

Psychological effect of COVID-19 pandemic on university students in Turkey

Psychological effect of COVID-19 pandemic

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Abstract

Aim: The COVID-19 pandemic that started in China in December 2019 is spreading rapidly in Turkey and other parts of the world. The pandemic has not only brought the risk of death from infection, but also brought an irresistible psychological pressure. Especially, this pressure has increased due to the lockdown applied in the country. In this study, we aimed to reveal the effects of the COVID-19 pandemic in Turkey on the anxiety levels of university students.

Materials and Methods: This study was carried out in Turkey with a total of 1704 students studying in different cities and at different higher education institutions. "Personal Information Form" and "Generalized Anxiety Disorder Scale" consisting of 7 items were used as the data collection tools. SPSS for Windows 24 program was used for the analyses of study data. T-test statistics, One-way analysis of variance, Pearson correlation, and Ordinal Logit Regression Analysis test statistics were used for the comparison of data.

Results: The Cronbach's alpha value for the total score of the GAD scale was found to be 0.90. Concerning the effect of stress factors of the students on the GAD levels, the results of the study revealed that there was a statistically significant difference between the GAD levels and age, gender, educational level, type of family income, the positivity of COVID-19 in the family, individual, and vicinity, family economy, educational background, daily life routines, negative effects on the social life, and access to a protective mask ($p < 0.05$; $p < 0.001$).

Discussion: This study highlights the potential effect of the COVID-19 pandemic on the mental health of the students, and when the results obtained are evaluated, it was seen that this pandemic had a high effect on the mental health of the students. As a result, it is recommended to monitor the mental health of university students during pandemics.

Keywords

COVID-19; University students; Psychological effect; Anxiety

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Introduction

Since December 2019, numerous cases of unexplained viral pneumonia regarding the South China seafood market have been reported in Wuhan, Hubei Province of China. These cases have been later confirmed to be a new Coronavirus infection (2019 new Coronavirus, 2019nCoV). Afterward, The World Health Organization has officially named this new virus as COVID-19 (2019 Coronavirus Disease), which is similar to the Severe Acute Respiratory Distress Syndrome (SARS) virus. The United States (USA) National Centre for Disease Control (CDC) has categorized this disease on the National Class B Infectious Diseases list and managed the disease according to the measures taken for the prevention and control of Class A infectious diseases. In the seventh edition of the diagnosis and treatment program of new Coronavirus pneumonia, it has been emphasized, by pointing out the epidemiological characteristics of the virus that the population is generally at risk against this virus [1]. COVID-2019 has rapidly spread to Turkey and other countries and caused SARS [2]. According to the official web site of the Ministry of Health, 158.762 verified cases and 4.397 deaths have been reported in Turkey as of May 26th, 2020. This is an indication that COVID-19 has become a very large-scale and contagious public health event. The pandemic has not only brought the risk of death from the viral infection but also caused unbearable psychological pressure on people [3]. Studies conducted on previous pandemics have focused on understanding how the communities define the origin and impact of the pandemics and how they deal with them emotionally [4]. The studies conducted in China, the first country to be affected by the psychological and emotional consequences of COVID-19, have shown that obscurity and uncertainty have caused stress, anxiety, depression, and somatization, and can also lead to the development of negative behaviour, such as increasing alcohol and tobacco consumption [5].

Due to COVID-19, many countries have imposed restrictions on domestic and international travel to prevent the spread of the epidemic. Upon the advice of public health specialists and science committees, governments have taken various measures, such as social distance, self-isolation, or quarantine. In addition, practices for controlling the disease such as improving the health facilities and asking people to work from home have been activated [6]. Several countries have announced that places with large areas, including gyms, museums, cinema halls, swimming pools, and educational institutions, have been closed to fight against this invisible enemy. Preliminary evidence has shown that only elderly people are affected, and children are less susceptible to the virus, and several cases of the virus have been reported among children [7].

The virus should be kept away from the pediatric population as it is not possible to stop a sick child from playing with his/her friends and siblings, and to prevent him/her from hugging his/her family. Efforts to reduce the spread of the COVID-19 virus among young and adult populations have led to the closure of schools, colleges, universities, and other educational institutions in many countries. According to UNESCO's March 25, 2020 announcement, 150 countries have closed schools and educational institutions across the country and this has affected more than 80% of the student population in the world.

There is a wide amount of literature on the closure of educational facilities in order to decrease/slow the spread of infectious diseases among the general public, therefore breaking one of the most important filiations of the virus [8]. Increasing concern over the current COVID-19 pandemic has led to the postponement and cancellation of all campus events at universities worldwide, such as workshops, conferences, sports, and other events. Universities have started to provide education using various programs via the internet [9].

The country-wide sanctions applied to prevent the spread of the virus, such as lockdowns and limitations of social life, are expected to affect the mental health of most of the population and especially university students. There are currently published reports on the psychological effects of the COVID-19 pandemic across the population, on sick people, on health care personnel, and on children and the elderly [10]. Most of the studies have shown that mental health problems may occur both in health care specialists and SARS victims during the SARS epidemic [11]. Frequent effects are post-traumatic stress disorder and depressive disorders. This continues as a common and long-term psychological disorder [12]. Similar results are reported in a previous study on Middle East respiratory syndrome-MERS-CoV [13]. However, no detailed study has been carried out on the mental health status of the university students exposed to an epidemic until today. The General Anxiety Disorder Scale (GAD-7), which is one of the most commonly used tools for detecting and screening anxiety disorders and developed to assist in the diagnostic process of certain diseases, is the first self-reported questionnaire [14]. Completion of GAD-7 continues for less than 3 minutes, and its scoring is easy [15]. Today, GAD-7 is the most common measure of anxiety used in clinical practice and research due to its diagnostic reliability and efficacy [16]. Screening can be used to evaluate the severity of diagnosis and anxiety disorders, as well as social phobia, post-traumatic stress disorders, and panic disorders. The issue of how students can be guided to effectively and appropriately organize their emotions during pandemics that threaten public health and to prevent the losses caused by the crisis that arise/may arise has also become an important problem for universities. Failure to manage this process well will affect the success of the students at school. As a result of the research, we concluded that the COVID-19 pandemic may also affect university students psychologically. Therefore, we aimed to determine the effect of anxiety levels of the university students and the effect of the stress factors on the anxiety levels, and the relationship between them during the COVID-19 pandemic.

Material and Methods

Model of the Research

In this study, a descriptive research model from the quantitative research methods was used.

Sample Group

The sample group of the study consisted of a total of 1704 students including 471 males and 1233 females who were aged between 17 and 52 years, were receiving higher education in different cities in Turkey, and agreed to participate in the study. According to the 2019-2020 data of Higher Education Institution in Turkey, there are 7.940.133 students.

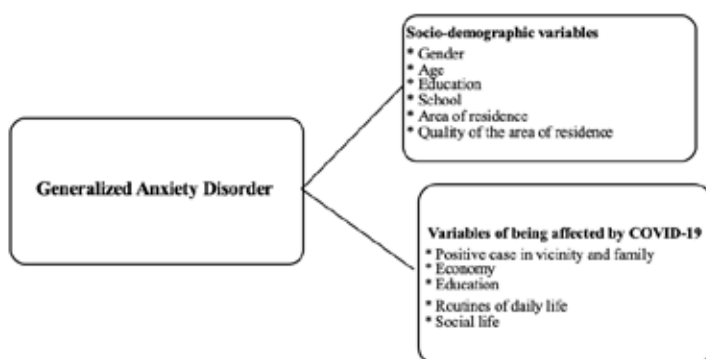


Figure 1. Model of the research

Data Collection Tools

In the study, “Personal Information Form” and “Generalized Anxiety Disorder Scale” were used as the data collection tools.

Socio-Demographic information form

In the study, the personal information form prepared by the researcher included gender, age, educational status, type of higher education, area of residence, quality of area of residence (Table 1), and the variables regarding the questions about the impact of New Coronavirus Disease (COVID-19) on an individual, economic, social, and family status.

Generalized anxiety disorder scale

Generalized Anxiety Disorder-7 (GAD-7) is a short test that is developed by Spitzer et al. consisting of 7 items, which evaluates the generalized anxiety disorder, improved according to DSM-IV-TR criteria, and is filled out by self-declaration [17]. It is a 7-item four-point Likert (0=none, 1=several days, 2=more than half of the days, 3=almost every day) type scale evaluating the experiences asked in the scale items in the last 2 weeks. In the evaluation of the total scores in the original article of GAD-7, 0-4 is evaluated as mild, 5-9 as moderate, 10-14 as high, and 15-21 as severe anxiety. It is essential to investigate and confirm the diagnosis of GAD with other methods in patients getting a total score of 10 points or higher. When the total score threshold is selected as 10, sensitivity was detected as 89% and specificity as 82%. Turkish adaptation, validity and reliability of the original GAD-7 scale were conducted by Konkan et al. [18]. GAD-7 scale has been adapted to Turkish over 110 patients, who applied to the hospital as out-patients with a diagnosis of GAD and underwent reliability and validity analyzes. Konkan et al. identified a single-factor structure in their studies that included all items. The Cronbach alpha value of the total score of the GAD-7 test was found to be 0.85.

Data Collection Method

The test method conducted in a computer environment applied to 1704 students, who agreed to participate in the research with their consent, was used as the data collection method in our study. According to the results of a meta-analysis carried out in Turkey, there was no statistically significant difference in students’ performances between paper-and-pencil and computer-based tests. In our study, the scale form applied to the students was sent to the participants in a computer environment. After the sufficient sample size was reached in the study, the application was terminated.

Ethical Considerations

The ethics committee of Istanbul Sabahattin Zaim University approved this study (2020/6).

Data Analysis

Data analysis was performed using SPSS (Statistical Package for Social Sciences) for Windows 24 program. According to the answers of 1704 students who accepted to participate in the research and were studying in different higher education institutions in different cities in Turkey, the distribution of questions in the personal information form was determined using frequency analysis, and descriptive statistics were conducted.

In our study, parametric test statistics were used to compare the data. To compare the total score of the scale, independent samples t-test statistics were used based on gender, type of school, type of region of residence, and type of family income, COVID-19 positive cases in the vicinity and family, affecting the economy of the individual and family, education, routines of daily life, and social life. One-way analysis of variance test statistics was used to make comparisons based on the variables age, educational level, department of education, region of residence, and area of residence. “Games-Howel” test statistics, which is used if variances are not homogenous and the number of group elements is not equal, was used to make a pair-wise comparison of GAD levels of the students in subscales for which the difference was specified as a result of one-way analysis of variance statistics. “Hochberg’s GT2” test statistics, which is used if variances are homogenous and the number of group elements is not equal, was used in the study to make pair-wise comparisons of GAD levels.

In addition, sequential logistic regression analysis was applied for the GAD levels, which is the dependent variable, and the stress factors related to COVID-19. Estimations regarding the strengths of the relations were shown using the 95% confidence interval (CI) and Odds Ratio (OR). $P < 0.05$ and $p < 0.001$ values were determined for the significance level. In our study, the Cronbach alpha value of the total score of the GAD scale was found to be 0.90.

Results

The age interval of the students with the mean age of 21.4 ± 3.39 (min =17; max=52) was found to be between 21 and 25 years old with a rate of 50.6%, and females accounted for 72.4% and males 27.6%. It was determined that the education level of the students was undergraduate degree with 52.9%, and they were studying other sciences with the highest rate of 32.7%. It was reported that the type of school of the students was state universities with a ratio of 67%, the region of residence is Marmara with a ratio of 47.1%, the type of the region of residence is urban with a ratio of 83.3%, the type of living is together with their families with a ratio of 86.6%, and the type of family income is constant income with a ratio of 67.7% (Table 1).

When this study examined the status characteristics of the students to be affected by the COVID-19 pandemic, it was determined that the rate of COVID-19 positive cases in the environment and family was 20.3%, access to protective mask %46.2, level of its negative effect on one’s environment, himself/herself, and the family’ economy was 76%. It was

Table 1. Socio-demographic characteristics of the student (n=1 704)

Variables	Groups	n	%	
Gender	Male	471	27.6	
	Female	1233	72.4	
Age	17-20 (1)	724	42.5	
	21-25 (2)	863	50.6	
	26-30 (3)	75	4.4	
	31-40 (4)	32	1.9	
	41 and over (5)	10	0.6	
Educational level	Associate degree (1)	703	41.3	
	Bachelor's degree (2)	902	52.9	
	Master's degree (3)	73	4.3	
	Doctor's degree (4)	26	1.5	
Area of education	Health sciences (1)	456	26.8	
	Social sciences (2)	444	26.1	
	Physical sciences (3)	247	14.5	
	Other sciences (4)	557	32.7	
Type of school	State university (1)	1141	67.0	
	Foundation/Private university (2)	563	33.0	
Region of residence	Mediterranean (1)	236	13.8	
	Aegean (2)	179	10.5	
	Central Anatolia (3)	209	12.3	
	Black sea (4)	162	9.5	
	South-eastern Anatolia (5)	63	3.7	
Type of the region of residence	Marmara (6)	802	47.1	
	Eastern Anatolia (7)	53	3.1	
	Urban (1)	1420	83.3	
	Rural (2)	284	16.7	
	Area of residence	Family (1)	1476	86.6
		Alone (2)	94	5.5
		Dormitory (3)	65	3.8
Other (4)		69	4.0	
Type of family income	Fixed income (1)	1154	67.7	
	Variable income (2)	550	32.3	

determined that due to the COVID-19 pandemic, the education of the students was negatively affected by 89.1%, daily life routines were negatively affected by 94.1%, and their social lives were negatively affected by 95.8%.

The average value of the total GAD scores of the students was 9.81 ± 5.8 , 95% CI=5.85-10.09. According to the evaluation of total GAD scores, the anxiety level of the students was reported as “moderate”.

In our study, when comparing GAD levels, the demographic variables of the students were analyzed using t-test statistics and the results are shown in Table 2.

As a result of the independent t-test, the difference in the GAD levels of the students between the groups was found statistically significant for variables of gender ($p=0.000$; $p<0.05$), type of family income ($p=0.011$; $p<0.05$), COVID-19 positive cases in the family, an individual or in his/her vicinity ($p=0.031$; $p<0.05$), family economy, education life, routines of daily life, affecting the social life negatively, and access to a protective mask ($p=0.000$; $p<0.05$). No statistically significant difference was found between the total GAD scores of the students and the

type of area of residence ($p=0.113$; $p>0.05$).

When the GAD effect size was evaluated according to the access to the protective mask, the effect was found to be at a low level (Cohen's $d=0.20-0.50$). When the GAD effect size was evaluated according to the negative effect on education life, the effect was found to be at a moderate level (Cohen's $d=0.50-0.80$). When the GAD effect size was evaluated according to the type of family income, type of university, COVID-19 positive in the family, the individual, and in the vicinity, and affecting the family economy negatively, the effect was observed at a very high level (Cohen's $d \geq 1$ very high effect).

In our study, the comparison of the GAD levels of the students according to age, educational level, type of the department of education, region of residence, and area of residence was analysed with the one-way variance test statistics, and the results are shown in Table 3. In our study, the difference within the groups and between the groups were found statistically significant according to the total GAD scores of the students, age ($F(5,63) = 9.417$, $p = 0.000$; $\eta^2=0.022$), region of residence ($F(3,67) = 2.584$, $p = 0.017$; $\eta^2=0.009$) and educational level ($F(8,53) = 4.009$, $p = 0.007$; $\eta^2=0.007$) variables. The difference within and between the groups was not found statistically significant in terms of the total GAD scores of the students, department of education and area of residence ($p > 0.05$). As a result of the Post Hoc test, it was observed that this difference was determined in favor of those aged 17-20 years. In terms of the variable of education level, there were significant differences in favor of associate degree students. According to the results obtained, it was seen that GAD scores decreased as the age increased. Additionally, it was observed that the value of eta square (η^2) calculated for the variables of age, region of residence and education was small and accounted for only 2.20%, 0.9% and 0.7% of the total variance, respectively.

The results of the sequential logistic regression analysis of variables affecting the GAD levels of students are described below. The effect of the presence of COVID-19 positive cases in the family, individual, or vicinity of the students on the GAD levels was found significant (Wald= 7.372; df=1; $p=0.007$). The risk of COVID-19 positive cases to have a higher anxiety level was $e0,298=1.3$ times greater than those who were not COVID-19 positive. The effect of accessing the protective masks on GAD levels was found to be significant (Wald=26.729; df=1; $p=0.000$). The risk of accessing protective masks to have a higher anxiety level was $e0,469=1.6$ times greater than those who were not accessing protective masks.

The impact of the negative affection on family economies of the students on the GAD levels was found to be significant (Wald=9.672; df=1; $p=0.002$). The risk of the individuals with a negatively affected family economy to have a higher anxiety level was $e0,336=1.4$ times greater than those who did not have a negatively affected family economy.

The effect of the negative affection on the education life of the students on the GAD levels was found to be significant (Wald=43.463; df=1; $p=0.000$). The risk of the individuals with a negatively affected education life to have a higher anxiety level was $e1.028=2.8$ times greater than those who did not have a negatively affected education life.

The effect of the negative affection on the daily routines of

Table 2. Comparison of the GAD levels via the t-test according to the demographic variables of the students (n=1704)

Variables	Groups	N	\bar{X}	sd	t	p	d
Gender	Male	471	8.66	5.76	-5.068	<0.001	0.027
	Female	1233	10.25	5.82			
Region of residence	Urban	1420	9.72	5.80	-1.502	0.133	0.096
	Rural	284	10.29	6.06			
Type of university	State	1141	10.12	5.90	3.138	0.002*	0.160
	Foundation/Private	563	9.19	5.69			
Family income	Fixed	1154	9.56	5.77	-2.559	0.011*	0.133
	Variable	550	10.34	5.97			
COVID-19 positive in the family, individual, or in the vicinity	Yes	346	10.42	5.54	2.161	0.031*	0.133
	No	1358	9.66	5.91			
Status of affecting the family economy negatively	Affected	1295	10.30	5.88	6.490	<0.001	0.109
	Not affected	409	8.26	5.45			
Status of affecting the education life negatively	Affected	1519	10.21	5.79	8.150	<0.001	0.658
	Not affected	185	6.57	5.26			
Status of affecting the routines of daily life negatively	Affected	1603	10.07	5.82	9.177	<0.001	0.840
	Not affected	101	5.66	4.61			
Status of affecting the social life negatively	Affected	1632	9.95	5.83	5.355	<0.001	0.803
	Not affected	72	6.63	5.13			
Access to the protective mask	Yes, I have accessed	787	10.85	5.93	6.846	<0.001	0.334
	No, I haven't accessed	917	8.92	5.63			

*p<0.05

Table 3. Comparison of the GAD levels via the one-way ANOVA test according to the demographic variables of the students (n=1704)

GAD		Sum of squares	df	Mean of squares	F	p	n2	Difference
Age	Between the groups	1262.512	4	315.628	9.417	<0.001	0.022	1>2 1>3
	Within the group	56944.143	1699	33.516				
	Total	58206.655	1703					
Educational level	Between the groups	408.902	3	136.301	4.009	0.007*	0.007	1>3
	Within the group	57797.753	1700	33.999				
	Total	58206.655	1703					
Type of department	Between the groups	260.540	3	86.847	2.548	0.054	0.004	-
	Within the group	57946.115	1700	34.086				
	Total	58206.655	1703					
Region of residence	Between the groups	526.894	6	87.816	2.584	0.017*	0.009	-
	Within the group	57679.761	1697	33.989				
	Total	58206.655	1703					
Area of residence	Between the groups	30.154	3	10.051	.294	0.830	0.001	-
	Within the group	58176.501	1700	34.221				
	Total	58206.655	1703					

*p<0.05

the students on the GAD levels was found to be significant (Wald=16.407; df=1; p=0.000). The risk of the individuals with negatively affected daily routines to have a higher anxiety level was e0,891=2.4 times greater than those who did not have negatively affected routines of daily life. The effect of the negative affection on the social lives of the students on the GAD levels was found to be insignificant (Wald=0.153; df=1; p=0.54).

Discussion

According to the evaluation of total GAD scores, the anxiety level of the students was reported as “moderate” in our study. Anxiety levels of female students were significantly higher than male students. The results comply with the results of the previous studies, in which it was concluded that women are much more vulnerable to stress and are more likely to develop

post-traumatic stress disorder [19]. In general, there are many studies in terms of gender, especially in disorders such as anxiety and depression, in which there are high results in favor of women [20,21]. However, the persistence of the gender gap after the coronavirus can be considered an important result, since the epidemic process shows similar effects for both genders. In addition, other studies have shown that women are much more vulnerable to stress and are more likely to develop post-traumatic stress disorder [22]. In our study, the difference in the variables between the groups in terms of age, gender, education life, type of family income, COVID-19 positive in the family, individual, or in the vicinity, education life, daily routines, negative impact on social life, and access to the protective mask in terms of GAD levels was found significant. However, no statistically significant difference was found between the total GAD score of the students and the type of region of residence. In our study, GAD levels were significantly affected by the presence of COVID-19 positive cases in the family, individual and in the vicinity, access to protective mask, family economy, education life, and negatively affected daily routines.

It was determined that there was a significant negative correlation between COVID-19 related stress factors and GAD levels. The effects of COVID-19 positive cases in the family, individual and in the vicinity, access to protective mask, family economy, education life, and negatively affected daily routines on the GAD levels were found significant.

Those with a positive diagnosis of COVID-19 in his/her family and in his/her vicinity have been notified to report significantly higher coronavirus anxiety compared to their uninfected but anxious peers [23]. If the plans for the COVID-19 pandemic come true, it may imply that 70% of the world population could potentially need both medical and psychological care for COVID-19 infections. COVID-19 outbreak in a study conducted in Turkey and social isolation showed that a disruptive effect on the psychological symptoms of the participants had a protective effect on resilience [24].

It was found that coronavirus anxiety also affected social attitudes significantly. In our study, a very strong correlation between the status of COVID-19 affecting social life and the anxiety level was determined. Correlations had also shown that older age and higher educational levels are associated with higher coronavirus anxiety. It can be said that young people tend to learn a vast amount of information from social media that may easily trigger stress. As the educational level increases, the level of anxiety becomes lower as the ability to comment on these news increases. Although systematic research on this issue is limited, there is a need for studies explaining the causes of the differences.

For the last six months, COVID-19 disease around the world and its spread to the world after the epidemic in Wuhan, China has become the major problem for health systems [25]. The spreading of the virus has been closely monitored by various groups of people in different countries when the mentality of how the Chinese health system handles the disease and how it deals with daily deaths, problems, and quarantines is considered [26]. One of the most stressful situations is the unpredictability of the pandemic, uncertainty about when to control the disease, and the severity of the risk. Together with some analyses

and misinformation, these may increase anxiety among the masses. On the other hand, this epidemic across the world may trigger common mental disorders such as stress, anxiety, and depression. According to similar outbreaks and pandemics, serious anxieties such as necrophobia may arise among the patients, and breakoff phenomenon and anger may develop in quarantined people [23]. In addition, quarantined people lose connections in person and traditional social interventions and this is a phenomenon causing stress [27]. According to the findings of the study, special attention should be paid to the mental health issues of the community, in addition to various levels of effort shown to prevent the spread of disease and other alarming situations. However, the important matter is that disease control requires comprehensive management and attention that is appropriate for mental health care. It seems that the only possible way to overcome the current situation is to comply with all the rules specified and to rely on compliance and social capital.

Our recommendations to the health care policymakers as a result of the findings of this study are as follows: web-based training should be provided to increase the knowledge of young people on health care literacy and social media literacy in order to correctly comment on the information received from information sources; they should have an access to the medical resources, protective masks, and public health services; methods of dealing with the COVID-19 pandemic should be reviewed, strengthened, and improved; controlled socialization should be permitted on certain days and at certain times instead of a full lockdown; psychological support should be provided to the university students via telemedicine applications.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

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