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The Relationship Between COVID-19 Disease Knowledge Level and Sociodemographic Characteristics and Fear of COVID-19: A Cross-Sectional Study

COVID-19 Hastalığı Bilgi Düzeyi ile Sosyodemografik Özellikler ve COVID-19 Korkusu Arasındaki İlişki: Kesitsel Bir Çalışma

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This study was presented as an oral presentation at 1st International Anatolia Midwives Association Congress, November 20-22, 2020, Online.

ABSTRACT Objective: The coronavirus disease-2019 (COVID-19) pandemic has adversely affected human life in many ways. This study was conducted to determine the relationship between the level of knowledge of COVID-19 disease, sociodemographic characteristics and fear of COVID-19. **Material and Methods:** This study is a cross-sectional research conducted on the web. 498 participants were included in the analysis after the sample with incomplete data entry and disrupting the normal distribution was removed. Data collection tools were sent to the participants via an online questionnaire link. Statistical data were evaluated with independent t-test, one-way analysis of variance, correlation and regression analysis by using SPSS 24 package program. **Results:** The mean age of the 498 participants included in the analysis in the study was 29.52 (minimum=18, maximum=72), and it was determined that 59.6% were women and 50% were associate degree graduates. The fear of COVID-19 is higher in women, those over 65, those with chronic diseases and those who perceive COVID-19 disease as a life threatening . It has been determined that there is a statistically significant, positive and weak relationship between individuals' fear of COVID-19 and gender, number of children, and a negative and strong relationship between COVID-19 disease threatens life and gender. When the regression analysis results are examined; when the significance of the variables used in the model was examined, it was found that the age and gender of COVID-19 disease was statistically significant for life threatening ($p<0.05$). **Conclusion:** It was found that the level of knowledge and fear of COVID-19 were not correlated, and that sociodemographic characteristics were related to the fear of COVID-19.

Keywords: COVID-19; knowledge; fear

ÖZET Amaç: Koronavirüs hastalığı-2019 [coronavirus disease-2019 (COVID-19)] pandemisi insan hayatını pek çok yönden olumsuz etkilemiştir. Bu çalışma, COVID-19 hastalığı bilgi düzeyi ile sosyodemografik özellikler ve COVID-19 korkusu arasındaki ilişkiyi belirlemek amacıyla yapılmıştır. **Gereç ve Yöntemler:** Bu çalışma, web üzerinde gerçekleştirilen kesitsel bir araştırmadır. Veri girişi eksik olan ve normal dağılımı bozan örneklem çıkarıldıktan sonra 498 katılımcı analize dâhil edilmiştir. Veri toplama araçları katılımcılara çevrim içi anket bağlantısı aracılığıyla gönderilmiştir. İstatistiksel veriler SPSS 24 paket program aracılığı ile bağımsız t-testi, tek yönlü varyans analizi, korelasyon ve regresyon analizleri ile değerlendirilmiştir. **Bulgular:** Araştırmada analize dâhil edilen 498 katılımcının yaş ortalaması 29,52 (minimum=18, maksimum=72) olup, %59,6'sının kadın ve %50'sinin ön lisans mezunu olduğu tespit edilmiştir. Kadınlarda, 65 yaş üstü olanlarda, kronik hastalığı bulunanlarda ve COVID-19 hastalığını hayati tehlike olarak algılayanlarda COVID-19 korkusu daha yüksektir Bireylerin COVID-19 korkusu ile cinsiyet, çocuk sayısı arasında istatistiksel olarak anlamlı, pozitif ve zayıf bir ilişki olduğu, COVID-19 hastalığının yaşamı tehdit ettiği düşüncesi ile cinsiyet arasında negatif ve güçlü bir ilişkinin olduğu belirlendi. Regresyon analizi sonuçlarına göre; modelde kullanılan değişkenlerin anlamlılığı incelendiğinde COVID-19 hastalığının 65 yaş üstü bireylerde ve kadınlarda yaşamı tehdit etme açısından istatistiksel olarak anlamlı olduğu bulundu ($p<0,05$). **Sonuç:** COVID-19 bilgi düzeyi ve korkusunun ilişkili olmadığı, sosyodemografik özelliklerin COVID-19 korkusuyla ilişkili olduğu bulunmuştur.

Anahtar Kelimeler: COVID-19; bilgi; korku

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The coronavirus pandemic has a significant impact with its economic, social and security consequences. It poses a major public health issue on the well-being of people and countries worldwide.[1,2] Person-to-person transmission of the coronavirus occurs through close contact with an infected person and/or exposure to respiratory droplets through coughing and sneezing.[3] When coronavirus disease-2019 (COVID-19) virus spread rapidly all over the world, it was declared a pandemic by the World Health Organization on March 11, 2020.[4] Pandemics can cause emotional problems such as fear, anxiety, panic, insecurity and intense stress.[5] Effective pandemic management can be achieved by the support of the population at risk and by taking precautions to mitigate the spread of the disease. It was demonstrated that knowledge, attitudes and practices play an important role in personal experience and influence behavior during previous pandemics.[4] It was shown in the literature that improved knowledge increases the intake of preventive precautions and has an effect on developing protective behaviors at individual and community level. Knowledge, attitudes and behaviors can have a great impact on stress, anxiety, and panic, which can affect the person's ability to benefit from healthcare or take preventive precautions from infectious diseases due to reasons such as fear and stigma.[4,6] COVID-19 pandemic is predicted to be a long-term process, and therefore it is important to implement individual and social precautions based on accurate information.

In addition to the knowledge level of COVID-19 disease, the uncertain and persistent threat to life in the COVID-19 pandemic can make fear chronic.[7] It is reported that quarantine and isolation precautions carried out to prevent the spread of the virus in pandemics cause serious fear on individuals. It is inevitable that situations that require a new and sudden change of order, such as the COVID-19 pandemic, will have an impact on human psychology. It is seen that reports were prepared on the psychological effects of the epidemic on patients, healthcare professionals, children and the elderly, and society.[8,9] However, the number of studies on the psychological effects of pandemics on people's mental health is very limited.[10-13]

Fear is the most intense of the central emotional responses that occur in life-threatening situations such as COVID-19.[14] As a multifaceted factor, fear is one of the most important fundamental factors that can lead to deterioration in mental well-being.[15] Understanding and alleviating people's fears in order to achieve physical and mental well-being is a central focus in health care and treatment.[16] Like other factors, the level of knowledge about diseases affects people's level of fear. This study was conducted in order to determine the knowledge level of the society on COVID-19 disease, and to examine the relationship between sociodemographic characteristics and COVID-19 knowledge level and fear of COVID-19.

MATERIAL AND METHODS

It is a cross-sectional study conducted on the web between September-October 2020 in order to examine the relationship between sociodemographic characteristics and COVID-19 knowledge level and fear of COVID-19. As the inclusion criteria for the study, the participants, who accepted to participate in the study, who were over 18 years of age, were literate, were determined and the participants were included in the study by random sampling method. An online survey link was sent as a message to those who use social media tools and meet the inclusion criteria. Among the participants, 512 replied, and the sample of 498 participants was formed after the sample that was incomplete and distorted the normal distribution was removed. In order to determine the sociodemographic characteristics of the participants and their level of knowledge about the coronavirus disease, the "Participant Information Form" and the "Questionnaire Form Regarding Coronavirus Knowledge Level and Ways of Protection" prepared by the researchers were used. In addition, the Fear of COVID-19 Scale was applied to determine the participants' level of fear of COVID-19.

Participant Information Form: It consisted of 16 questions that determine the sociodemographic data of the participants and their risk status for COVID-19 disease.[1,3,6,7]

Questionnaire Form Regarding Coronavirus Knowledge Level and Ways of Protection: In line

with the literature, 25 questions were created about the COVID-19 disease and ways to prevent it.[3,4,6,7] The prepared questions were sent to a total of five experts, consisting of lecturers in the fields of public health nursing, internal medicine nursing, and nurses and doctors working in the fields of infectious diseases. In line with the expert opinions, necessary sentence arrangements were made and a 26-question form was prepared by adding one question. Correct answer to each question was evaluated as 1 point, and wrong answer was evaluated as 0 point. The total level of knowledge was determined by summing the scores of the answers received from the participants.

The Fear of COVID-19 Scale: The Turkish validity and reliability study of the "Fear of COVID-19 Scale" developed by Ahorsu et al. in 2020 was carried out by Satici et al.[17,18] The questions were scored between 1-5 using a 5-point Likert type scaling. 1 point means "strongly disagree" and 5 point means "strongly agree". The lowest score that can be obtained from the scale is 7 and the highest score is 35. A high score on the scale means that the level of fear of COVID-19 is also high. Satici et al. determined the Cronbach alpha value as α=0.82 in the Turkish version of the Fear of COVID-19 Scale. Similarly, the Cronbach alpha value of the scale was determined as 0.90 in this study.[18]

DATA ANALYSIS

The analyzes of the study were made using the SPSS Statistics for Windows 24. version (IBM Corp., Armonk, N.Y., USA). In the analysis of sociodemographic data, Pearson correlation analysis and linear regression analysis were performed to examine the relationship between percentage, mean, sociodemographic and knowledge score, and fear of COVID-19. Independent sample t-test, one-way analysis of variance, Kruskal-Wallis H test were performed to determine how sociodemographic data affected other variables.

ETHICAL STATEMENT

Ethics committee approval was given for the study from Bartın University Social and Human Sciences Ethics Committee (date: April 16, 2020, no: 2020-SSB-0058). The consent of the participants was obtained as the first question during data collection, indicating that they participated in the study. The study was conducted per the ethical standards in the Declaration of Helsinki.

RESULTS

In the study, it was determined that 59.6% of the participants were female, 40.4% were male, average age was 29.52 (minimum=18, maximum=72), 50% had associate degree, 21% had undergraduate and postgraduate education. In addition, 46.6% stated that they had received hygiene training before.

In examining the effect of sociodemographic factors on the fear of COVID-19 and the level of knowledge of COVID-19, fear of COVID-19 was higher in women (t=4.463, p=0.00), over 65 years of age (F=2.709, p=0.02), those with chronic diseases (t=1.964, p=0.05) and those who perceive COVID-19 disease as a vital threat (t=6.776, p=0.005). The level of knowledge of COVID-19 was higher in those with undergraduate and postgraduate education (Table 1).

The relationships between the fear of COVID-19 and sociodemographic factors used in the study were examined by correlation analysis. When the results were examined, it was determined that there was a statistically significant relationship between the fear of COVID-19 and gender (r=-0.184, p<0.001), the number of children (r=0.107, p<0.05). It was determined that there was a statistically significant, positive and moderate relationship between individuals' age and the level of knowledge of COVID-19 disease (r=0.132, p<0.001). A statistically significant, positive and weak relationship was found between the risk of transmission of COVID-19 disease in individuals and age (r=0.092, p<0.05), marital status (r=0.101, p<0.05), number of children (r=0.105, p<0.05), work status (r=0.105, p<0.05), and a weak negative relationship was found between chronic diseases (r=-0.106, p<0.05). A strong positive correlation was found with age variable and chronic disease (r=0.303, p<0.05). There was a negative correlation between the variable in the number of children in the participants and the life-threatening condition of chronic illness and COVID-19 (r=-0.122, p<0.01). There was a statistically significant positive moderate

TABLE 1: Relationship of demographic characteristics with knowledge and fear.

	Characteristics	Number of participants	Knowledge X̄±SD	t/F	p value (2 tailed)	Fear score X̄±SD	t	p value
Gender*	Female	298	21.27±1.62	1.463	0.257	20.83±5.89	4.463	0.000
	Male	206	21.02±2.22			18.37±6.30		
Age***	20 under years	192	21.12±1.65	1.737	0.124	19.26±6.02	2.709	0.020
	21-30 years	131	21.00±1.81			20.32±6.54		
	31-40 years	61	20.90±2.44			20.08±5.94		
	41-50 years	78	21.52±2.03			19.10±5.51		
	51-60 years	35	21.77±1.89			20.88±6.15		
	61 overs years	7	21.00±1.91			26.71±8.51		
Education**	Primaryschool	52	21.15±1.94	4.450	0.004	21.80±6.65	2.120	0.097
	Highschool	96	20.72±2.27			19.31±6.16		
	Associate degree	251	21.13±1.75			19.60±6.27		
	Undergraduate and above	105	21.68±1.89			19.84±5.59		
Child situation*	Yes	172	21.44±1.92	2.306	0.022	20.25±6.01	1.115	0.265
	No	332	21.03±1.86			19.60±6.26		
Working status*	Not working	327	21.12±1.85	-0.760	0.447	20.03±6.18	1.039	0.299
	Working	177	21.25±1.97			19.44±6.16		
Chronic disease condition*	Yes	70	21.21±1.71	0.198	0.843	21.17±6.30	1.964	0.050
	No	434	21.16±1.92			19.61±6.13		
COVID-19 disease	Yes	413	21.21±1.75	1.082	0.280	20.66±5.86	6.776	0.000
life-threatening situation*	No	91	20.97±2.41			16.02±6.17		

*Independent sample t-test; **One-way analysis of variance; ***Kruskal-Wallis H test; SD: Standard deviation.

relationship between education and chronic disease in the participants (r=0.0192, p<0.001). There was a statistically significant negative moderate relationship between job and chronic disease (r=-0.128, p<0.001). There was a weak statistically significant positive relationship between chronic disease and the life-threatening state of COVID-19 (r=0.098, p<0.05) (Table 2).

Regression analysis was applied in the evaluation of the study data and it was seen that the model was statistically significant as a result of the analysis (F=6.557; p<0.001). In addition, when the significance of the variables used in the model was examined, it was found that age, gender, and the life-threatening status of COVID-19 disease were statistically significant (p<0.05). It was observed that there was no multiple linear connection problem in the model (variance inflation factor <10). Moreover, there was no autocorrelation when examining the Durbin Watson (DW) statistic, which is a measure of the relationship between errors (DW=1.761). Adjusted R2, which is the power of independent variables to explain the dependent variable, was calculated as 0.113 (Table 3).

DISCUSSION

COVID-19 disease emerged in late 2019 as a new disease that spreads rapidly, has different effects on many organs and systems in the body, and causes economic losses.[1,5] In addition, COVID-19 causes fear in societies because it is a disease that has uncertainties regarding the diagnosis and treatment process and its long-term effects and can result in death.[5,7] Therefore, in the study, it was aimed to examine the relationship between the knowledge level and sociodemographic characteristics of the society on COVID-19 disease and the fear of COVID-19.

The average knowledge score in the study was found to be 21 out of 26. More than 80% of the participants showed that they know about COVID-19. Hossain et al. in their study in Bangladesh, the mean COVID-19 knowledge score was 8.71 out of 12, Abdel Wahed et al. in the study they conducted in Egypt, the average knowledge score among healthcare professionals was 18.5 and the average correct answer rate was 80.4%.[6,19] In China, Zhong et al. found an overall accuracy rate of 90% in knowledge

TABLE 2: Relationship of COVID-19 fear between COVID-19 knowledge score and sociodemographic factors.

	Fear of COVID-19	Knowledge level	COVID-19 transmission risk	Gender	Age	Marriage status	Number of child	Education	Work	Hygiene education	Chronic disease condition
Chronic disease condition	0.045										
COVID-19 transmission risk	0.050	0.062									
Gender	-0.184*	-0.020	0.022								
Age	0.079	0.132*	0.092*	0.273*							
Marriage status	0.060	0.079	0.101*	0.180*	0.664*						
Number of child	0.107*	0.052	0.105*	0.120*	0.683*	0.618*					
Education	-0.098	0.004	0.077	-0.015	-0.384*	-0.291*	-0.412*				
Work	-0.041	0.044	0.105*	0.384*	0.527*	0.452*	0.271*	-0.054			
Hygiene education	0.065	0.057	0.012	-0.036	0.079	0.046	0.041	-0.059	-0.059		
Chronic disease condition	-0.084	0.013	-0.106*	-0.068	0.303*	-0.269*	-0.231*	0.192*	-0.128*	-0.030	
COVID-19 life-threatening situation	-0.289*	-0.016	-0.065	0.054	-0.075	-0.129*	-0.122*	-0.002	-0.034	-0.027	0.098*

*Pearson correlation analysis.

surveys.[20] Roy et al., on the other hand, found moderate knowledge about COVID-19 infection and sufficient information about its preventive aspects in their study in India.[21] It is thought that the information about COVID-19 made through the written and visual media and the statements made by the health personnel increase the level of knowledge of the people.

In the study, a relationship was found between the level of knowledge and the level of education. The level of knowledge is higher in those with higher education level. Hossain et al., similarly, stated that the level of knowledge about COVID-19 disease is higher among those with higher education levels, and individuals who are primary school graduates have the lowest level of knowledge. Zhong et al. found that there is a significant positive correlation between the level of knowledge and the level of education.[6,20] In the study, the COVID-19 knowledge score was found to be higher in women than in men, but the difference was not significant. However; in a study conducted in China, it was stated that men had a higher level of knowledge about COVID-19 symptoms, precautions and health counseling practices than women.[20] Ali et al. found that the level of knowledge of COVID-19 was higher and significant in women. However, in the study, while the COVID-19 knowledge score was high in women, it was not significant.[4] In the study, it was observed that the age variable did not affect the level of knowledge. Abdel Wahed et al. found that the level of knowledge about COVID-19 was significantly correlated with higher education levels, particularly among young adults aged 20-30.[19] Similarly, other studies have revealed that young people with higher levels of education have higher knowledge.[4,20-25] It is thought that those with higher education levels have higher levels of knowledge of COVID-19, as they have higher opportunities to research and access information.

Fear is an emotion that stimulates the inner energy to take action to cope with life-threatening situations. However, when fear is not at a level appropriate to the scale of the real threat, it can have negative consequences. For example, when the fear felt is above the level that the person will take protective measures, it can impair mental health both at the individual and so-

TABLE 3: Regression analysis results of fear of COVID-19, COVID-19 knowledge score and sociodemographic factors.

					95.0% confidence interval for B		
	Beta	SE	t value	p value	Lower bound	Upper bound	VIF
(Constant)	16.674	1.761	4.049	0.000	8.576	24.771	
Age	0.086	0.036	2.405	0.017	0.016	0.157	2.263
Gender	-2.103	0.665	-3.163	0.002	-3.410	-0.796	1.182
Education	-0.381	0.463	-0.822	0.411	-1.291	0.529	1.217
Marital status	-0.813	0.932	-0.873	0.383	-2.646	1.019	1.984
Work	-0.621	0.790	-0.786	0.433	-2.174	0.932	1.482
Hygiene education	0.363	0.608	0.597	0.551	-.833	1.560	1.030
Chronic disease	-0.968	0.925	-1.046	0.296	-2.788	0.851	1.149
COVID-19 disease life-threatening situation	-4.180	0.816	-5.125	0.000	-5.784	-2.576	1.036
Knowledge level score	0.186	0.188	0.989	0.323	-0.184	0.556	1.035
R^2=0.134 adjusted R^2 = 0.113, SE = 5.82, F = 6.557*, p < 0.001*, DW=1.761							

R^2= Correlation coefficient; DW: Durbin Watso; SE: Standard error; VIF: Variance inflation factor.

cial level.[7] In this sense, individual and social fear level of COVID-19 is important. In this study, fear of COVID-19 was higher in women, those over 65, those with chronic diseases and those who perceive COVID-19 disease as a life-threatening threat. In the other studies, COVID-19 fear level was found to be 17.9 and 25.8.[6,7] Similarly, it was found to be 19.8 in this study. Hossain et al. revealed that the fear score of COVID-19 disease was significantly associated with female gender, higher education level, and urban settlement. Furthermore, elderly citizens between 61-70 years old, 71-80 years old, and 80-90 years old had the highest fear scores among individuals in all categories.[6] The first reports saying that the coronavirus can be particularly dangerous for certain risk groups (eg the elderly, people with chronic diseases) fit the study data.[26] It suggested that people's risk perception and fear levels could be good in terms of protection. Researches on other infectious disease outbreaks showed that psychological individual variables such as intolerance to uncertainty, perceived vulnerability to disease, anxiety, and susceptibility to certain personality traits or risk groups may play a role in fear.[11,27,28] Zhang et al. stated that during the H1N1 virus epidemic that emerged in 2009, the relationship between exposure to the media and compliance with virus protection measures was mediated by both the level of perceived knowledge and the fear felt.[29] It has been determined that other factors such as low literacy level or lack of interest in science also affect the relationship between people's perceived knowledge of infectious diseases and their interpersonal communication.[30,31] Berry et al. stated that as a result of the fear felt due to the unknown effects of the pandemic, the proposed measures attracted more attention of the society.[32] Today, the thought of getting COVID-19 causes fear in most people. Mertens et al. found in their study that participants reported a wide range of concerns regarding the coronavirus epidemic.[7] Moreover, individual differences due to anxiety, seeking information about the coronavirus epidemic, and risks for loved ones were positively correlated with increased fear of coronavirus. These results could help politicians and healthcare professionals manage maladaptive levels of fear due to the coronavirus epidemic.

In addition regression analysis was applied in the evaluation of the study data and it was seen that the model was statistically significant as a result of the analysis. According to the results of the regression analysis, unlike other sociodemographic data, age, gender and life-threatening situation affect the fear of COVID-19 more. Similar to the study results, Ghaderi et al. stated that the factor of gender (being a woman) affected the fear of COVID-19 more, and unlike the study, they found that age was not related to COVID-19.[23] In the analysis, it was seen that the level of knowledge of COVID-19 did not affect the fear of COVID-19. Similarly, Ghaderi et al. and Ali

et al. found that fear of COVID was not associated with knowledge about COVID 19 disease.[4,23]

LIMITATIONS

One should be careful while interpreting and generalizing the study findings in the light of determined limitations. First, this study was done on the web. It was done on individuals having Internet access. The fact that not it could not reach to the all parts of Türkiye equally can affect the generalizability of the findings throughout the country.

CONCLUSION

Consistent with previous evidence concerning the general population, in our results, it was found that the level of knowledge and fear of COVID-19 in Türkiye are not related, and that sociodemographic characteristics are related to fear of COVID-19. Especially in the study, fear of COVID-19 was found to be higher in women, over 65 years of age, those with chronic diseases and those who perceive COVID-19 as a vital threat. COVID-19 knowledge level was higher in those with undergraduate and postgraduate education. The fear of COVID-19 was higher in the elderly, female gender, and those who perceive COVID-19 disease as a vital threat. The COVID-19 pandemic is predicted to be a long-term process, and therefore it is important to implement individual and social precautions based on accurate information. Furthermore, social services should be provided by considering individual differences in the society.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: *Hacer Yalnız Dilcen, Ebru Bulut, Yakup Önal, Fatih Yılmaz, Zehra Taşkaya;* ***Design:*** *Hacer Yalnız Dilcen, Ebru Bulut;* ***Control/Supervision:*** *Hacer Yalnız Dilcen, Ebru Bulut, Yakup Önal, Fatih Yılmaz, Zehra Taşkaya;* ***Data Collection and/or Processing:*** *Hacer Yalnız Dilcen, Ebru Bulut, Yakup Önal, Fatih Yılmaz, Zehra Taşkaya;* ***Analysis and/or Interpretation:*** *Hacer Yalnız Dilcen, Ebru Bulut;* ***Literature Review:*** *Hacer Yalnız Dilcen, Ebru Bulut, Yakup Önal, Fatih Yılmaz, Zehra Taşkaya;* ***Writing the Article:*** *Hacer Yalnız Dilcen, Ebru Bulut, Yakup Önal, Fatih Yılmaz, Zehra Taşkaya;* ***Critical Review:*** *Hacer Yalnız Dilcen, Ebru Bulut, Yakup Önal, Fatih Yılmaz, Zehra Taşkaya;* ***References and Fundings:*** *Hacer Yalnız Dilcen, Ebru Bulut, Yakup Önal, Fatih Yılmaz, Zehra Taşkaya;* ***Materials:*** *Hacer Yalnız Dilcen, Ebru Bulut, Yakup Önal, Fatih Yılmaz, Zehra Taşkaya.*

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