.3)	2 (9.5)	2 (7.4)	2 (11.8)	3 (9.4)	
	Other	16 (16.5)	4 (19.0)	3 (11.1)	2 (11.8)	7 (21.9)	

p: Comparison of treatment compliance rates among all groups.

Table 4. The relationship between treatment compliance and CAS scores of patients during the pandemic period

		CAS category				P¹	CAS score mean±SD	P²
		<9		≥9				
		n	%	n	%			
Duration of the psychiatric diorder	0-5 months	28	93.3	2	6.7	0.487	2.0±4.5	0.814
	6-11 months	24	85.7	4	14.3		2.3±4.3	
	≥12 months	209	92.1	18	7.9		2.1±3.3	
Have you used your medication regularly?	Yes	218	93.2	16	6.8	0.051	1.9±3.2	0.058
	No	43	84.3	8	15.7		3.3±4.6	
Your reason for not using medication regularly?	I didn't care	19	95.0	1	5.0	0.103	2.2±3.2	0.356
	I was feeling good	17	81.0	4	19.0		3.5±4.8	
	I couldn't provide my medicine	3	50.0	3	50.0		7.5±7.0	
	I didn't take them because they would weaken my immunity	1	100.0	0	.0		0.0±-	
	Other	3	100.0	0	.0		2.0±3.5	
Have you come to your routine checks?	Yes	84	86.6	13	13.4	0.03	3.3±4.2	<0.001
	No	177	94.1	11	5.9		1.5±3.0	
Your reason for not coming to the checks regularly?	I was afraid of the pandemic	46	83.6	9	16.4	0.352	3.8±4.2	0.084
	I had trouble making an appointment	6	85.7	1	14.3		3.3±3.6	
	Private reasons	9	90.0	1	10.0		2.5±3.7	
	I didn't care	7	77.8	2	22.2		4.7±6.2	
	Other	16	100.0	0	.0		1.1±2.3	

*Row percentage has been used. p1: Comparison of different variables by CAS category p2: Comparison of different variables by CAS total score.

Table 5. Factors associated with an increase in CAS score among all participants

Variables		CAS score mean±SD	p
Gender	Female	2.5±3.8	0.025
	Male	1.7±3.0	
Marital status	Single	1.6±3.1	0.020
	Married	2.5±3.7	
	Divorced/Widowed	2.3±3.2	
Having a child	No	1.6±2.9	0.004
	Yes	2.5±3.7	
Comorbid disease	No	1.8±3.3	0.001
	Yes	2.6±3.6	
Coming to routine checks	No	3.3±4.2	<0.001
	Yes	1.5±3.0	
Being infected with COVID-19	No	2.0±3.4	0.017
	Yes	3.7±4.4	
Being quarantined	No	2.0±3.3	0.009
	Yes	3.5±4.4	
Being tested	No	2.0±3.4	0.022
	Yes	2.7±3.6	
Having relatives treated with COVID-19	No	2.0±3.5	0.047
	Yes	2.5 3.3	

*Only statistically significant values are reported on the table.

Discussion

In this study, the awareness levels of psychiatric patients regarding the COVID-19 pandemic, data on the frequency of coronavirus anxiety and its effect on treatment compliance have been obtained.

All of the patients and healthy individuals in our study were aware of the COVID-19 pandemic. In the study of Muruganandam et al. [18], it was reported that 8.3% of psychiatric patients were completely unaware of the pandemic. Although our result was compatible with studies conducted in healthy populations, this high rate in the patient group was remarkable [21,22]. This high level of awareness may be related to the fact that the study was conducted with relatively mild patients and that patients with severe cognitive impairment were excluded from the study. In addition, the fact that the study was conducted in the 4 month after the pandemic was declared in our country may have provided the necessary time for people to get an idea about the pandemic.

In our study, in line with previous studies suggesting increased emotional and psychological discomfort during the current pandemic, almost half of the participants were found to experience at the least (the number of people who got a score ≥1 was170), coronavirus anxiety. However, the rate of dysfunctional anxiety was 8.6% in the patient group reporting anxiety, and 9.3% in the healthy group, which was quite low compared to previous studies [18, 23]. Moreover, the study was conducted during the months when the number of cases and death rates were the highest in Turkey. This result was surprising considering that the fear of pandemic is related with prevalence and mortality [24]. The exact reason for this is unknown, but the relative easing of restrictions during the summer months may play a role here. Perhaps a little bit of leaving home, the sharing and support perception provided by socialization have led to a decrease in COVID-19 anxiety in people. The fact that the government allowed patients with continuous drug use and drug report during the pandemic period to obtain their drugs from the pharmacy without going to the hospital may also have caused the anxiety rates in patients to decrease.

Another finding in our study was that although there was no significant difference between them, the group with the least worry was psychosis patients and the group with the most was the anxiety patients. In fact, considering that worry is the basic emotion of anxiety disorders, it was not an unexpected finding that these patients experienced more significant anxiety [18,25].

It has been reported in the literature that the presence of mental illness predisposes to the development of comorbid physical diseases [13,14]. Likewise, in our study, the rate of comorbid disease was found to be high in individuals with mental illnesses. However, despite these high rates, psychiatric patients experienced less dysfunctional anxiety than healthy control groups with similar characteristics. These low anxiety levels may indicate increased social withdrawal, negative symptoms, and impairments in cognitive and emotional functions. Perhaps for these reasons, patients had trouble grasping the significance of the pandemic or seemed not to attach much importance to it. Although it was not found to be statistically significant in our study, the fact that patients with psychotic disorders stated that they were less anxious supports this view [18,25]. Therefore, these low levels of anxiety may indicate that psychiatric symptoms are intensified rather than reflecting that patients are easily adapted to the pandemic.

It is a known fact that some young people and children are more vulnerable to health-related problems due to pre-existing anxiety and / or experiences [26]. In our study also, it was found that young patients have more coronavirus anxiety than their healthy peers. Similarly, Brand et al. [27] in their study, showed that university students who had prior anxiety sensitivity, obsessive-compulsive symptoms and / or beliefs had high rates of anxiety associated with the swine flu pandemic. In the literature, this situation is attributed to environmental factors as well as a mental illness in young patients causing cognitive and emotional distortions and weakness in coping power. As a matter of fact, these people may interpret events worse, or they may become more anxious by being more easily affected by the concerns of the individuals around them. Considering that more than half of all conditions affecting mental health develop during childhood and/or early adulthood, this result may indicate that more distressing situations may arise in the future, especially for young patients.

In our study, it was observed that female patients were more concerned than male patients. The reason for this may be related to the biological predisposition brought about by being a woman as well as their ability to express their fears more easily than men [28]. In addition, this result can be attributed to women's excessive threat perceptions or concerns about loss of control. On the other hand, in this study, unlike the literature, coronavirus anxiety scores in the control group were found to be similar in both genders [29,30]. Regardless of their gender, these people without a mental illness cared more about their advanced age, their spouses, children, relatives, and financial difficulties and were therefore more anxious. Moreover, individuals in the patient group were less affected by the death of their relatives due to COVID-19, while for those in the healthy group, this was associated with increased anxiety scores. This result appears to be a reflection of distancing from the environment and family, hopelessness, loss of interest and desire caused by mental illnesses. On the other hand, this result reveals that the anxiety that is developed during the pandemic process cannot be limited only to COVID-19 transmission, and its negative impact in other areas such as economic, social and education should be further examined.

Another important result in our study was that patients with high anxiety avoided coming to their routine checks. The compliance of psychiatric patients with their follow-up and treatment is generally problematic, and research has shown that this problem increases during the pandemic process. A recently published investigation by Demir et al found that 61% of psychiatric patients had treatment nonadherence during the pandemic, and the most common reason for this was anxiety about the high contagiousness of COVID-19 [31]. It is known that treatment non-compliance seriously affects the rates of re-hospitalization in psychiatric patients. Weiden et al. reported that treatment non-compliance in patients with schizophrenia doubled the risk of hospital readmission and prolonged hospital stay [32]. Ganzalez et al. observed that the suicide rate was 5.2 times higher in bipolar patients with treatment nonadherence [33]. The annual cost of being re-hospitalized as a result of non-compliance is over millions of dollars [34]. Therefore, it is important to take urgent measures for patients who do not compliance with their treatment due to high anxiety. The effect of this avoidance can quickly lead to an exacerbation of mental illness and an increase in the burden on health services. Additionally, this result demonstrated the urgent need for urgent measures for these patients with high anxiety to coping with their anxiety and to ensure their routine control.

There are some strengths and limitations to this study. Firstly, this is the first study investigating the effects of coronavirus anxiety on treatment compliance among psychiatric patients. It had an adequate sample size and validated scale were used to measure anxiety caused by the COVID-19. The age and sex-matched control group selected from the general population strengthened our assessment. On the other hand, this study may not reflect the general psychiatric patient population since it consists of patients who applied to our hospital. Although the psychiatric evaluation was made with proven tests, the reliability of self-reported information may be low. Additionally the cross-sectional nature of the study, the other factors that could affect anxiety, such as the patients' level of knowledge about the pandemic, their attitudes and behaviors about the measures taken, and their perceptions of social support, pre-existing anxiety levels, drugs taken and disease severity of these patients were not investigated. Despite these limitations, these findings have potentially important implications. These data can provide pilot data for studies that will investigate the long-term effects of the pandemic. Considering that psychiatric diseases cause long-term and serious disability, identifying risky groups may guide healthcare professionals in the organization of follow-up and treatment of these patients.

Conclusion

In conclusion, our study has shown that the global COVID-19 pandemic causes similar anxiety in the whole population and this anxiety prevents individuals with psychiatric diseases from going to their routine check-ups and receiving therapy. It seems that the effects of COVID-19, which continues to seriously threaten human health despite a year since its inception, will continue for a long time. This may affect individuals with mental illnesses even more. For this reason, it is important for mental health professionals to consider vulnerable groups and to develop and implement special treatment and monitoring techniques as soon as possible. This will make significant contributions to controlling the exaggerated anxiety of these patients, ensuring the continuity of their treatment and protecting the mental health of the society in the future.

Conflict of interests
The authors declare that they have no competing interests.

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Ethical approval
This study is cross-sectional and priorly local ethics committee approval was obtained from university faculty of medicine (2020/943).

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