THE EFFECT OF FEAR OF COVID-19 ON DEPRESSION LEVEL IN UNIVERSITY UNDERGRADUATE STUDENTS: THE MEDIATOR ROLE OF ANXIETY

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Başvuru Tarihi: 24.12.2021 **Kabul Tarihi:** 21.03.2022

DOI: 10.21441/sosyalguvence.1042324

ABSTRACT

The aim of this study is to reveal whether the fear of COVID-19 affects depression in university undergraduate students, and also to determine whether the level of anxiety mediates the relationship between fear of COVID-19 and depression. An online-based cross-sectional study design on university students was used in the research. The universe of the research consisted of undergraduate students from three different universities in the same region. Data were collected from 627 students using the online questionnaire technique. SPSS and AMOS package programs were used in the analysis of the data. Descriptive analyzes, independent sample t-test, ANOVA analysis, correlation analysis and path analysis were applied to the data. The empirical result of the study revealed that students currently feel more depressed due to widespread fear of COVID-19. In addition, it has been determined that the level of fear caused by COVID-19 in university undergraduate students significantly affects depression, and that the level of anxiety partially mediates the relationship between fear of COVID-19 and depression. This research revealed the

important role that the complex relationships between fear and anxiety can play in the development of symptoms of depression.

Keywords: Fear of COVID-19, anxiety, depression, structural equation modeling.

ÜNİVERSİTE LİSANS ÖĞRENCİLERİNDE COVID-19 KORKUSUNUN DEPRESYON DÜZEYİNE ETKİSİ: ANSİYETENİN ARACI ROLÜ

ÖZ

Bu çalışmanın amacı, üniversite lisans öğrencilerinde COVID-19 korkusunun depresyonu etkileyip etkilemediğini ortaya koymak ve bunun yanı sıra anksiyete düzeyinin COVID-19 korkusu ile depresyon arasındaki ilişkiye aracılık edip etmediğini tespit etmektir. Araştırmada üniversite öğrencileri üzerinde online temelli kesitsel çalışma tasarımı kullanılmıştır. Araştırmanın evrenini aynı bölgede bulunan üç farklı üniversitenin lisans öğrencileri oluşturmuştur. Veriler çevrimiçi anket tekniği kullanılarak 627 öğrenciden toplanmıştır. Verilerin analizinde SPSS ve AMOS paket programları kullanılmıştır. Verilere betimsel analizler, bağımsız örneklem t testi, ANOVA analizi, korelasyon analizi ve yol analizi uygulanmıştır. Araştırmanın ampirik sonucu, öğrencilerin yaygın COVID-19 korkusu nedeniyle şu anda kendilerini daha depresif hissettiklerini ortaya koymuştur. Ayrıca, üniversite lisans öğrencilerinde COVID-19 kaynaklı korku düzeyinin depresyonu önemli derecede etkilediği ve bunun yanı sıra anksiyete düzeyinin COVID-19 korkusu ile depresyon arasındaki ilişkiye kısmi aracılık ettiği tespit edilmiştir. Bu araştırma korku ve anksiyete arasındaki karmaşık ilişkilerin, depresyon semptomlarının gelişiminde oynayabileceği önemli rolü ortaya koymuştur.

Anahtar kelimeler: COVID-19 korkusu, anksiyete, depresyon, yapısal eşitlik modellemesi.

INTRODUCTION

The virus, which first appeared in December 2019 in Wuhan, China, was later defined as "New Coronavirus Disease/COVID-19" and caused a deadly disease and a global epidemic was declared by the World Health Organization (WHO) (World Health Organization, 2020a). COVID-19 is a newly discovered type of infectious disease and its etiology is not fully known (World Health Organization, 2020b). Due to the spread of the virus to Europe and America in a short time, the World Health Organization has declared COVID-19 as a pandemic (global epidemic) as of March 11, 2020. The pandemic brings many medical or social behavior changes, therefore, the obligation to comply with the rules requires a sustainable spiritual adaptation skill. Because the difficulties in adaptation, unmanageable anxiety and fear of COVID-19 can weaken the immune response ina short amount of time (Psychiatric Association of Turkey, 2020). In addition, as in many pandemic epidemics, coronavirus reveals both epidemiological and psychological crises caused by "anxiety, depression, insomnia, trauma, anger, psychosis, panic and boredom" (American Psychological Association, 2020).

Today, many researchers accept that depression, fear of COVID-19 and anxiety are general emotional issues (Akpinar, 2013; Ilhan et al., 2014; Yılmaz & Ocakbaşı, 2010). It has been stated that the feelings of depression, anxiety and fear of COVID-19 can be triggered by many different sources. Therefore, the source of fear of COVID-19 and anxiety and the level of experienced anxiety depends on the personality and perspective of events. It can be said that there is an interaction between fear of COVID-19, depression and anxiety (Kapcı, 2004). Similarly, the nature of the COVID-19 pandemic has also been observed to cause anxiety, fear of COVID-19 and depression in society. In addition, the lack of large scale vaccination and an effective treatment method for the virus has further increased the level of such feelings and created an uncertainty about the near future (Ahorsu et al., 2020).

On the other hand, from a physiological perspective, fear of COVID-19 and anxiety are basic emotions that involve activating the "fight or flight" response of the sympathetic nervous system and provide a rapid response when faced with an imminent threat. The contagious nature of the infection, its being an imminent threat and invisibility to the eye and increasing influence of the

virus are the the most important reasons why the COVID-19 pandemic causes fear of COVID-19 or anxiety in both the society and healthcare workers (Pappas et al., 2009). The psychological reactions that emerge during the pandemic can range from extreme fear of COVID-19 to apathy to fatalism. In some cases, psychological effects can be severe and prolonged (Taylor, 2019).

Disease outbreaks such as the COVID-19 pandemic are seen as situations of concern. Although the impact of this pandemic on global mental health has not been recorded and measured, it has been observed that people experienced increased levels of fear of COVID-19, anxiety and anxiety, especially during the emergence of the pandemic and rising number of cases (Rajkumar et al., 2020). At the same time, this pandemic resulted in psychological problems, including anxiety, depression and stress (Duan & Zhu, 2020). Similarly, in previous studies, it was shown that anxiety, depression and fear of COVID-19 levels of individuals increased during infectious diseases such as severe acute respiratory failure syndrome (SARS) (Wu et al., 2005). The COVID-19 pandemic is predicted to pose serious threats to physical health and lives, as well as trigger a wide range of psychological conditions such as depression, fear of COVID-19 and anxiety. Similarly, in another study on COVID-19 patients in Fangcang Shelter Hospital, it was emphasized that anxiety and depressive symptoms were found to be common and some patients being at high risk (Dai et al., 2020).

The Present Study

After evaluating the critical situation of the global pandemic caused by COVID-19 in terms of literature, it becomes clear that more studies are needed on the possible triggers of anxiety. Especially university undergraduate students, who seem to be an extremely vulnerable population, are the focus of this study. The research was carried out in Turkey, a country affected by high levels of stress and fear, with highly restrictive social distancing measures, a steady rise of new cases, and the authorities facing serious difficulties in meeting the social, psychological and economic needs of its citizens. This research assumes the following objectives:

a. to examine the impact of ‘Fear of COVID-19’ on depression and

b. to find the mediating role of anxiety from COVID-19 in the relationship between 'Fear of COVID-19' and depression.

As in any pandemic situation, people tend to fear for their lives in the first place and then their belongings. As the number of feared situations increases and the severity deepens, anxiety reveals. Fear and anxiety, which are reflections of different forms of depression, pose a threat to human health. This research attempts to hypothetically understand the direct and indirect relationship between 'Fear of COVID-19' and depression, in which anxiety from COVID-19 plays a mediating role.

1. CONCEPTUAL FRAMEWORK

The first evidence from studies shows that COVID-19 is associated with mental illnesses (Lai et al., 2020). In a study consisting of about 9,000 people performed on social media, it was stated that 67.3% of the participants were highly or extremely anxious about COVID-19, while 48.8% choose to self-isolate themselves to avoid COVID-19 (Nelson et al., 2020). In another study, it was reported that confronting uncertain situations, especially when there is a potential risk of death, can increase people's levels of anxiety and fear of COVID-19 which can lead both healthy and vulnerable individuals to engage in protective behaviors (Shigemura et al., 2020). Thus, the COVID-19 pandemic has resulted in widespread depression, fear of COVID-19 and anxiety (Ahorsu et al., 2020). During the pandemic, depression, fear of COVID-19 and anxiety interact in multiple ways; the tendency to negatively respond to uncertain events in emotional and behavioral ways manifest themselves as fear of COVID-19, anxiety and intolerance (Buhr and Dugas, 2002). In a previous study, it was reported that those with low level of knowledge about COVID-19 experience more problems and higher sense of insecurity in accessing any source of information. In the same study, it was observed that participants were less likely to engage in precautionary behaviors such as washing hands and avoiding crowded areas (Shiina et al., 2020).

It has been reported that about a quarter of university students show at least mild anxiety level due to the COVID-19 outbreak (Cao et al., 2020). In another study conducted on university students, it was emphasized that the complex relationships between fear, stress and anxiety may play a role in the

development of depression symptoms (Rodríguez-Hidalgo et al., 2020). In another study, it was emphasized that the fear of COVID-19 will have a huge impact on the mental health of the public (Torales et al., 2020). Anxiety, defined as "a state of restlessness or worry caused by anticipating a real or perceived threatening event or situation" (Spielberger, 2010), was found to be common among healthcare professionals who are directly involved in the management of patients. Moreover, due to direct contact with COVID-19 patients, healthcare workers have been found to be more exposed to traumatic events, such as suffering and death of patients, which can further increase their fear of COVID-19 and anxiety (Pappa et al., 2020). In another study, a higher risk of depression symptoms during a pandemic was found to be associated with lower social resources and lower income, exposure to more stress (Ettman et al., 2020).

1.1. Fear of COVID-19 and Depression

Looking at the previous epidemics in the world, the variables that make individuals psychologically vulnerable; negative affect, susceptibility to anxiety, low tolerance to uncertainty, excessive fear and the thought of being vulnerable to illness (Taylor, 2019). Looking at the symptoms of those directly or indirectly affected by the epidemic, similarly, fear (getting sick, dying, being separated from loved ones due to quarantine, losing loved ones due to the virus), feeling helpless due to social isolation, feeling stressed, feeling lonely and depression symptoms come to the fore (Hall et al., 2008; International Federation of Red Cross and Red Crescent Societies Guide, 2020). It has been stated that this epidemic causes fear, helplessness and anxiety in people, and these feelings negatively affect people's behavior, especially since the discussions about the treatment process, effective vaccine and transmission routes of the virus cannot be concluded (Ho et al., 2020).

As in the time of SARS, the uncertainty of the situation, health anxiety, constant exposure to true and / or false information in the press and social media, and the risk of the people they love have been identified as the sources of fear experienced by individuals in the COVID-19 Outbreak (Mertens et al., 2020). This situation, which increases the confusion regarding the epidemic, causes fear and anxiety to spread. In this context, when we look at the literature, it was thought that some of the fear and anxiety experienced in the MERS epidemic in 2015 was caused by information from unofficial sources on the internet (Ro et

al., 2017). Therefore, this research has assumed the following hypothesis as a basis:

H_1: There exists a significant relationship between 'Fear of COVID-19' and depression.

1.2. The Mediating Role of Anxiety from COVID-19

The COVID-19 outbreak and pandemic nature has caused widespread anxiety, fear, and depression (Ahorsu et al., 2020). One of the most prominent negative emotions during the epidemic is fear. The feeling of fear, which has a determining role in people's decision to fight or escape in times of danger, may cause people to feel anxious and stressed, and their mental health may be negatively affected at the point where it exceeds a certain level. Studies have found that fear of COVID-19 is predominantly associated with anxiety, depression and stress (Bakioglu et al., 2020; Harper et al., 2020). In a study conducted by Mertens et al. (2020), they showed that the differences in anxiety levels of people are the predictive variable that increases the fear of COVID-19. In a study conducted by Bakioğlu et al. in Turkey (2020) on COVID-19, the relationship between the strength to withstand fear and uncertainty and positivity, depression, anxiety and stress levels was examined. Another study reflects the relationships between fear of COVID-19 and life satisfaction, depression, anxiety and stress variables. As a result of the study, it was determined that fear of COVID-19 affects life satisfaction negatively, and that depression, anxiety and stress variables have a mediating role in the relationship between fear of COVID-19 and life satisfaction (Seller et al., 2020).

It is thought that one of the vulnerable groups that were psychologically affected during the epidemic would be university students. Staying away from people they care about, possible employment difficulties they may encounter in the future (Wang et al., 2020) and the effect of the virus on their education life (Cornine, 2020) affect the anxiety levels of university students in an increasing way. One of the first studies conducted among university students during the COVID-19 epidemic emphasized that this group showed more anxiety symptoms than other segments of the society, and that women's anxiety tendencies were higher than male students (Wang and Zhao, 2020). In another study, the anxiety levels of university students; family income

status, place of residence, with whom they live, and whether or not a relative is infected with COVID-19 (Cao et al., 2020). It is important to plan and conduct similar studies in order to understand the impact of the COVID-19 epidemic on the mental health of individuals in our country and to design psychosocial support studies in line with the data collected from the participants. Therefore, this research has assumed the following hypothesis as a basis:

H_2: The relationship between 'Fear of COVID-19' and depression is mediated by COVID-19 anxiety.

2. METHOD OF RESEARCH

2.1. Ethics Approval

Ethical approval (dec: 2020/212) for this research study was obtained from the ethics committee of the University where the second author was currently in office, before starting the study. All participants were informed about the purpose of the study by sending an e-mail and they were invited to participate in the study. To ensure the confidentiality of participant information, no identifying information was included in the online survey.

2.2. Participants

The population consisted of 105,128 students from three different public universities from the provinces of Duzce, Sakarya and Bolu (Turkey): Duzce University, Sakarya University, and Bolu University. The sampling includes random conditions for accessibility reasons. Participants were required to have an internet connection, to voluntarily participate in an online survey, and to be able to read, understand and answer the questions provided. A total of 627 current university-going regular students took part in the research. Of the full sample, 74.5% were women (n= 467) and 25.5% men (n= 160).

2.3. Research Design and Procedure

This was a cross-sectional study performed via an online questionnaire between the dates of November 10, 2020 to December 25, 2020. Before collecting data, lecturers at several Turkish universities who normally teach face-to-face but are currently teaching online due to the COVID-19 quarantine were contacted. A day was held where the instructors could respond to the online questionnaires and they were discussed about how to fill in the

questionnaires via video conference. Written informed consent was obtained from all participants over the age of 17 before data were collected. It was ensured that no individual results or any information that could identify them as study participants would be published during the procedure. Likewise, they were clearly informed that the data provided is voluntary, anonymous and confidential and that it can be withdrawn at any time without explanation or punishment of any kind. The questionnaires were filled in individually and took approximately 5 minutes to complete.

2.4. Measurements of Variables

We applied the Turkish version of the fear of COVID-19 scale (Ahorsu et al., 2020), which includes a seven-item Likert-type scale [e.g., My hands become clammy when I think about Coronavirus (COVID-19)]. The tool offered high reliability for the study sample (α=0.867). Then, the Turkish version of the anxiety scale (Lee, 2020), which includes a five-item Likert-type scale [for example, I felt dizzy, dizzy, or fainted when I read or listened to the news about coronavirus (COVID-19)] was administered. The tool offered high reliability for the study sample (α=0.823). We then applied the Turkish version of the depression scale (Shea et al., 2009), which included a six-item Likert-type scale [for example, I did not experience any positive emotions]. The tool offered high reliability for the study sample (α=0.867).

In the first stage, permission was requested from the researchers who developed the original scales for the adaptation process and their approval was obtained. The scales were translated into Turkish separately by 3 experts who know both the language of the original scale and Turkish language very well. In the second stage, the translations made by the authors and the translation group consisting of experts were compared. While making the comparison, each item was examined whether the translations were appropriate in terms of intended meaning. The third stage is the provision of the previous stage. At this stage, the scales translated into Turkish were given to a group of 3-5 people who are experts in the language of the original scale and independent from the experts in the second stage and these experts were asked to translate the scales from Turkish back to the original language. Later, the original expression of each item was compared one-to-one with the expression resulting from this translation. With the translation in the third stage, it was seen that the original

scale was appropriate.

The concept of language equivalence is also named as language validity in the literature. For this purpose, the original scale and the draft scale were applied to a group of at least 30 people who know the languages of both scales well. In the application process, first the original scale and then the Turkish scale were applied at two-week intervals. After the application, the total scores of each individual in the study group obtained from both the original scale and the Turkish scale were calculated, and it was observed that the Pearson correlation coefficient of the relationship between the two applications was significant ($p<0.01$) and the degree of coefficient was 0.82 which shows a very high degree of harmony.

2.5. Data Analysis

All statistical analyses were performed using IBM SPSS and AMOS. The normality of the distribution of the data was determined using the Shapiro-Wilk values. Frequency, percentage, mean and standard deviation were used to report the demographic data of the participants. In addition, independent samples t-test and analysis of variance (ANOVA) were used to compare continuous data means. Confidence level applied in all analyzes was 95% ($p < 0.05$) or 99% ($p < 0.01$), considering dependency on the situation. Then, pathway analyzes were performed using structural equation modeling (SEM) in AMOS 24 to evaluate different latent construct models of the relationship between COVID-19 fear, anxiety, and depression levels. The model estimation method used is "maximum likelihood". Examined models were based on the results from previous research on factor structures of the relationship between fear of COVID-19, anxiety and depression levels among university students. Criteria for determining structural equation modelling analysis model fit and measurement invariance were based on conventional standards (Munro, 2005, Brown, 2006; Byrne, 2001). Specifically, adequate model fit for a confirmatory factor analysis model was defined by a chisquare/df value < 5, Root Mean Square Error of Approximation (RMSEA) value ≤ 0.10, Comparative Fit Index (CFI) ≥ 0.90, Tucker Lewis index (TLI) values ≥ 0.90, Relative Fit Index (RFI) values ≥ 0.90, Normed Fit Index (NFI) values ≥ 0.90, Goodness of Fit Index (GFI) values ≥ 0.85 and Standardised Root Meansquared Residual (SRMR) ≤ 0.08.

3. ANALYSIS RESULTS

3.1. Reliability of Research Data and Pilot Study

Conducting a pilot study;

A pilot study was carried out on 20 people with the draft scale and the expression errors in the questionnaire statements, misunderstandings by the respondents, spelling mistakes etc. have been corrected.

Test-retest reliability;

For the test-retest reliability, the draft scale was administered to 30 people twice with a 2-week interval and the total scores from the scale are given below. The level (degree) of the Pearson correlation coefficient between the first and the second application is 0.89 (89%) meaning that there is a very strong positive correlation between the first and the second application. It can be concluded that the measurements taken at different times are very similar, hence, the scale is highly reliable.

Application of the draft scale to the target audience;

An online survey technique was applied to 627 university students.

Performing item analysis for internal consistency reliability;

For the reliability analysis, "item analysis based on item-total correlation" was performed on the data obtained from the target population.

3.2. Demographic Findings

Table 1 shows that of the 627 participants, 25.5% males and 74.5% females were the respondents for this study, 60.9% were 21 to 24 age with the mean of 2.6466 (standard deviation = ±.94653), 93.9% live with family and living in urban (81.0%). While applying the research questionnaires, the questionnaire forms were distributed equally to male and female students, but the majority of those who returned to the questionnaire were female students. First, as is shown in Table 1, the majority students (45.5%) had moderate depression, followed by mild depression (26.0%), some of the students had moderately severe depression (15.2%), a few of the students had none-minimal depression (7.2%), and the rest of the students severe depression (6.2%). Second, the majority students (43.2%) had moderate anxiety, followed by mild

anxiety (26.6%), some of the students had none-minimal anxiety (13.2%), a few of the students had moderately severe anxiety (12.0%), and the rest of the students severe anxiety (4.9%). Third, the majority students (42.9%) had moderate fear, followed by mild fear (26.5%), some of the students had moderately severe fear (15.3%), a few of the students had none-minimal fear (10.8%), and the rest of the students severe fear (4.5 %). There was a statistically significant differences between men and women in the depression from COVID-19 scores (t test = -5.406; P < .05) and students living with family (t test = 2.357; P < .05) (Table 1). However,there was no significant difference in the depression from COVID-19 scores according to age of the participants and place of residence of the participants.

Similarly, there was a statistically significant differences between men and women in the fear of COVID-19 scores (t test = 3.042; P < .05) and students living with family (t test = 3.386; P < .05) (Table 1). However,there was no significant difference in the fear of COVID-19 scores according to age of the participants and place of residence of the participants.

Therefore, there was a statistically significant differences between men and women in the anxiety from COVID-19 scores (t test = -4.206; P < .05) and students living with family (t test = 3.051; P < .05) (Table 1). However,there was no significant difference in the anxiety from COVID-19 scores according to age of the participants and place of residence of the participants.

Table 1: Sociodemographic Characteristics of Students and T Test And ANOVA Test Regarding Depression, Fear, Anxiety Toward COVID-19

		Depression from COVID-19			Fear of COVID-19			Anxiety from COVID-19		
Variables	n (%)	Mean (±SD)	t Test/ Anova (t/F)	P	Mean (±SD)	t Test/ Anova (t/F)	P	Mean (±SD)	t Test/ Anova (t/F)	P
Sex										
Male	160(25.5)	2.3177 (±.85798)	-5.406[a]	.000	2.4979 (±.93424)	-3.042[a]	.002	3.3750 (±1.02687)	-4.206[a]	.000
Female	467(74.5)	2.7580 (±.97427)			2.7641 (±.96219)			3.7400 (±.91867)		
Age										
17-20	204(32.5)	2.6062 (±.95958)	.947[b]	.389	2.6593 (±.88645)	.344[b]	.709	3.6725 (±.97163)	.364[b]	.695
21-24	382(60.9)	2.6466 (±.94653)			2.7064 (±.97247)			3.6236 (±.92545)		

>24	41(6.5)	2.8333 (±1.14504)			2.7846 (±1.20603)			3.7366 (±1.20618)		
Living with family										
Yes	589(93.9)	2.6686 (±.95863)	2.357[a]	.019	2.7289 (±.95104)	3.386[a]	.001	3.6764 (±.93943)	3.051[a]	.002
No	38(6.1)	2.2895 (±.99976)			2.1886 (±.99184)			3.1895 (±1.15590)		
Place of residence										
Rural	119(19.0)	2.7493 (±.96985)	1.303[a]	.193	2.7549 (±1.02942)	.740[a]	.460	3.7580 (±.88868)	1.404[a]	.161
Urban	508(81.0)	2.6214 (±.96272)			2.6824 (±.94535)			3.6209 (±.97485)		
Depression level										
None-minimal	45(7.2)									
Mild	163(26.0)									
Moderate	285(45.5)									
Moderately severe	95(15.2)									
Severe	39(6.2)									
Anxiety level										
None-minimal	83(13.2)									
Mild	167(26.6)									
Moderate	271(43.2)									
Moderately severe	75(12.0)									
Severe	31(4.9)									
Fear level										
None-minimal	68(10.8)									
Mild	166(26.5)									
Moderate	269(42.9)									
Moderately severe	96(15.3)									
Severe	28(4.5)									

[a] Independent sample t test

[b] ANOVA test

3.3. Correlation Matrix

It can be concluded that there is a positive relationship between the results obtained from Table 2 and the variables used in this study.

Table 2: Correlation Matrix

		DEP	FCV-19	ACV-19
DEP		1		
		627		
FCV-19		,637**	1	
		,000		
		627	627	
ACV-19		,725**	,512**	1
		,000	,000	
		627	627	627
** Correlation is significant at the 0.01 level (2-tailed).				

DEP: depression from COVID-19; FCV-19: fear of COVID-19; ACV-19: anxiety from COVID-19

Extraction method: principal component analysis.

Rotation method: Promax with Kaiser normalization.

Source: Output from IBM SPSS.

3.4. The Model Fit Measures

In order to have a good fit model and present a structural relationship, it is necessary to measure the relationship between latent variables and their components. The structural relationship can then be performed to discover the relationship between the latent variables. In this study, a total of 18 questions constitute three latent variables. Out of 18 questions, 1 item was removed due to weak community inference; Finally, a total of 17 items/questions are taken into account to progress further. Model fit was tested with different model fit indicators given in Table 3.

Table 3: Model fit measures

Measure	**Estimate**	**Threshold**	**Interpretation**
CMIN/DF	4.624	Between 1 and 5	Acceptable range
CFI	0.939	≥ 0.90	Within range
GFI	0.911	≥ 0.85	Within range
SRMR	0.052	≤ 0.08	Within range
RMSEA	0.076	≤ 0.10	Within range
NFI	0.923	≥ 0.90	Within range
RFI	0.907	≥ 0.90	Within range
TLI	0.925	≥ 0.90	Within range

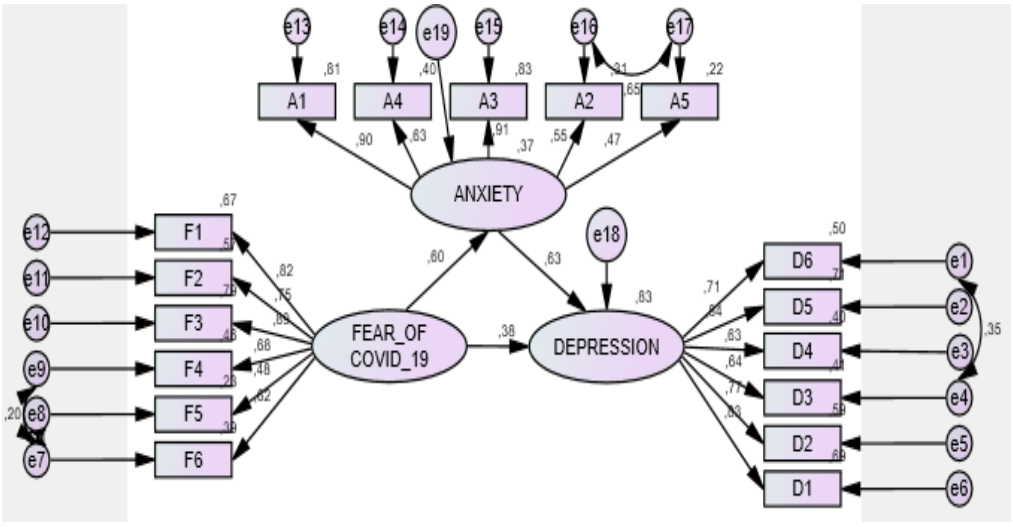
CMIN: chi-square value; DF: degrees of freedom; CFI: comparative fit index; GFI: goodness of fit index; SRMR: standardized root mean residual; RMSEA: root mean square error of approximation; NFI: normed fit index; RFI: relative fit index; TLI: tucker lewis index.

From Table 3, it can be summarized that this study questions/items of the latent variables pass through all the major model fit indicators suggested by Munro (2005), Brown (2006) and Byrne (2001).

3.5. The Results of the Measurement Model

It was assumed that the reasoning between the variables in the research model can be explained. Confirmatory factor analysis was performed to test the validity of the scales used, and the structure of all scales were verified. Figure 1 shows the confirmatory factor analysis results and model fit for the variables of depression, fear of COVID-19 and anxiety.

Figure 1: The results of the full model



The results for measuring the reliability and validity of the measurement model provide various measures of the measurement model, as shown in Table 3. The estimates or standard loading of each item ranges from 0.46 to 0.91. According to Harrington (2009), the standard loading estimates should not be less than 0.30 (ideally 0.70 or higher). Again, Cronbach's α is a reliability measurement criterion which ranges from 0 to 1, and 0.60 is the lower boundary prescribed by Hair et al. (2019). From the table below, it can be seen that all three values of Cronbach's α are well above the minimum criteria (>0.80). Finally, for the inferred mean variance (AVE) and construct reliability (CR), Hair et al. (2019) suggested that the minimum criteria should be 0.50 and 0.70. Table 4 shows that the constructs applied in this study met the criteria for reliability and validity.

Table 4: The items' estimate and the constructs' Cronbach's α, AVEs and CRs.

Constructs	Items	Estimate	Cronbach's α	Mean (±SD)	Average Variance Extracted (AVE)	Construct Reliability (CR)
Depression (DEP)	DEP1	.709	0.867	2.7238 (±.94359)	0.54	0.88
	DEP2	.844				
	DEP3	.629				
	DEP4	.638				
	DEP5	.767				
	DEP6	.829				
Fear of COVID-19 (FCV19)	FCV19-1	.613	0. 865	2.6962 (±.96144	0.54	0.79
	FCV19-2	.466				
	FCV19-3	.674				
	FCV19-4	.886				
	FCV19-5	.756				
	FCV19-6	.817				
Anxiety from COVID-19 (ACV19)	ACV19-1	.471	0.823	3.7407 (±.92701)	0.51	0.72
	ACV19-2	.633				
	ACV19-3	.914				
	ACV-19-4	.553				
	ACV19-5	.901				

As a result of the confirmatory factor analysis, the overall reliability coefficient was found to be Alpha=0.923. Because 0.80≤ α< 1.00, the scale is highly reliable. It is understood that there is a structural relationship between ensuring validity and reliability and university students' depression, fear of COVID-19 and anxiety levels. Because the calculated AVE values are greater than 0.5, the factors have fit validity. Also since the CR vavues are greater than 0.7, the factors have high construct reliability. The fit values examined show that the data fit the model well. Table 5 shows the results of the structural model.

Table 5: The result of the structural model

Hypothesis	Paths	Estimate	S.E.	C.R.	P	Result
Effect of Fear of COVID-19 on Depression (Before Mediation)						
H_1	DEP <---- FCV19	.762	.059	12.878	***	H_1 supported
Effect of Fear of COVID-19 on Depression (After Mediation)						
H_2	ACV19 <--- FCV19	.784	.064	12.167	***	H_2 supported with a partial mediation
	DEP <--- ACV19	.474	.032	14.670	***	
	DEP <--- FCV19	.373	.041	9.159	***	

Table 6 shows the indirect relationship and its properties. When the mediator variable (anxiety) is included in the model with the independent variable (fear of COVID-19) are included in the model, the direct effect of the independent variable (fear of COVID-19) on the dependent variable (depression) is reduced. The standardized regression value between the independent variable (fear of COVID-19) and the dependent variable (depression) decreased from 0.762 to 0.373.

Table 6: Indirect effect of the model

Indirect Path	Unstandardized Estimate	Standardized Estimate	Lower	Upper	p value
FCV19 --> ACV19 --> DEP	0.372	0. 379	0. 342	0. 989	0.001

The Results of the Structural Model

It has been determined that “Fear of COVID19” has a significant effect on students' depression with its direct effect. Thus, H1 is statistically supported. On the other hand, it is seen that the relationship between the presence of a mediator and COVID-19 anxiety, and the "fear of COVID-19" and depression has become less significant and has a partial mediation effect in the relationship. After performing a bootstrap of 5,000 samples with 95% bias-corrected confidence intervals, it is found that with the presence of mediator (anxiety from COVID-19), the direct relationship between “Fear of COVID-19” and future students’ depression becomes less significant and creates a partial mediation relationship. Structural model shown in Figure 1.

DISCUSSION AND CONCLUSION

In the young and inexperienced sections of the society, a new type of fear has entered into a human emotion, especially with the spread of the COVID-19 pandemic all over the world. This new type of fear, called "COVID-19 fear", poses a great threat to future university students and youth who plan to serve the job market in the near future. Our study hypothesizes that this “fear of COVID-19” has a direct effect on students' depression. In addition, COVID-19 anxiety mediates the direct relationship between “COVID-19 Fear” and students' depression. And also by conducting a confirmatory factor analysis, it was observed that the relationships between depression, fear of COVID-19 and

anxiety levels had an acceptable index of fit. The overall reliability coefficient was found to be Alpha=0.923 and because $0.80 \leq \alpha < 1.00$, the scale is highly reliable. Ensuring validity and reliability shows the existence of a structural relationship between depression, fear of COVID-19 and anxiety levels.

The empirical result reveals that, without COVID-19 anxiety, there is a significant relationship between "Fear of COVID-19" and students' depression (i.e., college students enter college with depressive feelings due to the emergence of COVID-19). On the other hand, with the appearance of anxiety from COVID-19, as a mediator, the indirect relationship between "Fear of COVID-19" and students' depression becomes less significant and resulting in a partial mediation. While COVID-19 is still spreading, anxiety from COVID-19 is affecting people's mindset, which can make them feel depressed.

It has been emphasized in previous studies that fear of COVID-19 greatly affects the mental health of the population (Torales et al., 2020). It has been reported that the COVID-19 pandemic has increased various psychological problems, including anxiety, depression, and stress (Duan and Zhu, 2020). Similarly, to determine the psychological impact of the COVID-19 epidemic on university students in China, it was reported that about a quarter of university students showed mild anxiety due to the COVID-19 epidemic (Cao et al., 2020).

Likewise, in a study conducted by Duman (2020) on university students, a positive, moderate and high-level significant relationship was observed between fear of COVID-19 and intolerance to uncertainty. Again, according to the same study, it was determined that fear of COVID-19 significantly predicted the level of intolerance to uncertainty. There are reports and scientific studies on the psychological effects of the COVID-19 epidemic on the population, patients, healthcare workers, children and the elderly (Chen et al., 2020; Yang et al., 2020; Li et al., 2020). This study also concludes that the pandemic in Turkey has direct psychological effects on university students.

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