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ARAŞTIRMA / RESEARCH

Fear of COVID-19 among healthcare workers in filiation teams: predictive role of sociodemographic, organizational and resilience factors

Filyasyon ekibindeki sağlık çalışanlarında COVID-19 korkusu: sosyodemografik, organizasyonel ve dayanıklılık faktörlerinin tahmin edici rolü

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Abstract

Purpose: The study aims to examine the effects of sociodemographic, organizational, and resilience factors on the fear of COVID-19 of healthcare workers in the filiation teams.

Materials and Methods: 1028 healthcare workers participated in the study. The sociodemographic questionnaire, The Fear of COVID-19 Scale, and The Resilience Scale for Adults were used. The data were analysed with stepwise multiple linear regression by using the backward elimination method.

Results: The study showed that age and family cohesion are positively significant, while planned future and perception of self are negatively significant explanatory factors on the fear of COVID-19. The fear of COVID-19 is higher in females, and in those; with a high level of education, who have an individual with a chronic disease at home, with a low-income level, who lost a colleague or a family member due to coronavirus, who have an increase in patient burden, and who have problems in access to medical equipment.

Conclusion: It is recommended to improve psychosocial support and organizational conditions for healthcare workers in the filiation teams.

Keywords:. Mental health, COVID-19, health personnel, fear, filiation teams, resilience

Öz

Amaç: Çalışma, filyasyon ekiplerinde görev yapan sağlık çalışanlarının sosyodemografik, örgütsel ve yılmazlık faktörlerinin COVID-19 korkusu üzerindeki etkisini incelemeyi amaçlamaktadır.

Gereç ve Yöntem: Çalışmaya 1028 sağlık çalışanı katılmıştır. Verilerin toplanmasında sosyodemografik soru formu, COVID-19 Korkusu Ölçeği ve Yetişkinler için Dayanıklılık Ölçeği kullanılmıştır. Veriler, geriye doğru eleme yöntemi kullanılarak adım adım çoklu doğrusal regresyon ile analiz edilmiştir.

Bulgular: Çalışma, COVID-19 korkusu üzerinde yaş ve aile uyumunun olumlu, planlanmış gelecek ve benlik algısının olumsuz anlamlı açıklayıcı faktörler olduğunu göstermiştir. Kadınlarda COVID-19 korkusu daha yüksektir. Eğitim düzeyi yüksek, evde kronik hastalığa sahip bireyi olan, gelir düzeyi düşük, meslektaşını ya da ailesinden birini koronavirüs nedeniyle kaybetmiş, hasta yükünde artış olan, sağlık sorunu yaşayanlarda ve tıbbi ekipmana erişim engelleri olanlarda COVID-19 korkusu artmaktadır.

Sonuç: Filyasyon ekiplerinde sağlık çalışanlarının psikososyal açıdan desteklenmesi ve organizasyonel koşulların iyileştirilmesi önerilmektedir.

Anahtar kelimeler: Ruh sağlığı, COVID-19, sağlık çalışanları, korku, filyasyon ekipleri, dayanıklılık

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INTRODUCTION

The COVID-19 pandemic has led to a new public health crisis threatening the world. Healthcare workers constitute the most affected population group in the fight against the COVID-19. There are physical, psychosocial, and economic aspects among these effects[1,2]. Especially, the COVID-19 pandemic has brought with it an important challenge for the mental health of healthcare workers. In terms of psychosocial aspects, the increased workload, witnessing worsening health conditions, being obliged to wear protective clothing, having to spend less time with the family, being exposed to discrimination by the social environment bring serious difficulties to healthcare workers both in business and social life[3-5]. Anxiety, distress, panic, depression, anger, confusion, indecision, and burnout increases in healthcare workers during the pandemic process are reported in studies[6-8]. It is also stated that the level of fear of coronavirus has increased[9]. Studies emphasize the importance of protecting mental health for healthcare workers to fulfil their roles effectively during the pandemic[10-12]. Achieving sustainable success in the provision of healthcare services is closely related to the psychological well-being of healthcare workers[13-14]. However, the COVID-19 can be considered a challenge for psychological resilience[15].

Turkey has been on the alert with the announcement of the first case infected with coronavirus as part of the fight against COVID-19. Healthcare workers have served intensively in healthcare institutions, intensive care units, home care services, emergency services, and coronavirus test departments. Filiation teams have been assigned to identify patients who have caught coronavirus, to prevent the spread of the disease by identifying other people that these patients have contact with, and to initiate the treatment process of these patients. The filiation teams who work 24 hours a day to monitor COVID-19, visit patients in their homes, give medicines to these people, ensure the transfer of patients or their contacts to the hospital in case of emergency, and regularly monitor how the health status of these people has changed via phone calls[12].

Studies on the fear and psychological resilience levels of various healthcare workers regarding the COVID-19 pandemic can be found in the literature in Turkey[12,14]. However, there are no studies that focus directly on the healthcare workers in the filiation teams, who are most affected by the pandemic and in the highest risk group. This study aimed to investigate the effects of the sociodemographic, organizational, and resilience factors on the fear of COVID-19 of healthcare workers working in the filiation teams in Turkey during the COVID-19 pandemic. Examining the predictors related to the fear of COVID-19 of these critical healthcare workers is of great importance in terms of protecting their well-being. It is expected that the results of this research will provide an important data source for the programs and services required for healthcare workers in the filiation teams to fight and overcome the fear of COVID-19.

MATERIALS AND METHODS

Design

This study was carried out in accordance with the principles of the Declaration of Helsinki. This study was approved by Başkent University Social and Human Sciences and Art Ethics Committee in 06.01.2021 (Project number: E-62310886-604.02.01-901). Informed consent was obtained from all participants.

The data in the study were obtained with an online form. The data were collected by the researchers through Qualtrics between 15.01.2021 and 15.02.2021. The link created through this website has been delivered to the network of healthcare professionals in the filiation teams. This link directed the participant to a text introducing the research. Once a person has agreed to participate in the study, they were invited to read and accept an informed consent form presented on the first page of the questionnaire. The created online form consists of three screens containing the questionnaire's sections. Participants can return to the previous page while answering the questions.

In the created directive, it was stated to the participants that all questions should be answered. Participants filled the questionnaire in approximately 15 minutes. In order to prevent the participants from filling out this form more than once, IP addresses were checked. Forms sent from the same IP address and giving exactly the same answers were not included in the study due to duplication. Participants were not given a gift or payment for participating in the study.

Sample

The universe of the research is composed of the healthcare workers working in the filiation teams in Turkey. There are approximately 22.000 healthcare workers take place in the filiation teams. The number of healthcare workers to be included in the study with the simple random sampling method was determined by the following formula[16]:

$$n = \frac{N\, t^2 pq}{d^2\,(N-1) + t^2 pq}$$

N: Number of individuals in the population (22.000)

n: Number of individuals to be included in the sample

p: Incidence frequency (possibility) of the inspected event (0.50)

q: Non-incidence (possibility) of the inspected event (0.50)

t: The theoretical value found from the t table at a certain degree of freedom and detected error level (t=1.96 for α=0.05)

d: The intended thing to do based on the incidence frequency of the event ± deviation (0.05)

1156 healthcare workers were reached via online form. The inclusion criteria of the study were determined as being a health worker and actively taking part in the filiation teams. The exclusion criteria of the study were determined as not taking an active role in the filiation teams and not responding to the entire questionnaire form.128 participants were excluded from the study due to duplication or missing data. The study included 1028 health workers selected.

Measures

Sociodemographic Questionnaire

It is related to the profession, gender, age, marital status, having children, educational status, total working time, working department, and the working time in the filiation team, and access to medical equipment during the pandemic.

Fear of COVID-19 Scale

It was developed by Ahorsu et al. (2020) to measure the fear level caused by the COVID-19[17]. Its Turkish validity and reliability studies were carried out by Ladikli et al. (2020)[18]. The validity and reliability study of the scale was carried out with the participation of 1176 people in Turkey. The scale consists of seven items with a five-point Likert-type. The internal consistency of the scale was 0.82 and test reliability was 0.72. It shows that the adapted scale is a reliable measurement tool in determining the fear of COVID-19. The high score obtained from the scale indicates that the fear of COVID-19 is high.

The Resilience Scale for Adults: It was developed by Friborg et al. (2003), and its Turkish adaptation and its validity and reliability studies were conducted by Basım and Çetin (2011)[19-20]. The scale was applied to the sample groups of 350 students and 262 employees. The scale is a five-point Likert type and consists of 33 questions. In the scale, structural style and perception of future are measured with 4 items; family coherence, self-perception and social competence with 6 items, and finally social resources is measured with 7 items. The internal consistency coefficients of the sub-dimensions ranged from 0.66 to 0.81, and test-retest reliability between 0.68 and 0.81.

Statistical analysis

The data were coded and analysed with the SPSS. The effects of the continuous variables and the categorical variables on the fear of COVID-19 were examined. Multiple linear regression models are used to examine the effect of more than one independent variable on a dependent variable[21-23]. In regression analysis, the data collected from different groups are generally wanted to be included in the regression model as a predictor. However, the variables must be continuous or categorical variables with two levels. Point-biserial correlation is the Pearson correlation between a continuous variable and a discontinuous variable whose two categories are encoded as 0 and 1. Simple regression on the other hand is based on Pearson correlation. For this reason, if categorical variable/variables is/are planned to be used as explanatory/predictive variables in multiple linear regression analysis, it should be taken into account that the model can only be created with explanatory/predictive variables with two categories. Discontinuous variables that qualitatively consist of different categories are sometimes analysed after converting them into a set of binary or two-level variables. The process of recategorizing a categorical variable to obtain a set of dichotomous variables is called dummy variable coding. The purpose of this is to limit the relationship between binary variables and

the others to linear relationships. A discontinuous variable with more than two categories can have any kind of relationship with another variable, and the relationship changes arbitrarily when the numbers assigned to the categories are changed. However, variables with two categories can only have a linear relationship with other variables because they have only two points; therefore, they have analysed appropriately with methods using correlation, in which only linear relationships are analysed[24].

The discontinuous variables included in the analysis were dummy coded and one of the categories was used as the reference group in each categorical variable. While determining dummy variables, one fewer dummy variable than the number of the categories (k-1) was created in each of the categorical independent variables. The category whose effect is to be examined was coded 1, and the other categories were coded 0. The purpose of this is to include only one category for one variable at a time in the analysis and to exclude the effects of other categories. In this way, the effect of the category under the analysis is interpreted according to the excluded reference category[25]. Normality tests are extremely sensitive tests. In addition, measurements of dependent variables do not show normal distribution[25]. The Central Limit Theorem states that if the sample is large enough ($n \geq 30$), the sampling distribution of the means will be normally distributed regardless of the distribution of the variables, and the normal distribution violation will not cause a major problem[25]. In large samples, skewness does not deviate significantly from normal. Positive kurtosis in a sample size of more than 100 and negative kurtosis in a sample larger than 200 begin to disappear. In line with this information, it was decided that multiple linear regression analysis could be used[26].

Table 1. The sociodemographic characteristics of the personnel working in the filiation teams

Variable	Frequency	Percent
Gender		
Female	714	69.5
Male	314	30.5
Age groups		
20-29	385	37.5
30-39	304	29.6
40-49	285	27.7
50-59	54	5.3
Educational status		
High school	34	3.3
Bachelor's degree	696	67.7
Post graduate	176	17.1
Doctorate	122	11.9
Marital status		
Single	400	38.9
Married	628	61.1
Population of the region		
Under 100.000	58	5.6
100.001-1.000.000	457	44.5
1.000.001-5.000.000	408	39.7
5.000.000 and higher	105	10.2
Profession		
Doctor	145	14.1
Dentist	110	10.7
Nurse	159	15.5
Psychologist and social worker	111	10.8
Healthcare officer	90	8.8
Healthcare technician	95	9.2
Midwife	218	21.2
Other healthcare workers	100	9.7

RESULTS

The sociodemographic characteristics of the healthcare workers are shown in Table 1. 69.5% of the participants are females. 37.5% of them are in the 20-29 age group. 67.7% of them have bachelor's degrees. 61.1% are married. Participants consist of midwives 21.2%, nurses 15.5%, doctors 14.1%, psychologists and social workers 10.8%, dentists 10.7%, healthcare officers 9.2% and healthcare technicians 9.2%. The average age is 34.85±8.65.

The effects of the continuous variables and the categoric variables on the fear of COVID-19 were investigated. This analysis was carried out with a stepwise backward multiple linear regression analysis by including the categorical variables after coded as "dummy" variables in the analysis. The analysis was completed in 19 steps. The model fit and the total percentage of the variation explained are shown in Table 2. It is seen that the model of the variables whose explanatory roles are modelled on the independent variable is significant ($F=13.991$, $p<.05$). It was decided that the regression model was established as appropriate. The Durbin-Watson value, which is the autocorrelation indicator of independent variables, was calculated as 1.973. If the value obtained as a result of Durbin-Watson analysis is close to 2, it can be said that the model is well-formed. The explanatory rate of the model is 19.10% ($R^2=0.191$). In other words, the explanatory variables' percentage to explain the COVID-19 fear is 19.10%. The adjusted R^2 value gives an idea about the generalizability of the model. When the adjusted R^2 is examined, it is seen that it has a close value (0.177) to the observed R^2, which indicates that the cross-validity of the model is at a good level. The statistically significant estimates in the best model obtained in the 19th step of the stepwise backward multiple regression are given in Table 3.

Table 2. Regression model fit

R	R^2	Adjusted R^2	Durbin-Watson	F	p
0.437	0.191	0.177	1.973	13.991	0.000

Table 3. Explanatory variables for fear of COVID-19

Variables	B	Std.Error	t	p	%95 CI		VIF
Constant	24.688	1.701	14.513	0.000	21.350	28.027	
Age	0.073	0.027	2.749	0.006	0.021	0.127	1.232
Perception of future	-0.374	0.075	-5.006	0.000	-0.520	-0.227	1.696
Family cohesion	0.146	0.050	2.945	0.003	0.049	0.243	1.219
Perception of the self	-0.159	0.065	-2.460	0.014	-0.286	-0.032	1.708
Gender=Male	-3.027	0.479	-6.317	0.000	-3.967	-2.087	1.145
Education=Doctorate	2.552	1.072	2.381	0.017	0.448	4.656	2.826
Presence of an individual with a chronic disease at home=Yes	1.223	0.462	2.647	0.008	0.317	2.130	1.081
Income=decreased	1.778	0.519	3.425	0.001	0.759	2.796	1.096
Having colleague diagnosed with COVID19=No	2.152	0.996	2.161	0.031	0.198	4.106	1.078
Having family member dies due to COVID19=Yes	2.805	1.103	2.542	0.011	0.640	4.970	1.018
Having colleague dies due to COVID19=Yes	1.453	0.462	3.144	0.002	0.546	2.360	1113
Number of patients=not changed	-1.517	0.614	-2.472	0.014	-2.722	-0.313	1.010
Access to medical equipment	-0.624	0.163	-3.827	0.000	-0.944	-0.304	1.063

VIF shows multicollinearity between predictive variables. When VIF is "1", there is no multicollinearity between predictive variables. There is no strong multicollinearity between predictive variables in the event of $1<VIF\leq10$. However, if VIF is over 10, then it can be said that there is strong multicollinearity between predictive variables, the model formulated is invalid and a regression model should be formulated with nonparametric or biased estimation methods. It can be said that there is no multicollinearity problem among the variables analysed. Age and family cohesion are positive and significant explanatory factors on the fear of COVID-19 ($p<.05$).

Perception of future and self-perception from continuous are negatively significant explanatory on the fear of COVID-19 (p<.05). Increased perception of the future and self-perception will lead to a decrease in fear of COVID-19. Gender is a significant explanatory variable (p<.05). Males experience COVID-19 fear less than females. Educational status is a significant explanatory variable on fear of COVID-19 (p<.05). Having a bachelor's degree was taken as the reference group in the analysis. Consequently, being a Ph.D. graduate causes an increase in the fear of COVID-19 when compared to having a bachelor's degree. The presence of an individual with chronic disease at home is a significant explanatory variable (p<.05). The absence of an individual with chronic illness at home was taken as the reference group. Therefore, having someone with a chronic illness at home increases the fear of COVID-19. The income variable is a significant explanatory variable (p<.05). In the analysis, the income status "did not change" group was taken as the reference group. Decreasing income causes an increase in fear of COVID-19.

Colleague's status of being diagnosed with COVID-19 is a significant explanatory variable (p<.05). The fact that the colleague was not diagnosed with COVID-19 causes an increase in fear of COVID-19. Having a colleague loss due to COVID-19 is a significant explanatory variable (p<.05). Losing a colleague due to COVID-19 causes an increase in fear of COVID-19. Having a family member loss due to COVID-19 is a significant explanatory variable (p<.05).

Losing a family member due to COVID-19 causes an increase in fear of COVID-19. The number of patients variable is a significant explanatory variable on the fear of COVID-19 (p<.05). "The number of patients increased" group was taken as the reference group. The number of patients does not change view causes a decrease in the fear of COVID-19 compared to the number of patients increased view. In other words, the increase in the number of patients' views causes an increase in the fear of COVID-19 of healthcare workers. Access to medical equipment is a significant predictor of fear of COVID-19 (p <.05). A low score in this variable indicates that there is difficulty in accessing medical equipment while getting a high score indicates easy access. The difficulty in accessing the equipment causes an increase in the fear of COVID-19 of healthcare workers (Table 3).

DISCUSSION

It was aimed to examine the effects of sociodemographic, organizational, and resilience factors on the fear of COVID-19. First, the effects of sociodemographic characteristics on fear of COVID-19 can be examined. It shows that age and family cohesion are positively significant explanatory factors on the fear of COVID-19. This finding of the study can be interpreted as it will increase the fear because the coronavirus is more deadly in elderly people. Hossain et al. also revealed that the fear of COVID-19 increases as age increases. Intervention programs can be developed to promote mental health in elderly health workers[27].

Gender was found as a significant explanatory variable on the fear of COVID-19, and males have less fear of getting coronavirus compared to females. This finding can be explained by the risk-taking behaviours of females are lower than males. Studies similar to this finding of our study can be also found[28-30].

Education was considered as a significant explanatory variable on the fear of COVID-19. This finding can be interpreted regarding the increase in the behaviour of seeking more information about coronavirus as the education level increases, and thus the level of fear increases. This finding of the study suggests that healthcare professionals accessing information from the right sources can reduce their fear of coronavirus. For this reason, it can be recommended that health professionals access the information provided by official institutions and international health organizations. Income was identified as a significant explanatory variable on the fear of COVID-19. Increasing the income of healthcare workers may be encouraging access to treatment options, access to protective equipment, and access to hygienic materials. Jørgensen et al. stated that as the income level increases, the fear of coronavirus decreases, and the ability to adapt increases[31].

Factors related to fear of COVID-19 may also be family-related. In this study, the presence of chronic disease at home was considered as a significant explanatory variable on the fear of COVID-19. This finding shows that thought of an individual with a chronic disease at home infected with coronavirus may have more severe symptoms might have increased the fear of COVID-19. The studies reported that participants' concerns about the health of their loved ones, especially those with chronic

diseases, increased their fear of coronavirus. Taking measures to protect family members against coronavirus (such as access to protective equipment, vaccination against COVID-19) can reduce fear of COVID-19[32-33].

The loss of a family member of the healthcare workers due to COVID-19 causes an increase in fear of COVID-19. Shammi et al. stated that the death of a family member due to coronavirus increases the fear of coronavirus[34].

Factors related to fear of COVID-19 may also be organizational-related. The loss of a colleague of healthcare workers was determined as a significant explanatory variable on the fear of COVID-19. Our study suggests that personnel working in similar healthcare environments increases their vulnerability to coronavirus, where adequate precautions are not taken, which may increase the fear of the possibility of getting coronavirus, just like their colleagues.

The number of patients was found as a significant explanatory variable on the fear of COVID-19. This finding means that, with the increase in the number of patients infected with coronavirus and the caseload, healthcare workers have more contact with patients and take higher risks. Lai et al. stated that healthcare workers who constantly care for patients are at a higher risk of contracting infectious diseases and that this has a heavy psychological cost[35]. Limiting the caseload of health workers in certain ways, and working by health workers taking leave and taking breaks can positively affect mental health.

The healthcare workers' access to medical equipment during the pandemic was identified as a significant explanatory variable on the fear of COVID-19. Failure of healthcare workers to access adequate equipment during medical interventions may increase fears of COVID-19[34-37]. So it is essential that healthcare workers have access to the medical equipment they need.

Finally, the effect of resilience factors on fear of COVID-19 can be examined. The perception of the future and self-perception were determined as negatively significant explanatory variables on the fear of COVID-19. This finding can be interpreted as healthcare workers' perception of the future within a positive framework, and their strengths such as self-confidence and self-discipline will be effective in reducing the fear of COVID-19. Psychoeducation programs can be developed to increase self-confidence and self-discipline in health workers.

This study has some limitations. First of all, the generalization of the results to Turkey may lead to wrong evaluations due to the cross-sectional design and the use of a simple random sampling method. Our manuscript as currently written presents an exploratory and descriptive study of demographic characteristics. The research questions were tested using single-survey, self-report data collected from the same individuals at one point in time. Second, the study was carried out within a certain cross-section in terms of duration. Third, this study was conducted through an internet survey which might reduce the comprehensive understanding of scale items.

The results of our study show that age and family cohesion are positively significant, while the planned future and perception of self is negatively significant explanatory factors on the fear of COVID-19. It was determined that the fear of COVID-19 is higher in females, and in those with a high level of education, those who have an individual with a chronic disease at home, those with a low-income level, those who lost a colleague and a family member due to coronavirus, those who have an increase in patient burden, and those who have problems in access to medical equipment. In the period of the COVID-19 pandemic, it is vitally important to protect the psychological well-being of healthcare workers in the filiation team, who maintain quarantine and infection control practices at the forefront for both the control of the disease and the recovery of the society. Therefore, we suggest that the adoption of psychosocial support mechanisms and mental health services, in which protective factors affecting the fear of COVID-19 are strengthened and the risks are reduced, play a key role for the healthcare workers in filiation teams. Services provided in the psychosocial field can be provided to healthcare professionals at individual, organizational and familial levels. Besides, it is recommended to improve organizational conditions (such as reducing the caseload, accessing medical equipment, increasing income level).

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