

The Relationship of Individuals' Depression and Anxiety Levels with Sociodemographic Characteristics and Worries and Attitudes Towards Outbreak During the COVID-19 Outbreak

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Abstract

Objective: This study aimed to investigate the relationship between depression, anxiety, and stress levels in individuals and sociodemographic characteristics and worries and attitudes towards the pandemic during the coronavirus disease-2019 (COVID-19) outbreak.

Methods: This cross-sectional study was conducted using an online survey. Participants were evaluated using a sociodemographic data form, the COVID-19 worry and attitude questionnaire, the depression anxiety and stress scale (DASS-21), and the impact of event scale-revised (IES-R).

Results: A total of 633 respondents were included in the study. In total, 23.2% (n=122) of respondents rated the psychological impact of the outbreak as moderate or severe (IES-R >33). Moderate, severe, and very severe depression, anxiety, and stress levels were determined in 29.7% (n=188), 19% (n=122), and 13.4% (n=85) of respondents, respectively. Binary logistic regression analysis showed that gender, accompanying chronic disease, employment status, COVID-19 contact history, poor self-rated health status, and worries related to the pandemic were factors significantly associated with the DASS-21 and IES-R scores.

Conclusion: The mental health of individuals was negatively affected by worries about socioeconomic and pandemic-related uncertainties during the COVID-19 pandemic. Social and health policies should be planned to reduce individual concerns during the pandemic.

Keywords: COVID-19, anxiety, depression, stress

INTRODUCTION

Coronavirus disease-2019 (COVID-19) pandemic, which started in Wuhan, China in December 2019, spread globally in a short period. As of 11 March 2020, when the virus was detected in Turkey for the first time, the government implemented several measures, including school closures, stay-at-home orders, and lockdowns. In many countries where the virus has spread, individuals have been warned through health institutions and the media to obey social distancing rules and restrict themselves

from social environments. Uncertainty in education, social life, and business life has gradually increased (1).

Under these negative conditions, studies have shown that the rates of anxiety and depression are high among individuals during the pandemic. In a study conducted in China, 53.8% of respondents rated the psychological impact of the outbreak as moderate or severe; 16.5% reporting moderate or severe depression symptoms, 28.8% reporting moderate or severe anxiety symptoms, and 8.1% reporting moderate or severe



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stress symptoms (2). Studies have reported percentages of post-traumatic stress symptoms as 7% and 15.8% (3,4). Several studies have reported risk factors for anxiety and depression. Female gender (2,5,6), urban residence (6), low self-rated health status (2), accompanying chronic disease (5,6), and contact history of suspected or confirmed cases (2) are defined risk factors.

Descriptive studies investigating the concerns of individuals during the pandemic are limited. Concerns are defined as repetitive negative or catastrophic thoughts accompanied by worries about uncertain circumstances (7,8). During the pandemic, individual concerns may be related to health anxiety as well as many other conditions, such as social and economic uncertainty, uncertainties about protection from the virus and treatment, and social restrictions. Concerns can be a factor in mobilizing individuals to deal with potential threats and increase protective behaviors (wearing masks) that can mitigate threats (7,9). However, increased intense worry is associated with increased mental health problems in individuals (8,10). Defining the extent to which individuals are affected by these concerns will help determine the risks of mental illness and take appropriate precautions.

This study aims to investigate pandemic-related worries and their effects on anxiety and depression levels.

METHODS

An online questionnaire was designed to investigate the psychological responses of individuals over the age of 17 living in various provinces of Turkey to the COVID-19 pandemic. The Karadeniz Technical University Faculty of Medicine Scientific Research Ethics Committee approved the study (approval number: 24237859-379, date: 19.06.2020). After approval, data were collected through an online questionnaire for four weeks. Individuals who read the informed consent form about the study via social media were asked to fill out the questionnaire. Google Docs software was used to collect data. This study was conducted in accordance with the principles of the Helsinki Declaration.

The sociodemographic data form includes age, gender, education level, income level, marital status, with whom he/she lives (living situation), having children, employment status for the last 14 days, direct or indirect contact history with COVID-19, and accompanying chronic disease. In addition, the participants were asked to rate their physical health.

In the COVID-19 worry and attitude questionnaire, participants were asked to rate each statement related to the COVID-19 pandemic (e.g., are you worried about spreading the virus

to others? Are you worried about experiencing financial difficulties?). The questionnaire was designed as a 5-point Likert-type feedback survey (0= Never, 4= Almost always). The items of precautionary behaviors in the questionnaire were hand washing/disinfection, wearing a mask, and avoiding close contact. The internal consistency of the survey was found to be good (Cronbach's alpha =0.864).

The depression anxiety and stress scale (DASS-21) was developed by Lovibond and Lovibond (11). This scale consists of 21 items, and its validity and reliability with clinical and non-clinical samples in Turkey were demonstrated (12). It contains 7 items for each subscale, and each item is scored between 0 (never) and 3 (almost always). Items 3, 5, 10, 13, 16, 17, and 21 of the scale assess the level of depression; items 2, 4, 7, 9, 15, 19, and 20 measure the level of anxiety; and items 1, 6, 8, 11, 12, 14, and 18 assess the level of stress. According to the total score of the depression subscale, the following categorization is made: normal (0-4), mild depression (5-6), moderate depression (7-10), severe depression (11-13), and very severe depression (14 and above). According to the total score of the anxiety subscale, (0-3) is graded as normal, (4-5) mild, (6-7) moderate, (8-9) severe, and (10 and above) very severe. The total score of the stress subscale was graded as normal (0-7), mild (8-9), moderate (10-12), severe (13-16), and very severe (17 and above).

Psychological impact was assessed using the impact of event scale-revised (IES-R). The IES-R is a self-report scale consisting of 22 items that measures the level of symptoms experienced in the last 7 days between 0 (none) and 4 (very much). It comprises three subscales: avoidance of traumatic events, over-arousal, and re-experiencing (13). In the validity and reliability study of the Turkish version of the scale, the cut-off value of the scale was found to be between 24-33, sensitivity to be between 74.0-92.2%, and specificity to be between 70.7-81.0% (14).

Statistical Analysis

While the data were included in the paired comparison analysis, to identify individuals with high levels of worry, the items of the COVID-19 worry and attitude questionnaire were grouped as follows: often; almost always (high); never; rarely; and sometimes (low). Self-rated health status was analyzed as good-very good (high) and moderate-bad-very bad (low). To identify individuals with high psychological burden, we detected individuals with moderate, severe, and very severe DASS-21 depression, anxiety, and stress levels. A score of 33 was included in the analysis as the cut-off score on the IES-R scale. IBM SPSS for Windows 23.0 statistics software package (Armonk, New York: IBM Corp.) was used for data analysis. Categorical data are presented as

numbers (n) and percentages (%). Binary logistic regression analysis was used to detect factors that predicted high DASS-21 scores for depression, anxiety, stress, and IES-R. Test validity was determined using the omnibus test and the Hosmer-Lemeshow test. Explanatoriness of the regression analysis was determined using Nagelkerke R². Logistic regression test results were presented using odds ratio and 95% confidence interval values. The cases where $p \leq 0.05$ were accepted as statistically significant.

RESULTS

A total of 633 participants completed the survey. Of the participants, 18.2% (n=115) were students, 42.2% (n=267) were actively employed, 22.7% (n=144) had flexible working arrangements (furloughed-rotation, working from home), and 16.9% (n=107) were unemployed. Of the entire group, 29.7% (n=188) had moderate, severe, or very severe depression, 19.3% (n=122) had moderate, severe, or very severe anxiety, 13.4% (n=85) had moderate, severe, or very severe stress. The IES-R score was detected above 33 points in 23.2% (n=147) of the patients. The severity of DASS-21 and IES-R scores and COVID-19 worry and attitude questionnaire scores are summarized in Table 1.

In the regression analysis, the variables that predicted moderate, severe, and very severe DASS-21 depression were active and flexible working, low self-rated health status, worry about social restrictions, financial difficulties, social breakdown, and getting COVID-19 test. (Nagelkerke R square =0.356, Hosmer-Lemeshow =0.476). The variables that predicted moderate, severe, and very severe DASS-21 anxiety were low self-rated health status, worry about spreading the virus to others, death of relatives from COVID-19, social restrictions, social breakdown, and access to adequate health care. Wearing a mask was significantly related to a decrease in individuals' anxiety levels (Nagelkerke R square =0.406, Hosmer-Lemeshow =0.720). In the regression analysis, the variables that predicted moderate, severe, and very severe DASS-21 stress were active working, contact history, worry about social restrictions, social breakdown, access to adequate health care, and taking the COVID-19 test (Nagelkerke R square =0.389, Hosmer-Lemeshow =0.725). The variables predicting high IES-R scores were flexible working, low self-rated health status, worry about spreading the virus to others, death of relatives from COVID-19, social restriction, social breakdown, and death from COVID-19 (Nagelkerke R square =0.394, Hosmer-Lemeshow =0.713) (Table 2).

DISCUSSION

In this descriptive study, it was observed that the most intense concerns of the participants during the pandemic were spreading

the virus to others, getting infected, or the death of relatives. In addition, worries that commonly affected the participants' mental health included social restrictions and being alone. Additionally, 24.3% of the participants reported intense concerns about financial difficulties, 24.9% reported concerns about a social breakdown, and 14% stated their concerns about access to adequate health care. These results show that uncertainties regarding economic, social, and COVID-19 treatment cause worries in a significant percentage of the participants.

We found that worries about social restrictions have significant adverse effects on depression, anxiety, and stress levels in patients. Long-term social restrictions have been reported to lead to many negative consequences, such as a decrease in close interpersonal relationships, separation from friends and family, and a sense of loneliness (15-18). Previous studies have reported increased depression, stress, sleep disturbance, irritability, post-traumatic stress symptoms, and suicide risk among individuals during quarantine and isolation periods (19-22). Thus, while warning individuals to remain isolated during pandemics, it is important to educate and advise individuals on dealing with the negative mental effects of restrictions (23).

In this study, participants' concerns about financial difficulties were associated with an increase in the severity of depression. The COVID-19 pandemic has increased fears of economic crisis and recession, and widespread restrictions have caused economic uncertainty (24). In line with our study results, during the pandemic, it was reported that an increasing level of economic anxiety developed in individuals living in the community (25,26). We found that economic anxiety significantly predicted the severity of depression. Furthermore, we found that employment was associated with a decrease in depression, stress, and the psychological impact of the event. Consistent with our findings, having a regular income and working were found to be protective factors for mental health during the pandemic (3,17,27). On the other hand, the finding that worry about a social breakdown is a predictor on all scales in our study suggests that the socioeconomic uncertainty caused by the pandemic has led to widespread negative effects on individuals' mental health. In a previous study that investigated the most common worries of individuals related to the pandemic, participants reported many common major worries about social breakdown. The researchers emphasized that in the socioeconomic uncertainty, most individuals were concerned about the devastating impact of the virus on the health system, economy, and society (7). In addition to uncertainty, repetitive media exposure to community crises during the pandemic can lead to a higher perception of the current risk (7,28). The negative effects of these worries on

Table 1. Sociodemographic and clinical characteristics and pandemic-related worries of the participants			
		n	%
Gender	Female	394	62.2
	Male	239	37.8
Age	<30	247	39
	30-50	310	49
	>50	76	12
Education	Primary-high school	73	11.5
	University	397	62.7
	Masters-doctorate	163	25.8
Working status	Active employee	267	42.2
	Flexible employee	144	22.7
	Retired	27	4.3
	Unemployed	80	12.6
	Student	115	18.2
Monthly income	<5000 ₺	323	51.0
	>5000 ₺	310	49.0
Marital status	Single	290	45.8
	Married	343	54.2
Having children	No	308	48.7
	Yes	325	51.3
Living situation	Alone	63	10.0
	Parents	204	32.2
	Spouse and/or children	344	54.3
	Friend(s)	22	3.5
Accompanying chronic disease	No	495	78.2
	Yes	138	21.8
COVID-19 contact history	No	553	87.4
	Yes	80	12.6
Self-rated health status	Low	270	42.7
	High	363	57.3
COVID-19 worry and attitude questionnaire			
Getting COVID-19 infection	Low	485	76.6
	High	148	23.4
Relatives getting COVID-19 infection	Low	325	51.3
	High	308	48.7
Spreading the virus to others	Low	374	59.1
	High	259	40.9
Death of relatives affected by COVID-19	Low	466	73.6
	High	167	26.4
Social restrictions	Low	387	61.1
	High	246	38.9
Access to food and provisions	Low	610	96.4
	High	23	3.6
Access to protective medical equipment	Low	570	90.0
	High	63	10.0
Financial difficulties	Low	479	75.7
	High	154	24.3
Social breakdown	Low	475	75.0
	High	158	25.0
Being kept in quarantine	Low	585	92.4
	High	48	7.6
Being alone	Low	499	78.8
	High	134	21.2

Table 1. Continued			
		n	%
Access to adequate healthcare	Low	544	85.9
	High	89	14.1
Getting COVID-19 test	Low	582	91.9
	High	51	8.1
Death from COVID-19	Low	567	89.6
	High	66	10.4
Wearing a mask	Low	70	11.1
	High	563	88.9
Handwashing/disinfection	Low	80	12.6
	High	553	87.4
Avoiding close contact	Low	182	28.8
	High	451	71.2
Scales			
DASS-21 depression	Normal	342	54.0
	Mild	103	16.3
	Moderate	122	19.3
	Severe	33	5.2
	Very severe	33	5.2
DASS-21 anxiety	Normal	425	67.1
	Mild	86	13.6
	Moderate	61	9.6
	Severe	27	4.3
	Very severe	34	5.4
DASS-21 stress	Normal	492	77.7
	Mild	56	8.8
	Moderate	39	6.2
	Severe	32	5.1
	Very severe	14	2.2
IES-R	0-33	486	76.8
	>33	147	23.2
DASS-21: Depression, anxiety and stress scale; IES-R: The impact of event scale-revised, COVID-19: Coronavirus disease-2019			

mental health demonstrate that social policies for the pandemic should be well-planned.

In this study, we determined that flexible working causes a decrease in IES-R scores. After the pandemic, a significant proportion of workers switched to remote work. It was reported that individuals who worked remotely during the pandemic were psychologically less affected by the event than active workers (27). Remote work and break periods can reduce the risk of exposure to COVID-19 and related concerns.

This study revealed that concerns about access to adequate healthcare were associated with participants' anxiety and stress levels. At the beginning of the pandemic, uncertainty regarding the treatment of COVID-19 was substantial. Hospitals and intensive care units were filled with patients with COVID-19. These developments may have led to an increase in treatment-related concerns. In connection with these worries, the present study found that worry about getting the COVID-19 test predicted depression and stress levels. Furthermore, some

negative situations that may arise in cases in which the test is positive could trigger worry about getting tested: isolation, stigmatization, job loss, etc.

Another finding to emphasize is that the accompanying chronic disease was associated with the psychological impact of the event. These results imply that it is important to implement measures to protect vulnerable groups against the virus during the pandemic. Furthermore, self-rated health status was strongly correlated with levels of anxiety, depression, and the psychological impact of the event. These data are consistent with previous studies (2,5,29,30). Individuals who do not perceive their physical health well may worry about being infected or become more vulnerable to the virus. On the other hand, the stressful environment of the pandemic or the accompanying anxiety and depression can increase physical symptoms (31). Therefore, during the pandemic, individuals who do not find their physical health conditions appealing should be evaluated for accompanying mental disorders (2).

Table 2. Predictors of IES-R and moderate, severe, and very severe DASS-21 in binary logistic regression analysis

		Predictors	Sig.	EXP (B)	%95 CI Lower	%95 CI Upper
DASS-21 depression	Sociodemographic	Active employment	0.006	0.442	0.246	0.794
		Flexible employment	0.007	0.413	0.217	0.789
	Total	Active employment	0.035	0.480	0.242	0.951
		Flexible employment	0.037	0.454	0.215	0.955
		Self-rated health status (low)	0.000	2.257	1.459	3.491
		Social restrictions	0.000	2.632	1.676	4.134
		Financial difficulties	0.008	1.989	1.200	3.296
Social breakdown	0.010	2.004	1.182	3.397		
Getting a COVID-19 test	0.011	2.615	1.242	5.505		
DASS-21 anxiety	Sociodemographic	Gender (male)	0.006	0.516	0.322	0.827
	Total	Self-rated health status (low)	0.000	2.957	1.766	4.952
		Spreading the virus to others	0.018	2.151	1.139	4.063
		Death of relatives affected by COVID-19	0.010	2.194	1.204	3.997
		Social restrictions	0.004	2.195	1.281	3.759
		Social breakdown	0.001	2.738	1.494	5.016
		Access to adequate healthcare	0.009	2.350	1.241	4.453
Wearing a mask	0.023	0.406	0.187	0.884		
DASS-21 stress	Sociodemographic	Gender (male)	0.005	0.432	0.242	0.772
		Active employment	0.011	0.361	0.164	0.795
		Flexible employment	0.026	0.367	0.152	0.886
	Total	Active employment	0.032	0.359	0.141	0.913
		Contact history	0.022	2.964	1.172	7.494
		Social restrictions	0.003	2.585	1.379	4.844
		Social breakdown	0.000	3.423	1.755	6.676
Getting a COVID-19 test	0.029	2.610	1.104	6.171		
Access to adequate healthcare	0.044	2.069	1.018	4.206		
IES-R >33	Sociodemographic	Flexible employment	0.003	0.330	0.159	0.683
		Accompanying chronic disease	0.004	1.964	1.239	3.113
	Total	Flexible employment	0.016	0.340	0.142	0.815
		Self-rated health status (low)	0.020	1.753	1.093	2.810
		Spreading the virus to others	0.002	2.522	1.406	4.526
		Death of relatives affected by COVID-19	0.003	2.330	1.328	4.090
		Social restrictions	0.002	2.208	1.353	3.604
Social breakdown	0.007	2.122	1.226	3.674		
Death from COVID-19	0.024	2.277	1.113	4.657		

DASS-21: Depression, anxiety, and stress scale, IES-R: The impact of event scale-revised, CI: Confidence interval, COVID-19: Coronavirus disease-2019, EXP (B): Exponentiation of the B coefficient, Sig.: Significance

Consistent with our findings, worries about spreading the virus to others and the health of relatives were the most frequently reported concerns during the pandemic (2,7,26,32). We found that these worries significantly predicted high anxiety levels. Concerns about the health of relatives are consistent with data showing that coronavirus can be particularly dangerous in certain risk groups (advanced age, chronic disease, etc.) (7). In line with our findings, protective behaviors such as using masks could reduce anxiety (2). These concerns can also be mitigated by providing clear information to the public about threat risk, increasing the clarity of what they should do, and taking additional steps to protect vulnerable groups from the risk of infection (7,18).

In a climate of uncertainty, it is expected that people will be worried about their health, relatives, the economy, and the effects of the pandemic on society. However, intense and dysfunctional concerns associated with COVID-19 negatively affect individuals' mental health and should be considered therapeutic targets. In a study, Wahlund et al. (33) reported that online cognitive behavioral interventions targeting intensive and dysfunctional COVID-19-related concerns (e.g., illness, death, economy, family) are effective in reducing anxiety and improving mood, daily functioning, and intolerance to uncertainty. The findings of our study demonstrate the concerns about the pandemic that can be potential therapeutic targets and their significant adverse effects on mental health.

Study Limitations

This study has some limitations. The collection of study data using an online tool may have made it difficult to access risky elderly individuals and those with low socioeconomic status, in particular. The lack of assessment of media exposure among individuals can be considered a limitation because worries about the pandemic may be affected by media exposures. However, the fact that individuals' concerns about the adverse effects of the pandemic on the health system and socioeconomic conditions were investigated, and the scales validated in a normal clinical sample were used, could be mentioned as advantages.

CONCLUSION

During the pandemic, it is essential to take measures to protect individuals' mental health. Individual worries about their health, relatives, economy, and the effects of the pandemic on society have significant adverse effects on mental health. Social and health policies should be planned to reduce individual concerns during the pandemic.

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Ethics

Ethics Committee Approval: The Karadeniz Technical University Faculty of Medicine Scientific Research Ethics Committee approved the study (approval number: 24237859-379, date: 19.06.2020).

Informed Consent: Individuals who read the informed consent form about the study via social media were asked to fill out the questionnaire.

Authorship Contributions

Surgical and Medical Practices: A.K., E.A., Concept: A.K., E.A., F.C.A., N.E.B., Design: A.K., E.A., F.C.A., D.S.A., N.E.B., E.Ö.K., Data Collection or Processing: A.K., E.A., F.C.A., Analysis or Interpretation: A.K., E.A., N.E.B., Literature Search: A.K., E.A., F.C.A., D.S.A., N.E.B., E.Ö.K., Writing: A.K., E.A., F.C.A., D.S.A., E.Ö.K.

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