

## The Relationship Between Knowledge Level and Fear Level of Society Regarding the COVID-19 Outbreak: A Cross-Sectional Web-Based Survey

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### Abstract

The main purpose of this study was to analyze the knowledge levels and fear levels of society regarding the COVID-19 outbreak and to test the structural relationship between knowledge level and fear level with structural equation modelling. The population of the research consisted of people between the ages of 18-65 in the central population of Bartın and Karabük provinces. The data were collected by online questionnaire technique. The total number of questionnaires evaluated and used in data analysis is 790. SPSS 26 and AMOS 24 package programs were used in the analysis of the data. Descriptive statistics, independent sample t test, ANOVA test and structural equation modelling were applied. The community's level of knowledge regarding COVID-19 outbreak was high. In addition, women's levels of fear related to the COVID-19 outbreak were found to be higher. Structural equation analysis revealed that the positive relationship between COVID-19 knowledge level and COVID-19 fear level had an acceptable fit index. However, no significant relationship was found between participants' age, education level, jobs, presence of chronic disease, and hospital visits after the COVID-19 outbreak. It has been observed that there is a reciprocal and positive relationship between the level of knowledge of COVID-19 and the level of fear of COVID-19.

**Keywords:** Knowledge Level, Fear Level, COVID-19 Outbreak, Society.

### COVID-19 Salgına Yönelik Toplumun Bilgi Düzeyi ile Korku Düzeyi Arasındaki İlişki: Kesitsel Web Tabanlı Bir Araştırma

#### Öz

Bu çalışmanın temel amacı, COVID-19 salgınına yönelik toplumun bilgi düzeylerini ve korku düzeylerini analiz etmek ve bilgi düzeyi ile korku düzeyi arasındaki yapısal ilişkiye yapısal eşitlik modellemesi ile test etmektir. Araştırmanın evrenini Bartın ve Karabük illeri merkez nüfusu içinde yer alan 18-65 yaş arası kişiler oluşturmuştur. Veriler online anket teknigi ile toplanmıştır. Değerlendirmeye alınan ve verilerin analizinde kullanılan toplam anket sayısı 790 dır. Verilerin analizinde SPSS 26 ve AMOS 24 paket programları kullanılmıştır. Tanımlayıcı istatistikler, bağımsız örneklem t testi, ANOVA testi ve yapısal eşitlik modellemesi uygulanmıştır. Toplumun COVID-19 salgınıyla ilgili bilgi düzeyleri yüksekti. Ayrıca kadınların COVID-19 salgını ile ilgili korku düzeyleri daha yüksek bulunmuştur. Yapısal eşitlik analizi, COVID-19 bilgi düzeyi ile COVID-19 korku düzeyi arasında olumlu ilişkinin kabul edilebilir bir uyum indeksine sahip olduğunu ortaya koymuştur. Ancak katılımcıların yaşı, eğitim düzeyi, meslekleri, kronik hastalık varlığı ve COVID-19 salgını sonrası hastane ziyaretleri arasında anlamlı bir ilişki bulunamamıştır. COVID-19 bilgi düzeyi ile COVID-19 korku düzeyi arasında karşılıklı ve pozitif bir ilişkinin var olduğu görülmüştür.

**Anahtar Kalimeler:** Bilgi Düzeyi, Korku Düzeyi, COVID-19 Salgını, Toplum.

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## **Introduction**

Pandemic is the general name given to epidemics that spread and affect a wide area in more than one country or continent around the world. According to the statement of the World Health Organization, in order for a disease to be a pandemic; it must be a new virus or a mutated agent, must be easily passed on to humans and infected from person to person in an easy and continuous manner. (Turkish Academy Of Sciences, 2020). Therefore, in December 2019, in Wuhan, China, the virus, called "New Coronavirus" (COVID-19), has started to spread rapidly with human mobility. Together with the spread of virus to Europe and America in a short time, it has been declared as a pandemic by the World Health Organization on March 11, 2020 (Republic of Turkey Ministry of Health, 2020).

COVID-19 is a type of infectious disease that can be transmitted quickly through contact, resulting in death in significant cases, and still lacking an effective vaccine and drug administration to treat the disease completely (World Health Organization, 2020). Clinical findings show that it develops as any upper respiratory tract infection does. Furthermore, having a strong immunity plays an important role in the mild course of the disease (Gökçay and Keskindemirci, 2020). At the same time, large numbers of people infected with the COVID-19 virus may experience mild to moderate respiratory distress and, as a result, recover without any special treatment. In addition, elderly individuals and people with underlying medical problems such as cardiovascular disease, diabetes, chronic respiratory failure and cancer are at risk for COVID-19. In addition, the risk of death increases with age (Ho et al., 2020; Huang and Rong Liu, 2020).

Although the measures such as mandatory isolation, lockdown and temporary closure taken by governments and health institutions at the global level after the epidemic was reported as a pandemic by the World Health Organization are necessary to prevent the epidemic and reduce its impact on health systems, they have brought along fear and anxiety as well. It has been stated that this epidemic causes fear and despair in people, and these emotions negatively affect people's behavior, especially because of the inability to conclude the discussions about the treatment process, the development of an effective vaccine, and the mode of transmission of the virus (Ho et al., 2020).

In addition, the COVID-19 pandemic and the nature of pandemic caused widespread anxiety, fear and anxiety, and the lack of a vaccine and effective treatment method for this virus has further increased the level of these feelings and led to an atmosphere of uncertainty about how the process will go on (Ahorsu et al., 2020). It is because it has been reported that the fears and uncertainties experienced during the pandemic process generally occur in a multifaceted

interaction and in such situations, the tendency to show emotionally, cognitively and behaviorally negative responses increases (Buhr and Dugas, 2002).

As the most important reasons why the COVID-19 pandemic causes widespread fear and anxiety in society, known facts about the COVID-19 virus, such as the infection being contagious, posing an imminent threat, not being visible and increasing its range of effect have been stated. (Pappas et al., 2009). It is because even if the impact of this epidemic on global mental health has not been recorded and measured, it has been observed that the levels of fear and anxiety also increase due to the understanding of the seriousness and danger of the COVID-19 virus, especially during the periods when epidemic first emerges and the number of cases increases (Rajkumar, 2020).

However, public awareness of the seriousness of the virus could potentially reduce the extent of the epidemic. Meanwhile, community measures and compliance can slow the spread of the pandemic and lower incidence rates (Funk et al., 2009). Social isolation is one of the most effective methods in creating this awareness. Social isolation means slowing the spread of a highly contagious virus and reducing or eliminating interpersonal interaction (Musinguzi and Asamoah, 2020). In addition, it has been observed that as the level of knowledge about COVID-19 increases, the level of handwashing also increases (Shiina et al., 2020). On the other hand, it has been reported that confronting uncertain situations, especially when there is a potential risk of death, can increase people's anxiety and fear levels, and this can make both healthy and vulnerable individuals exhibit protective behaviors (Shigemura et al., 2020). Moreover, due to their direct contact with COVID-19 patients and their constant involvement in this situation, it has been observed that healthcare workers witness and are more exposed to situations such as the suffering and death of patients, and therefore, their fear and anxiety levels increase (Pappa et al., 2020).

When looking at similar studies on the subject in the literature, in the study by Sögüt and Dolu (2020), it was reported that female midwifery students had a high level of knowledge about COVID-19 and their anxiety levels increased when they encountered individuals with chronic diseases in their parents or relatives and who visited the hospital during the pandemic. In a study conducted in Bangladesh, it was found that the level of knowledge and practice of COVID-19 is higher in the elderly male individuals with a high level of education and living in urban areas, although fear of COVID-19 is more common in women and elderly individuals (Hossain et al., 2020). In a study conducted among university students in the United Arab Emirates, it was found that students had sufficient knowledge about COVID-19; however, they have been reported to be under psychological stress (Saravanan et al., 2020). A study of

frontline nurses also revealed significant associations between increased fear of COVID-19 and decreased job satisfaction and increased psychological distress (Labrague and Santos, 2020). In another study, it was found that married people with high level of knowledge were more likely to implement all preventive measures related to COVID-19, whereas young individuals, men and those with high COVID-19 fear levels were less likely to implement all preventive measures ( Nhu et al., 2020).

In this study, it is aimed to analyze the knowledge levels and fear levels of society regarding the COVID-19 outbreak in the provinces of Bartın and Karabük and to test the structural relationship between knowledge level and fear level with structural equation modelling. Although there are many studies in the literature about the social and psychological effects of the global pandemic, the number of studies analyzing the society's COVID-19 knowledge and fear levels and revealing the structural relationship between COVID-19 knowledge levels and fear levels is limited. Having not being determined the structural relationship between COVID-19 knowledge level and fear level on Turkish society sample so far in the literature shows the importance of this study in terms of filling this gap in the literature.

## **1. Method**

### **1.1. Ethics Approval**

Prior to conducting the study, we obtained informed consent from the participants. This research was carried out upon the approval of the ethics committee of Duzce University Scientific Research and Publication Ethics Committee (Date: 27.10.2020, Decision Number: 2020/210). Quantitative research methodology was used because it is suitable for the purpose and main problem of the research and the analysis of the data set was performed by using SPSS 26 and AMOS 24 statistical analysis programs.

### **1.2. Participants**

The population of the research consisted of people between the ages of 18-65 in the central population of Bartın and Karabük provinces. Due to reasons such as the large number of the general population of the study, the cost and time limit, and the fact that it is impossible to reach the whole universe, the study has been sampled from the population. Convenience sampling method was preferred due to the accessibility. The sample group of the study consisted of 790 participants. In the literature, it has been stated that a sample size of 384 people represents a population between 1,000,000 and 100,000,000 with a 95% confidence interval and 5% margin of error (Yazıcıoğlu and Erdoğan 2004). It has been verified that the participants have an internet connection, are willing to participate in an online survey application and meet the requirements to be able to read, understand and answer the given questions. Individuals with

intellectual disabilities or those who do not have the ability to communicate were not included in the survey.

### **1.3. Research Design**

This is a descriptive, cross-sectional study through survey, conducted between end of October and end of December 2020. The quantitative research method was used and the study was designed and conducted by researchers. Participants were previously informed that participation was voluntary and their online consent was obtained. The research data began to be collected during the second peak of the COVID-19 pandemic.

### **1.4. Measurements of Variables**

We applied the Turkish version of a seven items Likert-type COVID-19 fear scale (Ahorsu et al., 2020). The measuring tool has been found to provide high reliability for the study sample ( $\alpha=0.878$ ). And then, We applied the turkish version of a ten items Likert-type COVID-19 knowledge level scale (Ahmed et al., 2020). The measuring tool has been found to provide high reliability for the study sample ( $\alpha=0.836$ ).

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 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 in terms of 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 0.91 which shows a very high degree of harmony.

### **1.5. Data Analysis**

SPSS 26 and AMOS 24 package programs were used for statistical analysis. In order to evaluate the reliability in terms of internal consistency, separate Cronbach alpha coefficients of all two subscales were calculated. First, the reliability analysis was performed on the data, and then the main variables of the research (COVID-19 knowledge level and COVID-19 fear level) were examined in terms of means, standard deviations, reliability coefficients, frequency distribution and variance values. Second, confirmatory factor analyses (CFA), using structural equation modelling in AMOS 24, were performed to assess different latent structure models of the relationship between COVID-19 knowledge level and COVID-19 fear level. Criteria for determining confirmatory factor 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  $\leq 0.10$ , Comparative Fit Index (CFI)  $\geq 0.90$ , Tucker Lewis index (TLI) values  $\geq 0.90$ , Relative Fit Index (RFI) values  $\geq 0.90$ , Normed Fit Index (NFI) values  $\geq 0.90$ , Goodness of Fit Index (GFI) values  $\geq 0.85$  and Standardised Root Meansquared Residual (SRMR)  $\leq 0.08$ .

## **2. Results**

### **2.1. Reliability of Research Data and Pilot Study**

#### **2.1.1. Normality Distribution of Research Data**

When the number of observations is 29 or more, Kolmogorov-Smirnov Test is used for normality (Kalayci, 2008). Therefore, Kolmogorov-Smirnov Test was used to determine whether the data showed a normal distribution and as a result of the analysis, it was seen that the data were not normally distributed. It is common to observe abnormal data in studies of this nature. Micceri (1989) states that normality is rare in social science studies that require the use of non-parametric tests. In addition, in cases where the number of subjects entering the analysis is high, it can be accepted that the variables meet the normality assumption according to the central limit theorem (Smidt et al., 2001). Therefore, analysis techniques with normal distribution were applied to all data. In addition, multivariate normality assumption maximum likelihood method was used for parameter estimation of the measurement model. The maximum likelihood method assumes multivariate normality.

### **2.1.2. 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.

### **2.1.3. 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 0.84 (84%) 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.

### **2.1.4. Application of the Draft Scale to the Target Audience**

An online survey technique was applied to 790 individuals.

### **2.1.5. 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.

## **2.2. Demographic Findings**

In this study, the responses of 790 participants in total were analyzed. Table 1 shows the main characteristics of the participants in the study. It can be seen that 23.8% males and 76.2% females were the respondents for this study. While 43% of the participants reside in Bartın, 57% reside in Karabük. Among 790 respondents, 8.8% were aged 18–25 years, 32.5% were aged 26–35 years, 42.5% were aged 36–45, 13.8% were aged 46–55 and the remaining 2.4% were aged 56–65 years. Participants about two-thirds (59.1%) had college education levels. Most respondents were officer (65.2%). Other occupations such as employee, retired, housewife, self-employment, student, unemployed, private sector employee, other accounted for 4.8%, 2%, 7.7%, 1.8%, 3.4%, 4.1%, 8.9% and 2.2% respectively. The majority participants (85.8%) did not have any chronic diseases. Approximately 17% of participants visited the hospital after the coronavirus outbreak. There was a statistically significant difference in COVID-19 fear level score according to sex ( $t$  test = -6.879;  $P < .05$ ). However, there was no significant relationship among the age of the participants, the educational level of the participants, the jobs of the participants, the presence of chronic disease in the participants and the hospital visit after corona outbreak of the participants. Therefore there was no significant relationship with COVID-19 knowledge level among the sex of the participants, among the age of the participants, the educational level of the participants, the jobs of the participants, the

presence of chronic disease in the participants and the hospital visit after corona outbreak of the participants.

Table 1. Demographic Characteristics of The Study Participants (n=790)

Variables	Frequency (n)	Percentage (%)	Knowledge Level		Fear Level	
			t Test/ Anova (t/F)	p-value (2tailed)	t Test/ Anova (t/F)	p-value (2tailed)
<b>Sex</b>						
Male	188	23.8	-1.453 <sup>a</sup>	.147	-6.879 <sup>a</sup>	<0.001
Female	602	76.2				
<b>Age categories</b>						
18–25 years	598	8.8				
26-35 years	64	32.5				
36-45 years	71	42.5	3.155 <sup>b</sup>	.054	.193 <sup>b</sup>	.942
46-55 years	38	13.8				
56-65 years	19	2.4				
<b>Educational attainment</b>						
Junior college and below	289	36.6				
College	467	59.1	.082 <sup>b</sup>	.970	.190 <sup>b</sup>	.903
Master's degree	28	3.5				
Doctoral degree	6	0.8				
<b>Speciality</b>						
Employee	27	4.8				
Officer	38	65.2				
Retired	16	2.0				
Housewife	61	7.7				
Self-employment	14	1.8	2.600 <sup>b</sup>	.080	1.930 <sup>b</sup>	.053
Student	515	3.4				
Unemployed	32	4.1				
Private sector employee	70	8.9				
Other	17	2.2				
<b>Presence of chronic diseases</b>						
Yes	112	14.2	.397 <sup>a</sup>	.691	1.842 <sup>a</sup>	.066
No	678	85.8				
<b>Hospital visit after Corona outbreak</b>						
Yes	137	17.3	1.726 <sup>a</sup>	.086	3.165 <sup>a</sup>	.052
No	653	82.7				

<sup>a</sup>Independent sample t test

<sup>b</sup>ANOVA test

### 2.3. Descriptive Findings Related to Factors

Descriptive statistics, averages, standard deviations, reliability coefficients, number of participants and variance values are given in Table 2.

Table 2. Descriptive Statistics Related to Factors

Factors	N	Mean	Standard Deviation	Variance	Cronbach's alpha
COVID-19 Knowledge Level	790	3,5138	,36388	,132	,831
COVID-19 Fear Level	790	2,6825	,85534	,732	,878

As a result of the confirmatory factor analysis, the overall reliability coefficient was found to be Alpha= 0.823. Because  $0.80 \leq \alpha < 1.00$ , the scale is highly reliable. Ensuring validity and reliability shows the existence of a structural relationship between knowledge levels and fear levels of society during the COVID-19 outbreak.

### 2.4. The Model Fit Measures

In this study, a total of 17 questions formed two latent variables. Out of these 17 items, 2 items were not included in the analysis since they had a poor factor load. Model fit was tested with the model goodness-of-fit indicators given in Table 3 and accepted in the literature.

Table 3. Model Fit Measures

Measure	Estimate	Threshold	Interpretation
CMIN/DF	4.232	Between 1 and 5	Acceptable range
CFI	0.942	$\geq 0.90$	Within range
GFI	0.944	$\geq 0.85$	Within range
SRMR	0.067	$\leq 0.08$	Within range
RMSEA	0.064	$\leq 0.10$	Within range
NFI	0.926	$\geq 0.90$	Within range
RFI	0.907	$\geq 0.90$	Within range
TLI	0.925	$\geq 0.90$	Within range

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

### 2.5. 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 COVID-19 knowledge level and COVID-19 fear level.

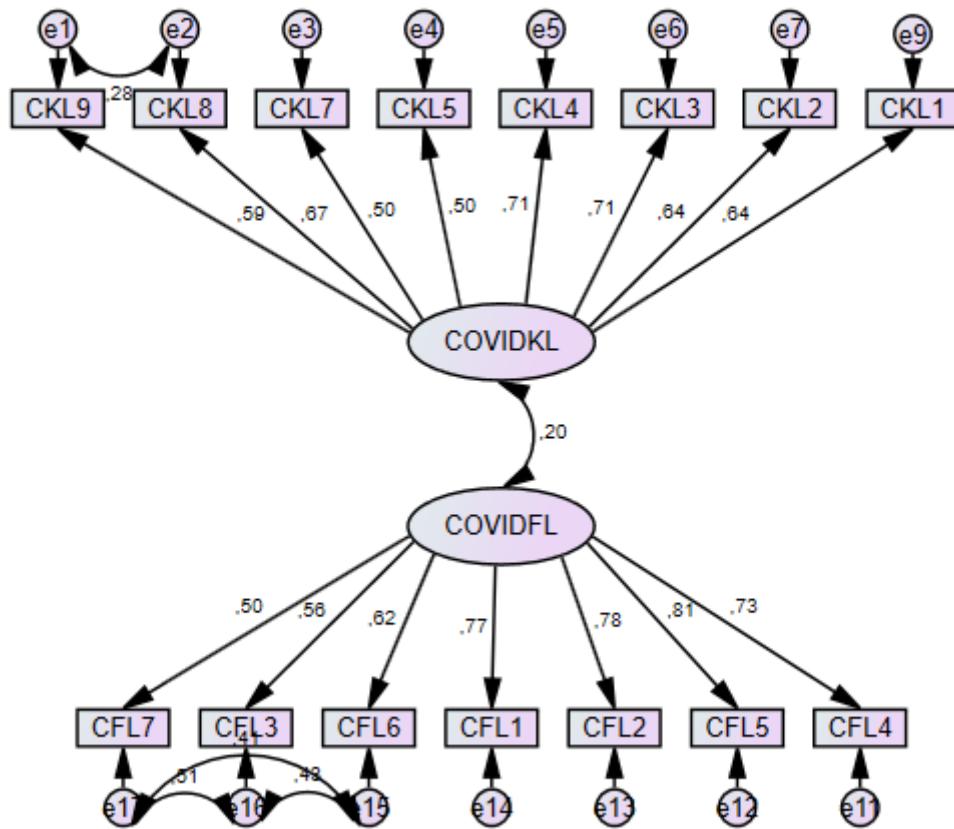


Figure 1. The results of the full model

The results of the analysis performed to test the reliability and validity of the measurement model are shown in Table 3. Table 3 expresses the goodness of fit values of the measurement model. The estimates or standard loading of each item ranges from 0.49 to 0.80. According to Harrington (2009), the standard factor loading estimates should be not less than 0.30 (ideally 0.70 or higher). Table 4 shows that the cronbach's  $\alpha$  coefficients are above the minimum criterion ( $> 0.60$ ). Finally, for average variance extracted (AVE) and construct reliability (CR), Fornell and Larcker (1981) stated that although the AVE value is below 0.50, if the CR value is above 0.70, AVE values below 0.50 can be accepted. In addition, Table 4 shows that the structures applied in the research meet the reliability and validity criteria. In addition, Covariances were established between some latent variables in the same group with a high correlation coefficient.

Table 4. The Items' Estimate and The Constructs' Cronbach's  $\alpha$ , AVEs and CRs.

Constructs	Items/Questions	Estimate	Cronbach's $\alpha$	Average Variance Extracted (AVE)	Construct Reliability (CR)
COVID-19 Knowledge Level (COVIDKL)	COVIDKL9-Healthcare workers are at a higher risk of infection	.590	0.836	0.39	0.88
	COVIDKL8-Patients with underlying chronic diseases are at a higher risk of infection and death	.670			
	COVIDKL7-Washing hands with soap and water, and using face masks can help in the prevention of disease transmission	.497			
	COVIDKL5-COVID-19 vaccine is available in markets	.501			
	COVIDKL4-The isolation period is 2 weeks	.705			
	COVIDKL3-Fever, cough, sore throats and shortness breath are possible symptoms of COVID-19	.711			
	COVIDKL2-COVID-19 is transmitted by close contact with the infected person	.639			
	COVIDKL1-COVID-19 is a virus infection	.644			
COVID-19 Fear Level (COVIDFL)	COVIDFL4-I am afraid of losing my life because of COVID-19	.734	0.878	0.48	0.84
	COVIDFL5-When watching news and stories about novel coronavirus on social media or any other media (i.e. TV, Radio), I become nervous or anxious	.806			
	COVIDFL2-It makes me uncomfortable to think about novel coronavirus.	.780			
	COVIDFL1-I am most afraid of the novel coronavirus	.774			
	COVIDFL6-I cannot sleep because I am worried about getting the novel coronavirus	.621			
	COVIDFL3-My hands become sweaty when I think about COVID-19.	.560			
	COVIDFL7-My heart races or palpitates when I think about getting COVID-19	.499			

Since the CR values 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	Correlations	Estimate	S.E.	C.R.	P	Result
<i>Relationship between COVID-19 knowledge level and COVID-19 fear level</i>						
H <sub>1</sub>	COVIDKL <-----> COVIDFL	.203	.020	4.601	***	H <sub>1</sub> supported

The obtained fit values show that the model fit is achieved. There is a positive relationship between COVID-19 knowledge level and COVID-19 fear level. The positive relationship between COVID-19 knowledge level and COVID-19 fear level has been confirmed.

## 2.6. The Results of The Structural Model

From the result, it is found that there is a positive relationship between COVID-19 knowledge level and COVID-19 fear level and the positive correlation between the level of knowledge of COVID-19 and the level of fear of COVID-19 is confirmed. Thus, H<sub>1</sub> is statistically supported.

## 3. Discussion and Conclusion

The COVID-19 virus has undoubtedly affected the whole world and has affected the psychological and sociological conditions of societies. The spread of the COVID-19 epidemic all over the world and the increased knowledge of COVID-19 have caused a new type of fear to arise in many groups of societies. Consistent with the results of previous similar studies, the results of our research have also shown that the Turkish population has moderate to high levels of COVID-19 fear and COVID-19 knowledge.

This study was conducted in the second most severe episode of the COVID-19 outbreak and on areas critically affected by the outbreak. In this study, the relationship between society's fear levels and levels of knowledge about COVID-19 was primarily investigated. In addition, it was examined whether the fear and knowledge levels of the participants about COVID-19 differed according to their socio-demographic characteristics. According to the results of this study, the fear levels and knowledge levels of the individuals participating in the research were moderate to high. COVID-19 fear are significantly associated with COVID-19 knowledge level. In a similar study, female midwifery students' knowledge levels about COVID-19 were found to be high (Sögüt et al., 2020).

Among the respondents, there were more females (76.2%) than males (23.8%). The responses per age group were distributed as follows: 8.8% among those aged 18–25 years, 32.5% aged 26–35 years, 42.5% aged 36–45, 13.8% were aged 46–55, 2.4% aged 56–65 years. Four-hundred-sixty-seven respondents (59.1%) had college education, 289 persons (%36.6) had junior college and below, 28 respondents (%3.5) had only master's degree and 6 persons

(%0.8) had doctoral degree. In the comparative studies conducted around the world, the socio-demographic characteristics of the participants generally differed. For example, in studies conducted in India, China and Egypt, it was reported that female participants were more common, and in the study conducted in the USA, male participants were more (Zhong et al., 2020; Mamun, 2020; Abdelhafiz et al., 2020; Clements, 2020; Roy et al., 2020).

In our research, it was determined that the fear of COVID-19 is significantly associated with female gender. A study has shown that COVID-19 fear is caused by longer isolation time, more limited freedom of action, and misleading news and rumors on social media (Banerjee, 2020). Another study has reported that the feelings of fear and stress experienced can lead to insomnia and psychological illness in people (Roy et al., 2020). It has been observed that the relatives of female midwifery students with chronic diseases applied to the hospital during the pandemic period, increasing the anxiety levels of female midwifery students (Sögüt et al., 2020). Galasso et al. (2020), in a study conducted in eight countries, found that women perceive COVID-19 as a very serious health problem. In a recent Cuban study, being a woman was found to be a predictor of moderate and high level of fear of COVID-19 (Broche-Pérez et al., 2020), and also in some other studies, being a woman was significantly associated with a greater psychological impact of the epidemic and a higher level of illness (Jacques-Aviñó et al., 2020). The findings of this study confirmed with the results of previous studies conducted in other countries that the fear of contracting COVID-19 is a psychological distress felt especially by women. We recommend future studies investigate information on the long-term observation of COVID-19 positive cases or cases with symptoms with respect to fear of COVID-19, anxiety, depression, stress, mental health, and quality of life issues. Nevertheless, there was no significant relationship among the age groups of the participants, the educational level of the participants, the jobs of the participants, the presence of chronic disease in the participants and the hospital visit after corona outbreak of the participants.

The individuals participating in the study were found to have moderate or high levels of fear, and the relationship between the fear and COVID-19 knowledge levels was statistically significant. As a result, it is found that there is a positive relationship between COVID-19 knowledge level and the positive correlation between the level of knowledge of COVID-19 and the level of fear of COVID-19 is confirmed. Contrary to the result of our study a study reported that knowledge scores showed an inverse correlation with fear scores ( $p<0.001$ ). In the same study Bangladeshi have reported significant self-isolation, positive preventive health behaviors related to COVID-19, and a moderate to high sense of fear of COVID-19 (Hossain, 2020). In a study by Wang et al. (2020), approximately 28.8% of the respondents stated high levels of

anxiety, but these anxiety levels were found to be lower in groups that were properly informed and took precautions. Other similar studies also showed an increase in anxiety scores when patients thought they were more likely to get an infection. This was seen to support the previous study of COVID-19 on risk perception, anxiety and fear (Petzold et al., 2020).

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