



Original Research

Evaluation of Coronavirus Anxiety Levels and Coping Strategies of Major Depressive Disorder, Generalized Anxiety Disorder, and Panic Disorder Patients During the Covid-19 Pandemic

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Abstract

Objectives: This study aims to compare patients with major depressive disorder (MDD), generalized anxiety disorder (GAD), and panic disorder (PD), whom we have frequently seen in our hospital practice during the pandemic, with healthy controls (HC) in terms of coronavirus anxiety levels and coping strategies.

Methods: In this study, the Sociodemographic Data Form, Coronavirus Anxiety Scale (CAS), Hamilton Depression Rating Scale, Hamilton Anxiety Rating Scale, and Coping Orientation to Problems Experienced (COPE) scale were applied to the participants. 30 MDD patients, 32 GAD patients, 31 PD patients and 38 HCs, totaling 131 participants, constituted the sample of the study.

Results: Evaluation of the CAS scores of the participants revealed that HC scored 3.306 ($p=0.002$) points lower than GAD patients and 3.014 ($p=0.005$) points lower than PD patients, while HC and major depression patients were not statistically different in terms of CAS scores ($p=0.880$). In the comparison of coping strategies, HC scored 3.151 ($p<0.001$) points higher than MDD patients and 2.059 ($p=0.004$) points higher than GAD patients in terms of "active coping." In terms of "planning," HC scored 2.726 ($p<0.001$) points higher than MDD patients, 2.589 ($p=0.001$) points higher than GAD patients, and 2.171 ($p=0.006$) points higher than PD patients.

Conclusion: This study found higher coronavirus anxiety levels in GAD and PD patients but no difference in MDD patients compared to HC during the COVID-19 pandemic, which may indicate that MDD patients can cope better with coronavirus anxiety. Determining the coping strategies that individuals use to cope with coronavirus anxiety during the COVID-19 pandemic may help mental health professionals to control disease-related stressors and contribute to the treatment process.

Keywords: Coping strategies, coronavirus anxiety level, COVID-19 pandemic, generalized anxiety disorder, major depressive disorder, panic disorder

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COVID-19 disease originated at Wuhan, Hubei, China in December 2019 and spread all over the world.^[1] The World Health Organization (WHO) declared the coronavirus outbreak as a global pandemic on March 11, 2020.^[2] The CO-

VID-19 pandemic has also had negative effects on physical and mental health.^[3] COVID-19 infection caused significant health problems and fatalities in individuals, whereas the economic and social consequences of the pandemic have

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emerged over time.^[4] All environmental changes employed (social restrictions, quarantine, school and work closures, loss of livelihood, reduced economic activities, states' initiatives to control the outbreak, etc.) due to the COVID-19 pandemic have the potential to affect mental health.^[5]

The incidence of mental symptoms such as anxiety, depression, fear, stress, and sleep problems has increased during the COVID-19 pandemic.^[6] In the United States, it was reported that anxiety and depression symptoms were 3 times higher in adults during the first phase of the pandemic (early 2020) compared to 2019.^[7] In Turkey, in a study conducted by Özdin et al.^[8] in the first period of the COVID-19 pandemic (2020), it was found that 23.6% of the population had depression and 45.1% had anxiety disorder. Individuals with existing psychiatric illness or a history of psychiatric illness are significantly affected, as known from previous pandemics.^[9] In a study conducted with 1450 adults in the USA between March 31 and April 13, 2020, the prevalence of GAD in the presence of COVID-19-related stressors (family and relationship problems, financial problems, death of a relative due to COVID-19, job loss of a family member, feeling lonely, etc.) was found to be 10.9%.^[10] In the National Comorbidity Survey, the data of which were collected before the COVID-19 pandemic, this rate was found to be 3.1%.^[11] In another study conducted in 2017, the 12-month prevalence of GAD was 4%.^[12]

"Coping" is defined as the cognitive and behavioral efforts deployed by individuals to solve the problems they face using their psychological resources.^[13] It is reported that individuals with psychiatric illness experience more psychological stress than healthy individuals are more sensitive to negative news about the pandemic, and their coping strategies are less effective.^[14,15]

Most of the studies conducted in Turkey and worldwide concern the psychiatric effects (depressive symptoms, anxiety symptoms, sleep, etc.) of the COVID-19 pandemic on the general population (health-care professionals, students, children, etc.).^[8,16] With the prolongation of the COVID-19 pandemic in the world and in Turkey, it has become important to investigate the direct and indirect effects of the pandemic on psychiatric diseases. In this study, we aimed to compare patients with major depressive disorder (MDD), generalized anxiety disorder (GAD) and panic disorder (PD), whom we have frequently seen in our hospital practice during the pandemic, with healthy controls (HC) in terms of coping strategies and coronavirus anxiety levels.

The hypothesis of the research:

1. During the pandemic process, the coronavirus anxiety level is higher in patient groups (MDD, GAD, and PD) compared to the healthy control group

2. The coping attitudes of the patient groups (MDD, GAD, and PD) are different from the healthy control group during the pandemic process.

Methods

Procedure and Sample

A total of 93 patients, 32 with GAD, 31 with PD, and 30 with MDD according to the DSM-5^[17] diagnostic criteria, who attended the psychiatry outpatient clinic for treatment between July 1 and December 31, 2021, newly diagnosed and had not been on any psychotropic drugs for any other reason at least 1 month, were at the age of 18–65 and gave written informed consent to participate in the study, were included in the study according to the order of attendance to the outpatient clinic. All participants were examined by 2 specialist psychiatrists, evaluated according to the DSM-5 criteria and given SCID-5-CV (DSM-5).^[18] As the control group, 38 people at the age of 18–65, who applied to the medical board of our hospital in the same time period, had similar sociodemographic characteristics with the study group, and who had no physical illness or psychiatric illness according to the DSM-V criteria were included. Patients who had alcohol and substance use disorders according to the DSM-5 criteria during psychiatric evaluation, experienced difficulty in performing the tests applied in the study and suffered cognitive impairment that would complicate their compliance with the study instructions were excluded from the study. A total of 131 people, including 93 patients and 38 HC, were included in the study.

Measurements

Sociodemographic Data Form

A form in which demographic characteristics such as age, sex, and educational status of the participants were questioned, as well as whether they were infected with coronavirus, their isolation status and vaccination status.

Hamilton Anxiety Rating Scale (HARS)

This scale developed by Hamilton was prepared to determine the level of anxiety and symptom distribution in individuals and to measure any change in severity.^[19] The Turkish version of the scale, the Turkish validity and reliability study of which was conducted by Yazıcı et al.^[20], did not calculate a cutoff score.

Hamilton Depression Rating Scale (HDRS)

This scale developed by Hamilton evaluating the severity of depression consists of 17 items, and the highest score is 53.^[21] The validity and reliability of the Turkish version were conducted by Akdemir et al.^[22]

Coronavirus Anxiety Scale (CAS)

The CAS is a self-report scale used to measure coronavirus-related dysfunctional anxiety.^[23] The Turkish validity and reliability study of the scale was conducted by Evren et al.^[24]

Coping Orientation to Problems Experienced (COPE)

It was developed by Carver et al.^[25], to identify coping strategies used in the face of stressful situations. The Turkish validity and reliability study was conducted by Ağargün et al.^[26]

Procedure

After obtaining the written informed consent of the participants, in the first phase of the study, the Sociodemographic Data Form, CAS, HDRS, HARS, and COPE scale were applied to patient groups with MDD, GAD, and PD. In the second stage, the clinical scales applied to patients were also applied to HC matched in age and sex with the patient groups. Two participants whose alcohol use disorder was determined according to DSM 5 criteria during the psychiatric evaluation and one participant who had difficulty in performing the tests applied in the study were not included in the study. The data of six participants which were found to have deficiencies in the data collection tools that could affect the results of the study were also excluded from the study.

Ethics Committee Approval

For the ethics committee approval of the study, permission was granted by the Alanya Alaaddin Keykubat University Non-Interventional Clinical Research Ethics Committee on June 9, 2021, under decision no. 10354421-2021/10-08. An informed consent form was signed by all participants before the interview. The study was conducted in accordance with the Declaration of Helsinki.

Statistical Analysis

In the assessment of data, frequency distributions and percentages were used as descriptive statistical methods for categorical variables whereas mean and standard deviation values were used for numerical variables. Chi-square test was used to compare categorical variables, and Pearson correlation test was used to determine the relationship between numerical variables. For the comparison of descriptive variables forming two independent groups, t-test for independent groups was used if the distributions and variances of the groups met the appropriate conditions. If this was not the case, Mann-Whitney U test, the non-parametric equivalent of the aforementioned test, was applied. For the comparison of descriptive or ordinal variables that can form more than two independent groups,

one-way analysis of variance was applied if the distributions and variances of the groups met the appropriate conditions. If this was not the case, Kruskal-Wallis test, the non-parametric equivalent of the aforementioned test, was applied. Data analyses were conducted using the Statistical Package for the Social Sciences (SPSS), version 22 (IBM SPSS Corp.; Armonk, NY, USA) and the statistical significance level was set as $p \leq 0.05$.^[27]

Results

The sociodemographic and pandemic-related characteristics of the participants and the comparison of MDD, GAD, and PD patients and HC in terms of these characteristics are shown in Table 1. Of the 131 participants with a mean age of 34.10 ± 10.70 years, 29% were HC, 22.9% were MDD patients, 24.4% were GAD patients, and 23.7% were PD patients. While 64.1% of the participants were female and 35.9% were male, 49.1% were university graduates, and 56.4% were married. About 27.5% of the participants had a COVID infection, and 26.4% had been in isolation due to a first-degree relative infected with COVID. About 6.9% lost a first-degree relative to COVID. Approximately two-thirds of the participants had sleep problems and considered that the pandemic negatively affected their mental health. No statistically significant difference was found between MDD, GAD, and PD patient groups and healthy control group in terms of age ($p=0.229$), sex ($p=0.274$), education level ($p=0.159$), marital status ($p=0.843$), socioeconomic status ($p=0.363$), COVID infection status ($p=0.076$), isolation status ($p=0.786$), death of a first-degree relative due to COVID infection ($p=0.785$), and vaccination status ($p=0.143$). On the other hand, a statistically significant difference was determined between the groups in terms of thinking that the pandemic negatively affected one's mental health ($p<0.001$) and sleep problems ($p=0.001$) (Table 1).

Comparison of MDD, GAD, and PD Patient Groups and HC in Terms of Clinical Scale Scores

Table 2 shows the comparison of MDD, GAD, and PD patient groups and healthy control group in terms of the CAS, HDRS, HARS, and COPE scale scores. Among the groups, a statistically significant difference was found in the CAS score ($p<0.001$), HDRS score ($p<0.001$), HARS score ($p<0.001$), COPE Item 1 Positive reinterpretation and growth score ($p=0.023$), COPE Item 2 Mental disengagement score ($p=0.039$), COPE Item 3 Focus on and venting of emotions score ($p=0.009$), COPE Item 5 Active coping score ($p<0.001$), COPE Item 6 Denial score ($p=0.003$), COPE Item 8 Humor score ($p=0.029$), COPE Item 9 Behavioral disengagement score ($p<0.001$), COPE Item 10 Restraint score ($p<0.001$), and COPE Item 15 Planning score ($p<0.001$).

Table 1. Comparison of participants in terms of sociodemographic characteristics and pandemic-related characteristics

Sociodemographic and Pandemic-related Characteristics	Healthy control n	MDD n	GAD n	PD n	Total n/%	Chi Chi-Square. Value/F	p
Age							
Mean/SD	35.49±10.62	30.89±8.39	34.45±11.93	36.29±11.11	34.40±10.70	1.459	0.229 ^a
Sex							
Female	21	21	24	18	84 / 64.1	3.887	0.274 ^b
Male	17	9	8	13	47 / 35.9		
Total	38	30	32	31	131 / 100		
Education Level							
Primary School	5	8	7	7	27 / 24.1	9.264	0.159 ^b
High school	5	6	8	11	30 / 26.8		
University	23	9	11	12	55 / 49.1		
Total	33	23	26	30	112 / 100		
Marital Status							
Single	15	14	13	10	52 / 39.7	2.722	0.843 ^b
Married	20	15	18	18	71 / 54.2		
Divorced	3	1	1	3	8 / 6.1		
Total	38	30	32	31	131 / 100		
Socio-Economic Status							
Low	6	5	9	3	23 / 17.6	6.561	0.363 ^b
Middle	27	22	21	27	97 / 74.0		
High	5	3	2	1	11 / 8.4		
Total	38	30	32	31	131 / 100		
COVID inf. status							
Yes	12	3	9	12	36 / 27.5	6.888	0.076 ^b
No	26	27	23	19	95 / 72.5		
Total	38	30	32	31	131 / 100		
Isolation status							
Yes	10	6	10	8	34 / 26.4	1.062	0.786 ^b
No	26	24	22	23	95 / 73.6		
Total	36	30	32	31	129 / 100		
Death of first-degree relative due to covid inf.							
Yes	3	1	2	3	9 / 6.9	1.068	0.785 ^b
No	34	29	30	28	121 / 93.1		
Total	37	30	32	31	130 / 100		
Vaccination status							
Double dose	34	23	23	23	103 / 79.2	13.445	0.143 ^b
Single dose	1	2	4	5	12 / 9.2		
Unvaccinated	2	5	5	3	13 / 11.5		
Total	37	30	32	31	130 / 100		
Sleep problem status							
Yes	14	21	25	23	83 / 64.3	16.383	0.001 ^b
No	23	9	7	7	46 / 35.7		
Total	37	30	32	30	129 / 100		
Consideration that the pandemic negatively affected mental health							
Yes	15	16	23	28	82 / 63.1	20.236	<0.001 ^b
No	22	14	9	3	48 / 36.9		
Total	37	30	32	31	130	100	

N: Sample Number; SD: Standard Deviation; SQ: Square; INF: Infection; MDD: Major Depressive Disorder; GAD: Generalized Anxiety Disorder; PD: Panic Disorder; HC: Healthy Control; p^a: statistical significance p≤0.05 ANOVA test; p^b: statistical significance p≤0.05 Chi-square test.

Table 2. Comparison of MDD, GAD, and PD patient groups and healthy control group in terms of clinical scale scores

Clinical scale scores	Healthy controls & and patient groups	n	Mean	SD	95% Confidence		F	p
					Confidence Interval			
					Lower Limit	Upper Limit		
CAS Scores	HC	38	0.63	1.601	0.11	1.16	6.802	< 0.001
	MDD	30	1.30	2.744	0.28	2.32		
	GAD	32	3.94	5.285	2.03	5.84		
	PD	31	3.65	4.278	2.08	5.21		
	Total	131	2.31	3.928	1.63	2.98		
Hamilton depression rating scale scores	HC	38	1.74	2.088	1.05	2.42	87.194	< 0.001
	MDD	30	18.80	4.567	17.09	20.51		
	GAD	32	14.75	5.628	12.72	16.78		
	PD	31	14.40	5.941	12.28	16.62		
	Total	131	11.83	8.140	10.43	13.24		
Hamilton anxiety rating scale scores	HC	38	3.34	3.543	2.18	4.51	80.041	< 0.001
	MDD	30	26.53	8.943	23.19	29.87		
	GAD	32	24.50	9.480	21.08	27.92		
	PD	31	25.16	6.812	22.66	27.66		
	Total	131	18.98	12.442	16.83	21.14		
COPE item 1 positive reinterpretation and growth	HC	38	13.71	2.052	13.04	14.39	3.286	0.023
	MDD	30	12.00	2.421	11.10	12.90		
	GAD	32	12.25	2,688	11.28	13.22		
	PD	31	12.23	3.159	11.07	13.38		
	Total	131	12.61	2.653	12.15	13.07		
COPE item 2 mental disengagement	HC	38	8.71	2.217	7.98	9.44	2.868	0.039
	MDD	30	10.37	2.553	9.41	11.32		
	GAD	32	9.50	3.005	8.42	10.58		
	PD	31	10.13	2.487	9.22	11.04		
	Total	131	9.62	2.621	9.17	10.07		
COPE Item 3 3 Focus on & and venting of emotions	HC	38	11.34	2.654	10.47	12.21	4.067	0.009
	MDD	30	12.67	2.279	11.82	13.52		
	GAD	32	12.91	2.680	11.94	13.87		
	PD	31	11.03	2.881	9.98	12.09		
	Total	131	11.95	2.728	11.48	12.43		
COPE Item 4 4 Instrumental social support	HC	38	11.74	2.511	10.91	12.56	0.630	0.597
	MDD	30	11.10	3.377	9.84	12.36		
	GAD	32	11.28	3.215	10.12	12.44		
	PD	31	12.06	3,265	10.87	13.26		
	Total	131	11.56	3.066	11.03	12.09		
COPE item 5 active coping	HC	38	13.18	1.872	12.57	13.80	9.803	< 0.001
	MDD	30	10.03	2.282	9.18	10.89		
	GAD	32	11.13	2.562	10.20	12.05		
	PD	31	11.71	3.046	10.59	12.83		
	Total	131	11.61	2.688	11.15	12.08		
COPE item 6 Denial	HC	38	5.53	1.899	4.90	6.15	4.896	0.003
	MDD	30	7.10	2.683	6.10	8.10		
	GAD	32	7.16	2.343	6.31	8.00		
	PD	31	7.55	2.755	6.54	8.56		
	Total	131	6.76	2.520	6.33	7.20		
COPE item 7 turning to religion	HC	38	11.18	3.517	10.03	12.34	0.942	0.422
	MDD	30	11.67	4.071	10.15	13.19		
	GAD	32	12.03	4,284	10.49	13.58		
	PD	31	12.71	3.514	11.42	14.00		
	Total	131	11.86	3.843	11.20	12.53		

Table 2. CONT.

Clinical scale scores	Healthy controls & and patient groups	n	Mean	SD	95% Confidence		F	p
					Confidence Interval			
					Lower Limit	Upper Limit		
COPE item 8 humor	HC	38	8.18	3.384	7.07	9.30	3.106	0.029
	MDD	30	6.97	2.512	6.03	7.90		
	GAD	32	6.34	2.418	5.47	7.22		
	PD	31	6.61	2.431	5.72	7.50		
	Total	131	7.08	2.823	6.60	7.57		
COPE item 9 behavioral disengagement	HC	38	5.45	2.262	4.70	6.19	9.896	< 0.001
	MDD	30	8.67	2.695	7.66	9.67		
	GAD	32	7.81	3.084	6.70	8.92		
	PD	31	6.81	2.197	6.00	7.61		
	Total	131	7.08	2.823	6.60	7.57		
COPE Item 10 Restraint	HC	38	8.71	2.065	8.03	9.39	7.404	< 0.001
	MDD	30	10.37	2.059	9.60	11.14		
	GAD	32	11.19	2.177	10.40	11.97		
	PD	31	9.68	2.761	8.66	10.69		
	Total	131	9.92	2.436	9.50	10.34		
COPE item 11 item emotional social support	HC	38	11.32	2.877	10.37	12.26	0.506	0.679
	MDD	30	10.77	3.319	9.53	12.01		
	GAD	32	11.25	2.995	10.17	12.33		
	PD	31	11.71	2.842	10.67	12.75		
	Total	131	11.27	2.987	10.75	11.78		
COPE item 12 substance use	HC	38	4.71	1.523	4.21	5.21	0.985	0.402
	MDD	30	5.40	3.158	4.22	6.58		
	GAD	32	5.56	3,583	4.27	6.85		
	PD	31	5.87	3.274	4.67	7.07		
	Total	131	5.35	2.935	4.84	5.86		
COPE item 13 acceptance	HC	38	10.00	2.526	9.17	10.83	0.966	0.411
	MDD	30	10.60	2.824	9.55	11.65		
	GAD	32	10.38	2.311	9.54	11.21		
	PD	31	9.61	2.108	8.84	10.39		
	Total	131	10.14	2.455	9.71	10.56		
COPE item 14 suppression of competing activities	HC	38	10.18	2.216	9.46	10.91	2.123	0.101
	MDD	30	11.03	2.327	10.16	11.90		
	GAD	32	10.94	2.341	10.09	11.78		
	PD	31	9.74	2.645	8.77	10.71		
	Total	131	10.46	2.409	10.04	10.87		
COPE item 15 planning	HC	38	13.53	2.215	12.80	14.25	7.982	< 0.001
	MDD	30	10.80	2.618	9.82	11.78		
	GAD	32	10.94	2.839	9.91	11.96		
	PD	31	11.35	3.094	10.22	12.49		
	Total	131	11.76	2.896	11.26	12.26		
COPE total score	HC	38	147.47	15.894	142.24	152.69	0.210	0.890
	MDD	30	149.53	15.652	143.68	155.37		
	GAD	32	150.65	16.742	144.62	156.69		
	PD	31	148.80	20.328	141.35	156.26		
	Total	131	149.03	17.034	146.09	151.98		

N: Sample Number, SD: Standard Deviation, CAS: Coronavirus Anxiety Scale, COPE: Coping orientation to problems experienced scale, HDRS: Hamilton Depression Rating Scale, Hamilton Anxiety Rating Scale, HC: Healthy Control, MDD: Major Depressive Disorder, GAD: Generalized Anxiety Disorder, PD: Panic Disorder, P: statistical significance $P \leq 0.05$ ANOVA test.

In order to determine which subgroups this difference was between, the statistical significance level was reduced to $p \leq 0.008$ and post hoc Tukey-Tukey B HSD test was performed.

Pairwise Comparisons of Patient Groups and HC in Terms of Clinical Scale Scores

Pairwise comparisons of MDD, GAD, and PD patient

groups and healthy control group in terms of clinical scale scores are shown in Table 3. While HC scored 3.306 ($p=0.002$) points lower than GAD patients and 3.014 ($p=0.005$) points lower than PD patients in CAS score, there was no statistically significant difference between HC and major depression patients in terms of mean CAS scores ($p=0.880$).

Table 3. Pairwise comparisons of MDD, GAD and PD patient groups and healthy control group in terms of clinical scale scores

Clinical scale scores	Healthy Controls & Patient Groups	Mean Diff.	SE	p	99.2% Confidence interval		
					Lower limit	Upper limit	
CAS Scores	HC	MDD	-0.668	0.901	0.880	-3.59	2.26
		GAD	-3.306*	0.885	0.002	-6.18	-0.43
		PD	-3.014*	0.893	0.005	-5.91	-0.11
Hamilton Depression Rating Scale Scores	HC	MDD	-17.063*	1.147	<0.001	-20.79	-13.34
		GAD	-13.013*	1.127	<0.001	-16.67	-9.35
		PD	-12.715*	1.136	<0.001	-16.41	-9.02
	MDD	HC	17.063*	1.147	<0.001	13.34	20.79
		GAD	4.050*	1.193	0.005	0.17	7.93
		PD	4.348*	1.203	0.002	0.44	8.25
Hamilton anxiety rating scale scores	HC	MDD	-23.191*	1.808	<0.001	-29.07	-17.32
		GAD	-21.158*	1.776	<0.001	-26.93	-15.39
		PD	-21.819*	1.792	<0.001	-27.64	-16.00
COPE Item 1 Positive reinterpretation and growth	HC	MDD	1.711	0.632	0.038	-0.34	3.76
		GAD	1.461	0.620	0.091	-0.55	3.48
		PD	1.485	0.626	0.088	-0.55	3.42
COPE Item 2 Mental disengagement	HC	MDD	-1.656	0.627	0.045	-3.69	0.38
		GAD	-0.789	0.616	0.576	-2.79	1.21
		PD	-1.419	0.621	0.107	-3.44	0.60
COPE Item 3 Focus on & venting of emotions	HC	MDD	-1.325	0.644	0.173	-3.42	0.77
		GAD	-1.564	0.633	0.069	-3.62	0.49
		PD	0.310	0.638	0.962	-1.76	2.38
COPE Item 5 Active coping	HC	MDD	3.151*	0.598	<0.001	1.21	5.09
		GAD	2.059*	0.588	0.004	0.15	3.97
		PD	1.475	0.593	0.067	-0.45	3.40
COPE Item 6 Denial	HC	MDD	-1.574	0.590	0.042	-3.49	0.34
		GAD	-1.630	0.579	0.029	-3.51	0.25
		PD	-2.022*	0.584	0.004	-3.92	-0.12
COPE Item 8 Humor	HC	MDD	1.218	0.673	0.274	-0.97	3.40
		GAD	1.840	0.661	0.031	-0.31	3.99
		PD	1.571	0.667	0.091	-0.60	3.74
COPE Item 9 Behavioral disengagement	HC	MDD	-3.219*	0.628	<0.001	-5.26	-1.18
		GAD	-2.365*	0.617	0.001	-4.37	-0.36
		PD	-1.359	0.622	0.133	-3.38	0.66
COPE Item 10 Restraint	HC	MDD	-1.656	0.555	0.018	-3.46	0.15
		GAD	-2.477*	0.545	<0.001	-4.25	-0.71
		PD	-0.967	0.550	0.299	-2.75	0.82
COPE Item 15 Planning	HC	MDD	2.726*	0.656	<0.001	0.59	4.86
		GAD	2.589*	0.645	0.001	0.49	4.68
		PD	2.171*	0.650	0.006	0.06	4.28

N: Sample Number, DIFF: Difference, SE: Standard Error, CAS: Coronavirus Anxiety Scale, HDRS: Hamilton Depression Rating Scale, HARS: Hamilton Anxiety Rating Scale, COPE: Coping orientation to problems experienced scale, HC: Healthy controls, MDD: Major Depressive Disorder, GAD: Generalized Anxiety Disorder, PD: Panic Disorder, P: statistical significance $P \leq 0.008$ post hoc tukey, tukey-B test, *: Mean difference ≤ 0.008 post hoc tukey, tukey-B test.

COPE Item 5. While HC scored 3.151 ($p < 0.001$) points higher than MDD patients and 2.059 ($p = 0.004$) points higher than GAD patients in COPE Item 5 Active coping score, there was no statistically significant difference between HC and PD patients ($p = 0.067$). COPE Item 6. In the COPE Item 6 Denial score, there was no statistically significant difference between HC and MDD patients 1.574 ($p = 0.042$) and GAD patients 1.630 ($p = 0.029$) ($p > 0.008$), but HC scored 2.022 ($p = 0.004$) points lower than PD patients. COPE Item 9. In the COPE Item 9 Behavioral Disengagement score, HC scored 3.219 ($p < 0.001$) points lower than MDD patients and 2.365 ($p = 0.001$) points lower than GAD patients, but there was no statistically significant difference between HC and PD patients ($p = 0.133$). COPE Item 10. In the COPE Item 10 Restraint score, HC scored 2.477 ($p < 0.001$) points lower than GAD patients, while there was no statistically significant difference between HC and MDD patients ($p = 0.018$) and PD patients ($p = 0.299$) ($p > 0.008$). COPE Item 15. In COPE Item 15 Planning, HC scored 2.726 ($p < 0.001$) points higher than MDD patients, 2.589 ($p = 0.001$) points higher than GAD patients and 2.171 ($p = 0.006$) points higher than PD patients (Table 3).

In pairwise comparisons, there was no statistically significant difference between healthy control and MDD, GAD, and PD patient groups in COPE Item 1 Positive reinterpretation and growth, COPE Item 2 Mental disengagement, COPE Item 3 Focus on and venting of emotions, and COPE Item 8 Humor ($p > 0.008$).

Correlation of CAS Scale Scores with Other Clinical Scale Scores in MDD, GAD, PD and Healthy Control Groups

Table 4 shows the correlation of CAS scale scores with other clinical scale scores in MDD, GAD, PD, and Healthy Control groups. CAS scores were negatively correlated with COPE Item 1 Positive reinterpretation and growth at 65.9% ($p < 0.001$), COPE Item 4 Instrumental social support at 44.8% ($p = 0.005$), COPE Item 5 Active coping at 54.5% ($p < 0.001$), COPE Item 15 Planning at 58.4% ($P < 0.001$), and COPE Total score at 46.2% ($p = 0.003$).

In MDD patients, CAS scores were positively correlated with HDRS scores at 37.9% ($p = 0.039$) and HARS scores at 56.5% ($p < 0.001$) whereas they were negatively correlated with COPE Item 14 Suppression of competing activities at 36.9% ($p = 0.045$). In GAD patients, CAS scores were positively correlated with HDRS scores at 54.8% ($p < 0.001$) and HARS scores at 56.1% ($p < 0.001$). CAS scores did not correlate with HDRS scores in PD patients ($p = 0.274$), whereas they correlated positively with HARS scores at 49.3% ($p = 0.005$). There was no statistically significant correlation between CAS scores and the COPE and its sub-items in neither GAD nor PD groups ($p > 0.05$).

Table 4. Correlation of CAS scores with other clinical scale scores in MDD, GAD and PD patient groups and Healthy control group

Clinical Scale Scores	HC CAS Scores	MDD CAS Scores	GAD CAS Scores	PD CAS Scores
CAS Scores				
r	1	1	1	1
p				
Hamilton Depression Rating Scale Scores				
r	0.132	0.379*	0.548**	0.203
p	0.430	0.039	<0.001	0.274
Hamilton Anxiety Rating Scale Scores				
r	0.028	0.565**	0.561**	0.493**
p	0.869	<0.001	<0.001	0.005
COPE Item 1 Score Positive reinterpretation and growth				
r	-0.659**	0.161	-0.065	-0.300
p	<0.001	0.396	0.725	0.101
COPE Item 2 Score Mental disengagement				
r	-0.077	-0.075	0.124	-0.227
p	0.648	0.692	0.499	0.219
COPE Item 3 Score Focus on & venting of emotions				
r	-0.116	0.232	0.002	-0.134
p	0.489	0.218	0.992	0.471
COPE Item 4 Score Instrumental social support				
r	-0.448**	0.175	0.075	-0.215
p	0.005	0.354	0.683	0.244
COPE Item 5 Score Active coping				
r	-0.545**	0.004	-0.302	-0.302
p	<0.001	0.984	0.093	0.098
COPE Item 6 Score Denial				
r	0.057	0.146	0.105	0.198
p	0.736	0.442	0.567	0.285
COPE Item 7 Score Turning to religion				
r	0.008	0.093	0.238	-0.267
p	0.964	0.626	0.190	0.147
COPE Item 8 Score Humor				
r	-0.257	-0.059	-0.039	-0.264
p	0.120	0.759	0.834	0.152
COPE Item 9 Score Behavioral disengagement				
r	0.248	-0.047	0.221	0.028
p	0.133	0.807	0.224	0.882

Table 4. CONT.

Clinical Scale Scores	HC CAS Scores	MDD CAS Scores	GAD CAS Scores	PD CAS Scores
COPE Item 10 Score				
Restraint				
r	-0.115	0.041	-0.041	-0.038
p	0.492	0.830	0.824	0.838
COPE Item 11 Score				
Emotional social support				
r	-0.221	0.019	0.125	-0.105
p	0.183	0.919	0.494	0.575
COPE Item 12 Score				
Substance use				
r	0.044	-0.114	0.084	0.120
p	0.794	0.549	0.649	0.519
COPE Item 13 Score				
Acceptance				
r	-0.207	-0.140	0.116	-0.145
p	0.212	0.461	0.529	0.436
COPE Item 14 Score				
Suppression of competing activities				
r	-0.262	-0.369*	0.049	-0.055
p	0.112	0.045	0.789	0.767
COPE Item 15 Score				
Planning				
r	-0.584**	-0.015	-0.235	-0.177
p	<0.001	0.936	0.196	0.342
COPE Total Score				
r	-0.462**	0.020	0.109	-0.271
p	0.003	0.915	0.552	0.141

CAS: Coronavirus anxiety scale, COPE: Coping orientation to problems experienced scale, MDD: Major Depressive Disorder, GAD: Generalized Anxiety Disorder, PD: Panic Disorder, HC: Healthy control, r: Pearson Correlation, P*: statistical significance $P \leq 0.05$; P**: $P \leq 0.01$ Pearson Correlation test.

Discussion

In our study, no difference was found between major depression patients and HC in terms of coronavirus anxiety levels during the COVID-19 pandemic. However, it was found that GAD patients and PD patients showed higher coronavirus anxiety levels compared to HC. When compared in terms of coping strategies, HC scored higher for "active coping and planning" and lower for "behavioral disengagement" compared to patients with MDD and GAD. In HC, "planning" scores were higher and "denial" scores were lower compared to PD patients. In our study, the relationship between coronavirus anxiety levels and coping strategies was also evaluated and no specific relationship

was found between coronavirus anxiety levels and coping strategies in GAD and PD patients. On the other hand, a significant negative correlation was found between coronavirus anxiety levels and the coping strategies of "positive reinterpretation and growth, instrumental social support, active coping, and planning" in HC and "suppression of competing activities" in MDD patients.

It is known that individuals with psychiatric illness have been significantly affected by the pandemic.^[9] In our study, in line with the literature, it was determined that MDD, GAD, and PD patients experienced more sleep problems compared to HC.^[8,16] At the same time, individuals in our patient group reported that the pandemic negatively affected their mental health at higher rates than HC. In a study conducted on the adult population in Germany, it was reported that COVID-19-related fear, depression, and anxiety symptoms were more severe in patients with depression and anxiety disorders, consistent with the previous studies.^[14] In studies conducted with adults in the general population in Canada and the United States, COVID-19-related stress levels were found to be higher in those with the previous depressive disorder and anxiety disorder.^[28] In our study, in line with other studies, coronavirus anxiety level was found to be higher in GAD and PD patients compared to HC. On the other hand, our study found no difference between MDD patients and HC in terms of coronavirus anxiety level, which differs from other studies.^[14,28] In addition, in our study, although MDD patients had higher Hamilton anxiety scale scores compared to HC, their CAS scores were found to be low. This finding may indicate that MDD patients are probably better at coping with coronavirus anxiety. The fact that our study included newly diagnosed patients, whereas the other studies were conducted with previously diagnosed patients and that the time interval between the studies was different may explain the difference in the results obtained.

Individuals under different stressors may deploy passive or active coping strategies. When passive coping strategies are used, stress conditions are accepted, efforts to overcome the stressors are abandoned, and thus stressful feelings are reinforced. When active coping strategies are used, ways to overcome the stressful event are found, lessons are learned and plans are made for the subsequent steps.^[29] "Planning" defined as an active coping strategy, is to contemplate ways for dealing with a stressor. "Planning" involves thinking and developing action strategies about how best to deal with the problem and what steps to take.^[25] In our study, it was determined that all MDD, GAD, and PD patients used the coping strategy of "planning" at the lower levels than HC. This finding is consistent with other studies on the positive effect of problem solving in reduc-

ing psychological stress and supporting well-being.^[30,31] In addition, similar results were found in a study conducted by Garbóczy et al. (2021)^[32] during the COVID-19 outbreak. Further, our study determined a negative relationship between “active coping and planning” and coronavirus anxiety levels in HC. Considering that “active coping” scores were higher in HC compared to MDD and GAD patients; in our study, it can be considered that in the face of difficult times such as pandemics, focused, and effective coping strategies such as “active coping and planning” that are oriented toward problem solving may be more effective.

“Behavioral disengagement” as a coping strategy is defined as holding back from or letting go of making efforts to achieve the goal that the stressor prevents, while “restraint” is defined as remaining passive by stopping coping efforts until a suitable position is secured.^[25] In our study, the scores of avoidance coping strategies such as “behavioral disengagement and restraint” in GAD patients compared to HC and “behavioral disengagement” in MDD patients compared to HC were found to be higher. In the context of the COVID-19 pandemic, it may be considered that people who use avoidance-related coping strategies more may show psychiatric symptoms at a higher rate. Consistent with our results, in a study conducted during the pandemic, Fluharty et al. (2021)^[33] reported that people who used avoidance-related coping strategies to a greater extent showed more psychiatric symptoms.

In our study, it was found that PD patients used the coping strategy of “denial” more than HC did. In the literature, use of “denial” as a coping style has been reported as a positive adaptation strategy that reduces stress in the short term. It has been suggested that “denial” can help patients distract themselves from the stress of COVID-19 and a negative emotional state.^[34] In line with the study by Umucu and Lee (2020), it can be considered that newly diagnosed PD patients included in our study also use “denial” in the acute period in order to cope with stress. The rate of COVID-19 infection in PD patients in our study was determined to be relatively higher compared to other patient groups and HC. Considering that individuals with COVID-19 infection deny the disease and its severity as a positive coping attitude that reduces stress in the short-term, the relatively high rate of Covid-19 infection in PD patients may help explain the greater use of denial coping in this patient group.

In our study, there was no statistically significant difference between HC and MDD, GAD, and PD patients in terms of coping strategies based on seeking social support and understanding from others. Considering that social contacts were restricted and limitations on entertainment

were imposed as transmission prevention measures during certain periods of the COVID-19 pandemic, it is likely that legal regulations may have affected coping strategies based on social support. However, in our study, the relationship between coronavirus anxiety levels and coping strategies was also evaluated, and a negative relationship was determined between the coping strategies of “positive reinterpretation and growth, and instrumental social support” and coronavirus anxiety levels in HC. “Positive reinterpretation and growth” is considered as an emotion-focused coping strategy in which coping is directed at controlling stress rather than dealing with the problem. Structuring a stressful life event from a positive perspective may help the individual to continue with an active problem-focused coping strategy. The result we obtained in our study is consistent with the literature in that the use of instrumental social support is generally associated with positive effects.^[35,36] However, this finding is valid only for HC, since a similar relationship was not found in patients with MDD, GAD, and PD.

In our study, there was no statistically significant difference between HC and patients with MDD, GAD, and PD in terms of coping strategies regarding religion and spirituality. Unlike our results, the positive effect of religion and spirituality was shown in the study conducted by Walsh (2020) in the early period of the pandemic,^[37] while the opposite was found in a study conducted by Panico et al. (2022)^[38] in the late period of the pandemic. Different results found in different studies may indicate that the COVID-19 pandemic, which has been going on for more than 2 years, has become chronic, and the effect of religion and spirituality may change when faced with a chronic situation. In our study, a complex result was obtained with regard to the coping strategy of humor and joking, which revealed a statistically significant difference between HC and MDD, GAD, and PD patient groups. However, no statistically significant difference was found in the pairwise comparisons performed to determine the subgroups causing such difference. Unlike our results, Penson et al. (2005)^[39] found that the use of humor was associated with the lower anxiety levels. Freud’s psychodynamic perspective also defines humor as one of the most powerful defense mechanisms that allow individuals to confront problems and avoid negative emotions.^[40]

In our study, the relationship between coronavirus anxiety levels and coping strategies was also evaluated, and no specific correlation was found between coronavirus anxiety levels and coping strategies in GAD and PD patients. However, a significant negative relationship was determined between the coping strategy of “suppression of competing activities” and coronavirus anxiety levels in

MDD patients. “Suppression of competing activities” is a problem-focused coping strategy in which the individual focuses on coping with the stressor by reducing his/her interest in other activities, and in our study, it was determined as the only coping strategy that revealed a correlation with coronavirus anxiety levels in MDD patients. Since there is limited number of studies in the literature evaluating the relationship between coronavirus anxiety levels and coping strategies during the pandemic, it was not possible to compare all of our results with other studies. Therefore, our results should be approached cautiously and supported by future studies having larger samples.

There are some limitations that should be taken into consideration in our study. Firstly, this is a cross-sectional study; therefore, a causal relationship between variables cannot be established. The number of participants in healthy control and MDD, GAD, and PD groups is approximately 30, thus the low number of participants in the subgroups is another limitation. Studies with larger samples are needed. All data used in this study were collected from voluntary participants. Therefore, the generalizability of our results should be tested in future studies. In addition, the fact that the majority of the participants were double-vaccinated may have affected their coronavirus anxiety levels and coping strategies. It should also be taken into account that if our study had been conducted at the beginning of the pandemic and before the vaccination process took place, the coping attitudes and intensity of the participants might have been different. Especially longitudinal studies will shed light on whether coronavirus anxiety is limited to a certain period of time or whether it has more permanent effects.

Studies on coronavirus anxiety have mostly been conducted on sample groups without psychiatric diagnosis, such as health-care professionals or students. The advantages of our study are that it is a clinical study conducted with MDD, GAD, and PD patient groups who attended the hospital and newly diagnosed, were not on psychotropic medication for any other reason, and that we had a healthy control group that allowed us to make comparisons with patient groups. Another superior aspect of our study is that our data were not collected online but through face-to-face psychiatric evaluation. Our study was conducted relatively late in the course of the pandemic, namely in the 2nd year. Most of the studies belong to the early stages of the pandemic while there are fewer clinical studies on the later stages of the pandemic and our study is one of them. To the best of our knowledge, this is the first study in Turkey comparing different clinical patient groups during the pandemic.

Conclusion

In this study, no difference was found between major depression patients and HC in terms of coronavirus anxiety levels during the COVID-19 pandemic. However, it was found that GAD patients and PD patients showed higher coronavirus anxiety levels compared to HC. Furthermore, a negatively significant correlation was found between coronavirus anxiety levels and the coping strategies of “positive reinterpretation and growth, use of instrumental social support, active coping, and planning” in HC and “suppression of competing activities” in MDD patients. Determining the coping strategies that MDD, GAD, and PD patients use to cope with coronavirus anxiety during the COVID-19 pandemic may help mental health professionals to control disease-related stressors and contribute to the treatment process.

Disclosures

Ethics Committee Approval: This study was approved by the Ethics Committee for NonInvasive Clinical Research, the Faculty of Medicine of Alanya Alaaddin Keykubat University on June 9, 2021, under decision no. 10354421-2021/10-08.

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