

Research Article

Impacts of Covid-19 and Lockdown on Mental Health: Depression, Anxiety, Stress and Fear among Adult Population in Turkey

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Abstract

Background: Most of the documented literature to date has reported that the COVID-19 pandemic is associated with greater distress, anxiety, anger, stress, and agitation among the general public compared to before the onset of the pandemic.

Method and study design: A review was done to now the evidence for the antiviral and immunomodulatory properties of micronutrients. A search was done in PubMed, Scopus, and Google Scholar for the nutrients with proven effect against viral infection.

Experimental studies, clinical studies, reviews, and meta-analyses were studied descriptively.

Aim: The aim of study was to examine the impact of COVID-19 and the national lockdown on mental health perception of depression, anxiety, stress and fear among the general population in Turkey.

Subjects and methods: The present study comprised a cross-sectional survey of 1,792 male and female participants aged 20-65 years in Turkey (June to October 2020) who completed the 21-item Depression, Anxiety, Stress Scale (DASS-21) and Fear of COVID-19 Scale (FCV-19S). Bivariate and multivariate stepwise regression analyses were used for the demographic and mental health-related variables.

Results: The majority of the respondents recognized the main COVID-19 symptoms (82.9%), knew that there is no drug and vaccine (85.4%), were afraid to travel and visit a shopping mall (86.9%), believed wearing medical masks helped prevent against COVID-19 (81.1%), and considered lockdown isolation reduced the risk of COVID-19 (86.5%). The mean score (and standard deviation) for depression was 13.57 (SD±8.48); for anxiety was 9.32 (SD±7.62); for stress was 16.45 (SD±6.89); and for fear of COVID-19 was 23.47 (SD±4.24). The study showed that there was a significant relationship between fear of COVID-19 and higher levels of depression ($r=0.345$), anxiety ($r=0.253$), and stress ($r=0.369$), (all p -values <0.001). The results of multivariate regression analysis showed that the age ($p<0.001$), depression ($p<0.001$), anxiety ($p<0.001$), sleeping problems due to worrying about being

infected with COVID-19 ($p<0.001$), stress ($p<0.001$), and being afraid to travel because of COVID-19 ($p=0.041$) were all significantly associated with greater fear of COVID-19.

Conclusions: The findings of this study confirmed that fear of COVID-19 was significantly associated with depression, anxiety, and stress.

Keywords: COVID-19 pandemic; Depression; Anxiety; Stress; Fear

1. Introduction

The world is currently experiencing the biggest pandemic in 100 years. Unfortunately, the coronavirus disease 2019 (COVID-19), first identified on December 31, 2019 in Wuhan, China, has since spread all over the world [1-3]. The COVID-19 pandemic has been associated with several mental health issues including depression, anxiety, and stress disorders [2, 4-7]. The COVID-19 pandemic has appeared to have caused a common concern globally, namely fear. Due to high levels of fear, individuals may not always think clearly and rationally in relation to COVID-19. Consequently, Ahorsu et al. developed a valid and reliable scale to assess the fear of COVID-19 [3]. The threat of COVID-19 can lead to a number of psychological symptoms in the general community [2, 8-14].

Fear can be triggered by many different things including the rise in infected cases, confinement at home, poor health facilities, lack of psychiatric services, and poor health information [8-13]. During country lockdowns, several studies have suggested that mental health problems have increased since the

outbreak of the virus [2, 7, 12, 15]. A recent study in India reported that anxiety, depression, stress, and other mental health diseases were commonly reported during lockdown [16]. Most of the documented literature to date has reported that the COVID-19 pandemic is associated with greater distress, anxiety, anger, stress, and agitation among the general public compared to before the onset of the pandemic [2, 11-13, 15]. The aim of the present study was to examine the impacts of COVID-19 and lockdown, and fear of COVID-19 in relation to mental health outcomes of depression, anxiety, and stress among the general population in Turkey.

2. Methods

2.1 Participants and procedure

The present study was conducted in Istanbul, which is a metropolitan city located in both Europe and Asia. The study was cross-sectional comprising a multicenter-based survey among the population living in the urban and rural residential part of Istanbul. The sample size calculation was based on the following parameters: margin error of 2.5%, and confidence level of 99%. The computed sample size was deemed to be 2,454 participants. A total of 2,454 individuals were approached during June and October 2020, and 1,792 individuals completed the survey offline (72.5%). Multistage cluster sampling method performed.

The questionnaire was filled by the participants and all participants provided verbal informed consent prior to the collection of data with the knowledge they could refuse to answer any question, withdraw from the survey at any point, and that all data would remain confidential.

The COVID-19 knowledge questionnaire was developed by the authors. The questionnaire consists a total of 30 questions divided into four sections including socio-demographic information of participants, age, gender, education level, occupational status, knowledge of COVID-19, attitudes towards COVID-19 and practices of precautionary measures in response to COVID-19. The questionnaire was designed on a true/false option basis. A correct answer was assigned 1 point, and false was assigned 0 points. The questionnaire was filled by the participants and all participants provided verbal informed consent prior to the collection of data with the knowledge they could refuse to answer any question, withdraw from the survey at any point, and that all data would remain confidential. The Cronbach's alpha coefficient of the instrument was 0.85 in the present study.

2.2 Measures

2.2.1 Knowledge of COVID-19 scale: Questions concerning COVID-19 knowledge, attitude and practice were devised by the authors and all the questions were free recall. A correct answer was scored as 1 and an incorrect answer was scored as 0. The Cronbach's alpha of the knowledge scale was 0.85 in the present study.

2.2.2 Depression, anxiety and stress scale (DASS-21): The 21-item DASS-21 was used to assess depression, anxiety, and stress with three seven-item subscales [17]. Each item is scored on a four-point scale from 0 to 3. The total score is calculated by summing the scores of each subscale and multiplying by two. Yilmaz et al. adapted the DASS-21 into Turkish [18]. Satici et al. reported that the reliability

coefficients of the scale were 0.87 (depression), 0.82 (anxiety), and 0.89 (stress) [19]. In the present study the reliability coefficients of the subscales were all good to very good for the depression ($\alpha=0.86$), anxiety ($\alpha=0.81$) and stress ($\alpha=0.79$). Cronbach alpha internal consistency coefficient for the whole scale was found as $\alpha=0.82$. Recommended cut-off scores for the DASS-21 were used to categorize the participants as follows: depression was categorized as normal (0-9), mild (10-20), and severe (≥ 21); anxiety was categorized as normal (0-7), mild (8-14), and severe (≥ 15), and stress was categorized as normal (0-14), mild (15-25), and severe (≥ 26). These scores simply represent the possible existence of depression, anxiety and stress in individuals but are not diagnostic.

2.2.3 The Fear of COVID-19 scale: The seven-item unidimensional FCV-19S was used to assess the fear of COVID-19 [3]. Each item is responded to a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree) with a scoring range of 7 to 35. It was developed by Ahorsu et al. [3], and adapted into Turkish language by Satıcı et al. [19]. The higher score indicates the greater the fear of COVID-19. In the present study the Cronbach's alpha for FCV-19S was good ($\alpha=0.74$).

2.3 Statistical analysis

The Statistical Package for Social Sciences (SPSS, version 25) software was used to analyze data. Significant differences between the means of

continuous variables were calculated using student t-tests. Chi-square tests were used to determine significant differences between categorical variables. Multivariate stepwise linear regression analysis was used to determine the association between the FCV-19S and DASS-21. A level of $p<0.05$ was used as the cut-off value for statistical significance.

3. Results

Table 1 shows the demographic characteristics, knowledge, attitude and practice of participants. The mean age of participants was 42.1 years for males ($SD \pm 11.5$) and 40.60 years for females (± 11.4). The majority of the respondents recognized the main COVID-19 symptoms (82.9%), knew that there is no drug and vaccine (85.4%), were afraid to travel and visit a shopping mall (86.9%), believed wearing medical masks helped prevent against COVID-19 (81.1%), and considered lockdown isolation reduced the risk of COVID-19 (86.5%). Table 2 indicates the distribution mean and percentages of the severity of depression, anxiety, stress and fear among the participants.

The mean scores on the scales (and standard deviations) for depression was 13.57 ($SD \pm 8.48$); for anxiety was 9.32 ($SD \pm 7.62$); for stress was 16.45 ($SD \pm 6.89$) and for fear was 23.47 ($SD \pm 4.24$). The findings showed that the percentage of depression, anxiety, and stress were very high among the participants compared to normal scale.

Variables		n (%)
Age group (Year)	<30	399 (22.3)
	30-39	387 (21.6)
	40-49	479 (26.9)
	50-59	387 (21.4)
	=>60	143 (8.0)
Gender		
	Males	901(50.3)
	Females	891(49.7)
Educational level		
	Primary	104(5.8)
	Preparatory	143(8.0)
	Secondary	481(26.8)
	University	818(45.6)
	Post graduate MD / M.Sc. / PhD	246(13.7)
Occupation status		166 (13.7)
	Sedentary	480 (26.8)
	Business Man	160 (8.9)
	Manual	72(4.0)
	Student	99(5.5)
	House Wife	230(12.8)
	Police/Military	71(4.0)
	Administrative / Clerical	517(28.9)
Monthly income		
	Low income	570(31.8)
	Medium income	766(42.7)
	High income	486(25.4)
Knowledge, attitude, and practice		
	1. The COVID-19 signs are fever, fatigue and dry cough.	1485(82.9)
	2. There is no effective treatment/ vaccine for COVID-19.	1531(85.4)
	3. Wearing medical masks can prevent against the COVID-19.	1554(86.7)
	4. Should avoid going to crowded places such as shopping mall, train, metro and bus stations to prevent the infection by COVID-19?	1558(86.9)
	5. Do you consider lockdown is isolation, which may reduce spread risk of COVID-19?	1550(86.5)
	6. Afraid of contacting individuals affected with COVID-19.	1509(84.8)
	7. Usually wearing medical masks to prevent against COVID-19?	1484(81.1)
	8. Do you wash both hands by soap after coming from crowded places?	1589(87.0)
	9. Mostly listen health professional about COVID-19.	1527(85.2)
	10. Do you consider keeping a physical distance is isolation?	1537(85.8)

Table 1: Socio-demographic characteristics of participants COVID-19 (N = 1792).

Scale	Mean ± Standard deviation	Severity				
		Normal n (%)	Mild n (%)	Moderate n (%)	Severe n (%)	Extremely n (%)
DASS-21	39.28 ± 13.08					
Depression	13.57 ± 8.48	588 (32.8%)	454 (25.3%)	356 (19.9%)	280 (15.6%)	114 (6.4%)
Anxiety	9.32 ± 7.62	587 (32.8%)	536 (29.9%)	253 (14.1%)	237 (13.2%)	179 (10.0%)
Stress	16.45 ± 6.89	653 (36.4%)	397 (22.2%)	325 (18.1%)	246 (13.7%)	171 (9.5%)
Fear	23.47 ± 4.24					

Table 2: Prevalence of severity of depression, anxiety, stress and fear among studied Participants (N=1792).

Table 3 presents the descriptive analysis of the FCV-19S with means, confidence intervals, and variances of each item. There was a significant relationship between depression, anxiety, stress, and higher levels of fear of COVID-19 (all p-values <0.001). Most items were distributed asymmetrically. Item 4 had the highest mean, while Item 2 had the lowest mean. In other words, by using the Shapiro-Wilk normality

test, all items were distributed in a non-normal way ($p < 0.001$). In addition, the skewness and kurtosis values were not between -1 and 1, so, this indicated non-normality. Moreover, there were significant correlations between fear of COVID-19 and depression ($r=0.345$), anxiety ($r=0.253$), and stress ($r=0.369$), (all p-values <0.001).

Items	Mean	Confidence Interval	Variance	Skewness	Kurtosis
1. I am most afraid of COVID-19.	3.34	3.28 - 3.41	1.937	-0.130	-1.401
2. It makes me uncomfortable to think about COVID-19.	3.07	3.01 - 3.14	1.863	0.287	-1.344
3. My hands become clammy due to COVID-19.	3.46	3.39 - 3.53	2.017	-0.600	-1.027
4. I am afraid of losing my life because of COVID-19.	3.59	3.52 - 3.65	1.928	-0.358	-1.394
5. When watching news about COVID-19, I become nervous.	3.25	3.19 - 3.32	1.973	0.013	-1.515
6. I cannot sleep because worry about getting COVID-19.	3.44	3.28 - 3.51	1.779	-0.364	-1.210
7. My heart races /palpitates when think about getting COVID-19.	3.31	3.25 - 3.37	1.901	-0.123	-1.362

Table 3: Descriptive analysis of the items of the Turkish fear scale FCV-19S among studied population (N=1792).

Table 4 shows the relationship between fear of COVID-19 and depression, anxiety, and stress using multivariate regression analysis. The analysis showed that age in years ($p<0.001$), depression ($p<0.001$), anxiety ($p<0.001$), sleeping problems due to worrying

about being infected by COVID-19 ($p<0.001$), stress ($p<0.001$), and being afraid to travel because of COVID-19 ($p=0.041$) were all significantly associated with greater fear of COVID-19.

Independent Variables	Regression Coefficient (B)	Standard Error	t- test value	p-value significance
Age in years	0.128	0.019	6.765	0.001
Depression	0.121	0.023	5.184	0.001
Anxiety	0.529	0.128	4.132	0.001
Stress	0.251	0.075	3.347	0.001
Cannot sleep because worry about getting COVID-19	0.072	0.021	3.390	0.001
Afraid of travel due to COVID-19	0.060	0.029	2.046	0.041

Table 4: Relationship of fear of COVID-19 with depression, anxiety and stress and other variables using multivariate stepwise regression analysis.

4. Discussion

Currently, the COVID-19 pandemic has become the biggest public health issue of the last 100 years. The management and prevention of COVID-19 has become a major public health concern. Research concerning knowledge and attitudes related to COVID-19 are important in developing public perceptions of the disease and drawing up preventive plans for health promotion programs [2, 4, 11]. Many of the participants (83%) in the present study had a good level of knowledge concerning COVID-19. This knowledge level was higher than a study conducted in China [2]. Hand washing with soap or using sanitizer, and using a mask to cover mouth and nose are essential for COVID-19 prevention [4, 5]. The results of the present study demonstrated that most participants washed their hands with soap after being

in crowded places. Many individuals reported avoiding crowded places and wearing a mask when going out. These results were consistent with the results of previous research conducted in China [7].

As the greatest health challenge of the 21st century, COVID-19 has increased concern and fear among travelers, healthcare providers, and the general public [12, 20-22]). A previous study conducted in Istanbul found a high level of fatigue, stress, and fear among the Turkish population due to COVID-19 [4, 5]. The present study showed that depression, anxiety, and stress were all positively and significantly associated with the fear of COVID-19. The findings showed that the percentage of depression, anxiety, and stress were very high among the participants compared to normal scale. Research conducted in various countries with

different populations during the COVID-19 pandemic have reported similar results concerning depression, anxiety and stress, including Portugal [6, 7], India [16, 19], United Kingdom [23], Iran [11, 24], Spain [25] and Bosnia and Herzegovina [26]. For instance, a study in Spain reported the level of depression, stress, anxiety to be 9.9%, 7.8%, 11.6%, respectively [25].

The findings of the present study also suggested that fear of COVID-19 increases the likelihood of depression, anxiety, and stress. This finding is consistent with a recent study among Turkish population showing that the fear of COVID-19 was associated with psychological distress and life satisfaction [19]. The findings of this study found that depression, anxiety and stress had a high association with the fear of COVID-19 as has been found in recent previous studies [20, 21]. Furthermore, participants who have fear of COVID-19 were generally older, single, female, having moderate depressive symptoms, living in urban places and having higher scores on FCV-19 [26].

All adults aged over 65 years and those with underlying health conditions such as diabetes, stroke, cardiovascular disease, coronary heart disease, chronic respiratory disease, hypertension, cancer, obesity and smoking are all have increased risk of death from COVID-19. It is well known that the spread of COVID-19 is directly associated with population knowledge, attitude, and practices towards the disease. The number of positive cases and death from COVID-19 were very rapidly increasing in Turkey since beginning November 2020 [21]. The reason of increases could be, since our understanding of testing for COVID-19 is crucial, the number of

confirmed cases is lower than the number of total cases because not everyone is tested. Not all cases have a “laboratory confirmation”, testing is what makes the difference between the number of confirmed and total cases. Worldwide as all countries have been struggling to test a large number of cases, which meant that not every person that should have been tested, has in fact been tested.

The present study has some limitations. First, the design of the study was cross-sectional, which does not allow the determining of any cause-effect relationship. Second, the study may not reach to the target subject in population as a bias, which is very hard to avoid. Third, the tools used for the assessment of fear, depression, anxiety and stress in relation to COVID-19. The results were based on self-report measures, and the negative mental health states were not evaluated by clinicians, and therefore must be interpreted with caution. This may have caused recall bias and underreporting. However, the strength of the present study is that it presents an investigation among a large sample in a critical period during the outbreak of the COVID-19 in Turkey.

5. Conclusion

The COVID-19 pandemic and the subsequent lockdown have had great impact on people’s lives and presented highly significant challenges to public health in several areas, including psychosocial and mental health. The impact of the COVID-19 pandemic on depression, anxiety, and stress among the Turkish population appears to have been widespread. The findings of the study confirm that the fear of COVID-19 was significantly associated with depression, anxiety, and stress.

Ethics Committee Approval

The authors would like to thank the Istanbul Medipol University for their support and the Clinical Research Ethics Committee of Istanbul Medipol University, Institutional Review Board (Research Protocol and IRB# 10840098-604.01.01-E.14180).

Peer-Review

Externally peer-reviewed.

Contributors

AB and CCB contributed to conception, design, organized study, collected data, performed statistical analysis and wrote, and contributed to the to the interpretation of the data and writing, revised critically and approved final version of the manuscript.

MDG, EM and FÇ contributed to the literature review, interpretation of the data, and overseeing the final writing and editing of the manuscript, and approved final version of manuscript.

Conflict of Interest

No conflict of interest was declared by the authors.

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