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Evaluation of healthcare workers in terms of burnout and psychiatric symptoms during the COVID-19 pandemic

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Abstract

The aim of this study is to examine the physicians and allied healthcare personnel working during the COVID-19 outbreak in terms of burnout and psychiatric symptoms. The hypothesis of the study is that the level of burnout and psychiatric symptoms will be found higher in wards with high transmission risk compared to those working in wards with low risk. Physicians and allied healthcare personnel between the ages of 18-65 were included in the study. Participants were divided into two groups as those working in services with high risk of COVID-19 transmission and those who did not work. Sociodemographic data form, Maslach Burnout Inventory (MBI), Brief Symptom Inventory (BSI) and General Health Questionnaire (GHQ) were answered by all participants. The responses obtained were statistically compared between the groups and the relationship between the variables with the MBI, BSI and GHQ results were evaluated by linear regression analysis. 577 participants were included in the study. Participants from high (HRCI) risk for COVID-19 infection based on units had statistically significantly higher MBI depersonalization subscale scores compared to those from low (LRCI) risk for COVID-19 infection based on units ($p = 0.002$). In addition, the BSI phobic anxiety subscale scores of the participants from LRCI units were statistically significantly higher than those from HRCI units ($p = 0.005$). During the COVID-19 pandemic, healthcare professionals from HRCI units develop higher depersonalization and lower phobic anxiety than those from LRCI units, which may contribute to their adaptation to work environments. The higher level of phobic anxiety in healthcare professionals from LRCI units may be due to their less exposure to the stimulus. Further studies are required evaluating healthcare workers in terms of burnout and psychiatric symptoms during the COVID-19 pandemic.

Keywords: COVID-19, healthcare professional, burnout, depersonalization, hedonic adaptation, phobic anxiety

Introduction

In November 2019, a novel coronavirus disease was first reported in Wuhan, the capital of Hubei province, China, which since then has become quite prevalent [1]. Upon the rapid increase in the number of cases, the World Health Organization (WHO) declared the coronavirus disease 2019 (COVID-19) outbreak a public health emergency of international concern at a press conference in Geneva on January 30, 2020 and a pandemic on March 11, 2020, with approximately 465,000 confirmed cases and 21,000 deaths [2]. Severe Acute Respiratory Syndrome (SARS) was also reported in China in November 2002 that we remember as a disease with high infectivity and mortality [3]. The total number of COVID-19 cases was considerably higher than SARS cases, and the number of COVID-19 deaths exceeded the number of SARS deaths. On March 10, 2021, a year after the outbreak was declared a global pandemic, WHO reported approximately 117 million confirmed COVID-19 cases and around 2.5 million deaths worldwide [2]. In Turkey, the first case was identified on March 11, 2020, and approximately 2.8 million confirmed cases and around 29,000 deaths were reported as of March 10, 2021 [4].

It is a known fact that infectious diseases, such as COVID-19, cause psychological concerns and are associated with several psychiatric disorders [5]. Outbreaks have been reported to cause additional health problems among people, such as stress, anxiety, anger, fear, depressive symptoms, and insomnia [6,7]. In addition, the COVID-19 pandemic poses challenges for healthcare workers, leading to stressors and psychological trauma that affect their

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coping capacity. These challenges include uncertainties about the extent, effects, and duration of the outbreak, concerns regarding the level of preparedness in healthcare facilities, concerns regarding the lack of medical supplies and protective equipment, potential threats to healthcare workers' own health, and the risk of infecting their families [8]. Healthcare workers face the risk of infection while continuing long and stressful work shifts to meet healthcare requirements [9]. These tough working conditions and concerns due to uncertainty can cause high anxiety levels as well as burnout among healthcare workers [8]. This can manifest itself as emotional exhaustion, overload, depersonalization, and feelings of diminished efficacy [10]. Burnout has been reported to have direct negative effects on stress, exhaustion, anxiety, depression, mood disorders, suicide, substance abuse, patient care quality, and early retirement and unexpected resignations among physicians [11]. Furthermore, mental health problems of healthcare workers can impair their clinical decision-making abilities by affecting their attention and cognitive functions [12]. This, in turn, can pose a potential risk to medical errors and unintentional events [13]. Thus, it has become an important public health issue to identify the mental health problems of healthcare workers fighting the COVID-19 pandemic and take preventive measures accordingly.

There are several studies in the literature that assessed healthcare workers for burnout and other psychiatric symptoms during the COVID-19 outbreak [14,15]. Results vary across studies. For instance, Barello et al. reported that the Italian healthcare workers expressed work-related psychological pressure, emotional exhaustion, and somatic symptoms during the peak of the COVID-19 outbreak [14]. Wu et al., in turn, reported a lower frequency of burnout as well as a lower level of worry about being infected in healthcare personnel from COVID-19 wards compared to those working in non-COVID-19 wards [15]. The present study aims to compare burnout and other psychiatric symptoms between physicians and allied healthcare personnel from units with and without high risk for COVID-19 infection. The hypothesis of the study is that the level of burnout and psychiatric symptoms will be found higher in wards with high transmission risk compared to those working in wards with low risk.

Materials and Methods

Participants

This study was conducted in a university hospital between June 17, 2020 and June 30, 2020. Approval for the study was obtained from the Ministry of Health (04.05.2020). The study was approved by the Clinical Research Ethics Committee of the university (06.16.2020–2020/676). While planning this study, it was estimated that the difference between groups (the participants from units with and without high risk for COVID-19 infection) in mean Maslach Burnout Inventory (MBI) depersonalization subscales would be 1 point, the power analysis based on these data showed that at least 141 subjects were required in each group to obtain a difference of 1 point in mean MBI depersonalization subscales with $\alpha = 0.05$ and power of $\beta = 0.8$. Participants were selected by snowball sampling. 577 participants were included in the study. Healthcare workers aged 18–65 years, who were working in the hospital and who met the inclusion criteria were included in the study. Inclusion criteria were established as volunteering to participate in the study and being a physician or allied healthcare personnel (nurse, health officer, and emergency medical technician). Individuals with severe physical illnesses and severe psychiatric disorders (such as schizophrenia and schizoaffective disorder) that could affect the cognitive capacity required to fill out the sociodemographic data form and study scales were excluded from the study. A Sociodemographic Data Form, the MBI, the Brief Symptom Inventory (BSI), and the General Health Questionnaire (GHQ) were administered to the participants outside working hours, all scales were self – report and face to face meeting was not performed. All participants submitted their written consent.

Sociodemographic Data Form

Sociodemographic data were collected using a sociodemographic data form that was prepared by the authors based on previous studies in the literature and information about the study objectives. This form was used to collect information such as age, gender, marital status, years of professional experience, whether the spouse was a healthcare worker, history of psychiatric and chronic physical disorders, and history of working in units with a high risk of COVID-19 infection. In the study center, COVID-19 patients are diagnosed; followed-up; and treated by pulmonology, infectious diseases, emergency medicine, and intensive care units. Outpatients are treated in COVID-19 outpatient clinics and inpatients in COVID-19 wards and specific intensive care units. As COVID-19 is a highly contagious virus infecting the respiratory tract that can be easily transmitted via droplets [16], the COVID-19 ward, the COVID-19 outpatient clinic, the pulmonology clinic, the infectious diseases clinic, the emergency room, and the intensive care units were considered places with high risk of infection, while other hospital units were considered to have a low risk of infection. Accordingly, participants were classified into personnel from high (HRCI) and low (LRCI) risk for COVID-19 infection based on their units.

The Maslach Burnout Inventory

The MBI is a 22-item likert-type instrument developed by Maslach and Jackson in 1981, comprising three dimensions: emotional exhaustion, depersonalization, and personal accomplishment [17]. Responses to the items are rated on a scale from 0 to 4 points. The inventory measures emotional exhaustion with nine items, depersonalization with five items, and personal accomplishment with eight items. The Emotional Exhaustion subscale describes feelings of being emotionally over extended and exhausted by one's work. The Depersonalization subscale describes an unfeeling and impersonal response toward recipients of one's service. The Personal Accomplishment subscale describes feelings of competence and successful achievement in one's work with people. Due to the lack of cut-off points for subscale scores, a distinction between the presence and absence of burnout cannot be made; individuals with burnout are expected to have high scores on emotional exhaustion and depersonalization and low scores on personal accomplishment. The Turkish validity and reliability study of the scale was conducted by Ergin in 1993 [18].

The Brief Symptom Inventory

The original BSI was developed by Derogatis and Savitz in 1999 [19]. In Derogatis and Savitz' s study, the 90-item Symptom Checklist (SCL-90) was reduced to 53 items and BSI was

formed. As in the SCL-90, BSI consists of nine subscales and three global indices. The BSI, which identifies the presence and frequency of one's psychological problems, includes subscales to assess somatization, obsessive compulsive disorder, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism, as well three global indices: Severity of illness index, symptom total and symptom illness index. The inventory was adapted into Turkish by Şahin and Batıgün [20].

The General Health Questionnaire

The GHQ is a Likert-type scale developed by Goldberg and Hillier for screening mental symptoms in the general population [21]. The GHQ does not indicate a diagnosis, but it provides an insight into the current mental state. It is an overall measure of parameters such as feeling constant stress, the inability to enjoy normal activities, feeling worthless, and attention problems. The original questionnaire consists of 60 items, and there are short versions with 30, 28, 20 and 12 items. The 12-item version was used in our study for time efficiency. It has been reported that the prevalence of mental disorders is higher in individuals with a GHQ score of ≥2 than in those with a score of 0–1.The Turkish validity and reliability study was conducted by Kılıç [22].

Statistical Analysis

Data were analyzed statistically using SPSS 17.0. Data on quantitative variables were presented as mean ± standard deviation, and data on qualitative variables as numbers and percentages. The normality of the data was tested by the Kolmogorov-Smirnov test. Age, gender, marital status, profession, whether the spouse was a healthcare worker, the presence of physical illnesses, history of psychiatric disorders, the MBI scores, the BSI scores, the GHQ total scores, and the GHQ psychopathology risk were compared between the participants from HRCI and LRCI units. This assessment was made using the Chi-Square test for the analysis of qualitative variables, and the Independent Samples T-test for the analysis of quantitative variables. In addition, linear regression analyses were conducted to reveal the factors associated with the MBI depersonalization subscale score, the BSI phobic anxiety subscale score, and the GHQ total score. A p value of <0.05 was considered statistically significant.

Results

630 healthcare workers were approached for the study. 49 participants were excluded from the study due to missing data. 4 participants were excluded because they had schizophrenia. The study included 577 participants-353 physicians and 224 allied healthcare personnel. Physicians comprised 155 (43.9%) females and 198 (56.1%) males, while allied healthcare personnel comprised 169 (75.4%) females and 55 (24.6%) males. In terms of the risk of COVID-19 infection, 410 (71.1%) participants were working in high-risk units and 167 (28.9%) in low-risk units. Of the healthcare workers from HRCI units, 264 (64.4%) were physicians and 146 (35.6%) were allied healthcare personnel. Of those from the LRCI units, in turn, 89 (53.3%) were physicians and 78 (46.7%) were allied healthcare personnel. In terms of psychiatric disorder history, 350 (85.4%) of the healthcare workers from HRCI units did not have a history of psychiatric disorders, while 60 (14.6%) had such a history. Among these participants, 34 had a history of depression, 17 had a history of anxiety disorder, 4 had a history of obsessive compulsive disorder, and 5 had a history of other psychiatric disorders. Of the healthcare workers from LRCI units, there was no history of psychiatric disorders in 154 (92.2%), while 13 (7.8%) had such a history. Among these participants, six had a history of depression, four had a history of anxiety disorder, and three had a history of obsessive compulsive disorder.

When the participants were classified into healthcare workers from HRCI and LRCI units, sociodemographic characteristics, except for gender, profession and psychiatric disorder history, were similar between the groups, with no statistically significant difference. When gender, profession and psychiatric disorder history were compared between the groups, a statistically significant difference was established ($p < 0.001$, $p = 0.013$, $p = 0.025$, respectively). Sociodemographic data of the participants is presented in Table 1.

The evaluation of participants regarding the MBI subscales revealed that the depersonalization subscale score was statistically significantly higher in healthcare workers from HRCI units than in those from LRCI units ($p = 0.002$).

The evaluation of participants regarding the BSI total score and subscale scores revealed a significant difference only in phobic anxiety subscale scores between the groups. The phobic anxiety subscale score was statistically significantly higher in healthcare workers from LRCI units than in those from HRCI units ($p = 0.005$).

The evaluation of participants regarding the GHQ total score revealed that the total score was statistically significantly higher in healthcare workers from LRCI units than in those from HRCI units ($p = 0.045$). However, when both groups were evaluated by comparing those with a GHQ total score of ≥2 and those with a score of <2, no significant difference was established between the groups. The scale scores of the groups are presented in Table 2.

The effect of variables on the MBI depersonalization subscale score was examined by linear regression analysis. Accordingly, working in HRCI units, young age, male gender, and being a physician were found to have an effect on depersonalization as independent risk factors ($p = 0.037$, $p = 0.006$, $p = 0.001$, $p = 0.007$, respectively). There was no statistically significant relationship between depersonalization and other variables. The results of the linear regression analysis for the effect of variables on the MBI depersonalization subscale score are presented in Table 3.

The effect of variables on the BSI phobic anxiety subscale score was examined by linear regression analysis. Accordingly, working in LRCI units, female gender, psychiatric disorder history and physical disorders were identified as independent potential risk factors for phobic anxiety ($p = 0.026$, $p = 0.015$, $p < 0.001$, $p = 0.017$, respectively). There was no statistically significant relationship between phobic anxiety and other variables. The results of the linear regression analysis for the effect of variables on the BSI phobic anxiety subscale score are presented in Table 4.

The effect of variables on the GHQ total score was examined by linear regression analysis. Accordingly, female gender and physical disorders were found to have an effect on the GHQ total scoreas independent potential risk factors ($p < 0.001$, for both).

There was no statistically significant relationship between the GHQ total score and other variables. The results of the linear regression analysis for the effect of the variables on the GHQ total score are presented in Table 5.

Table 1. Sociodemographic data of the participants

		Participants working in HRCI units Mean (SD)	Participants working in LRCI units Mean (SD)	F	p[a]
Age		33.66 (7.01)	33.16 (6.78)	0.32	0.431
		n (%)	**n (%)**	**X²**	**p[b]**
Gender	**Female**	205 (50)	119 (71.3)	21.77	<0.001
	Male	205 (50)	48 (28.7)		
Marital status	**Married**	262 (63.9)	109 (65.3)	0.09	0.756
	Single	148 (36.1)	58 (34.7)		
Occupation	**Physician**	264 (64.4)	89 (53.3)	6.15	0.013
	Allied healthcare personnel	146 (35.6)	78 (46.7)		
Wife / husband healthcare worker	**Yes**	122 (29.8)	42 (25.1)	2.00	0.366
	No	141 (34.4)	67 (40.1)		
	The question is not appropriate because it is single	147 (35.9)	58 (34.7)		
Length of work experience	**≤ 5 years**	156 (38)	75 (44.9)	2.41	0.299
	6-10 years	114 (27.8)	43 (25.7)		
	> 10 years	140 (34.1)	49 (29.3)		
Physical illness	**No**	347 (84.6)	133 (79.6)	2.11	0.146
	Yes	63 (15.4)	34 (20.4)		
History of psychiatric illness	**No**	350 (85.4)	154 (92.2)	5.03	0.025
	Yes	60 (14.6)	13 (7.8)		

HRCI: High risk for COVID-19 infection, LRCI: Low risk for COVID-19 infection
[a]: P value for independent sample-t test. [b]: P value for chi-square analysis ($p < 0.05$).

Table 2. Comparison of the participants in terms of scale scores

	Participants working in HRCI units Mean (SD)	Participants working in LRCI units Mean (SD)	F	p[a]
MBI (Emotional exhaustion)	17.76 (8.00)	16.68 (7.76)	0.15	0.139
MBI (Depersonalization)	6.02 (4.09)	4.85 (4.11)	0.19	0.002
MBI (Personal accomplishment)	11.69 (5.28)	12.16 (5.35)	0.01	0.327
BSI Total Score	53.55 (40.27)	56.77 (40.57)	0.85	0.385
BSI (Somatization)	4.79 (5.48)	5.17 (6.17)	2.21	0.462
BSI (OCD)	7.58 (5.44)	8.38 (5.79)	1.87	0.115
BSI (Interpersonal sensitivity)	4.12 (3.70)	4.49 (3.63)	0.02	0.274
BSI (Depression)	6.97 (5.60)	7.25 (5.42)	0.14	0.589
BSI (Anxiety)	5.77 (5.13)	6.43 (5.43)	0.95	0.171
BSI (Hostility)	5.03 (4.53)	4.89 (4.67)	0.47	0.736
BSI (Phobic anxiety)	4.65 (4.39)	5.84 (4.99)	5.49	0.005
BSI (Paranoid ideation)	6.49 (4.78)	6.04 (4.43)	0.47	0.296
BSI (Psychoticism)	3.98 (3.94)	3.83 (3.79)	0.46	0.687
BSI (Additional items)	4.13 (3.76)	4.40 (3.60)	1.04	0.424
BSI (Severity of illness index)	1.01 (0.75)	1.07 (0.76)	0.85	0.385
BSI (Symptom total index)	27.31 (14.16)	28.10 (14.06)	0.00	0.547
BSI (Symptom illness index)	1.63 (0.60)	1.66 (0.63)	1.78	0.620
GHQ Total Score	4.65 (3.50)	5.29 (3.56)	0.02	0.045
	n (%)	**n (%)**	**X²**	**p[b]**
Groups according to the GHQ **0-1**	111 (27.1)	38 (22.8)	1.15	0.282
≥ 2	299 (72.9)	129 (77.2)		

HRCI: High risk for COVID-19 infection, LRCI: Low risk for COVID-19 infection, MBI: Maslach Burnout Inventory, BSI: Brief Symptom Inventory, GHQ: Genel Health Questionnaire, OCD: Obsessive Compulsive Disorder, [a]: P value for independent sample-t test. [b]: P value for chi-square analysis ($p < 0.05$).

Table 3. Examination of the effect of variables on MBI depersonalization subscale score by linear regression analysis

	Beta	95.0% Confidence Interval for B		p
		Lower Bound	Upper Bound	
Age	-0.198	-0.203	-0.033	0.006
Gender (0 = Female; 1 = Male)	0.143	0.497	1.886	0.001
Marital status (0 = Married; 1 = Single)	0.020	-1.286	1.638	0.813
Wife / husband healthcare worker (0 = Yes; 1 = No; 2 = The question is not appropriate because it is single)	-0.052	-1.114	0.574	0.530
Occupation (0 = Physician; 1 = Allied healthcare personnel)	-0.128	-1.875	-0.295	0.007
Length of work experience (0 = ≤ 5 years; 1 = 6-10 years; 2 = ≥ 10 years)	0.019	-0.636	0.816	0.807
COVID-19 transmission risk (0 = High; 1 = Low)	-0.086	-1.512	-0.045	0.037
Physical illness (0 = No; 1 = Yes)	-0.010	-1.025	0.812	0.820
History of psychiatric illness (0 = No; 1 = Yes)	0.063	-0.215	1.771	0.125

Adjusted $R^2 = 0.09$
MBI: Maslach Burnout Inventory. Bold indicates statistically significant results ($p < 0.05$)

Table 4. Examining the effect of variables on the BSI phobic anxiety subscale score by linear regression analysis

	Beta	95.0% Confidence Interval for B		p
		Lower Bound	Upper Bound	
Age	-0.156	-0.227	0.019	0.098
Gender (0 = Female; 1 = Male)	-0.105	-1.762	-0.188	0.015
Marital status (0 = Married; 1 = Single)	-0.156	-3.150	0.156	0.076
Wife / husband healthcare worker (0 = Yes; 1 = No; 2 = The question is not appropriate because it is single)	0.099	-0.380	1.529	0.237
Occupation (0 = Physician; 1 = Allied healthcare personnel)	0.057	-0.361	1.443	0.239
Length of work experience (0 = ≤ 5 years; 1 = 6-10 years; 2 = ≥ 10 years)	0.044	-0.459	0.729	0.656
COVID-19 transmission risk (0 = High; 1 = Low)	0.092	0.113	1.761	0.026
Physical illness (0 = No; 1 = Yes)	0.103	0.230	2.308	0.017
History of psychiatric illness (0 = No; 1 = Yes)	0.172	1.262	3.509	<0.001

Adjusted $R^2 = 0.06$
BSI: Brief Symptom Inventory ($p < 0.05$)

Table 5. Examining the effect of variables on the total score of the GHQ by linear regression analysis

	Beta	95.0% Confidence Interval for B		p
		Lower Bound	Upper Bound	
Age	-0.130	-0.140	0.008	0.078
Gender (0 = Female; 1 = Male)	-0.192	-1.970	-0.760	**<0.001**
Marital status (0 = Married; 1 = Single)	-0.075	-1.824	0.724	0.397
Wife / husband healthcare worker (0 = Yes; 1 = No; 2 = The question is not appropriate because it is single	0.048	-0.525	0.946	0.575
Occupation (0 = Physician; 1= Allied healthcare personnel)	-0.040	-0.981	0.395	0.404
Length of work experience (0 = ≤ 5 years; 1 = 6-10 years; 2 = ≥ 10 years)	0.078	-0.307	0.958	0.313
COVID-19 transmission risk (0 = High; 1 = Low)	0.044	-0.297	0.981	0.293
Physical illness (0 = No; 1 = Yes)	0.154	0.654	2.255	**<0.001**
History of psychiatric illness (0 = No; 1 = Yes)	0.047	-0.362	1.368	0.254

Adjusted $R^2 = 0.06$
GHQ: General Health Questionnaire ($p < 0.05$)

Discussion

The present study aimed to test the hypothesis that working in environments with a high risk of COVID-19 infection would lead to more burnout and psychiatric symptoms by examining burnout and other psychiatric symptoms among physicians and allied healthcare personnel working in a university hospital during the COVID-19 outbreak. The findings of our study revealed statistically significantly higher scores on the MBI depersonalization subscale for participants from HRCI units than for those from LRCI units. Another finding of our study showed that the BSI phobic anxiety subscale scores were statistically significantly higher in participants from LRCI units than those from HRCI units.

The increasing number of cases enhances the psychological impact of the outbreak on the society and healthcare workers. Several studies have been conducted to examine the psychiatric effects of the outbreak on the society and healthcare workers since November 2019, when the first case was identified in Wuhan. The study by Wu et al. from Wuhan compared oncologists and oncology nurses who were COVID-19 frontline workers with physicians and nurses who were not frontline workers and working as usual and reported a significantly higher frequency of burnout in COVID-19 frontline workers compared to other participants [15]. Matsuo et al., in turn, conducted a study in Tokyo with 312 healthcare workers who had contact with COVID-19 patients and working in emergency departments, general internal medicine departments, pulmonology and infectious diseases departments, general wards, and intensive care units, reporting a burnout prevalence of 31.4% in healthcare workers. The authors further reported that the group with the burnout had a statistically significantly higher percentage of females, more respondents with intentions to leave the profession, and lower mean age and years of professional experience compared to the group without burnout [23]. A study by Khalafallah et al. evaluated the effects of the COVID-19 pandemic on burnout and career satisfaction in 111 neurosurgery residents and reported an overall burnout rate of 26.1%. The authors established that burnout was significantly associated with changes in elective rotation or vacation schedules due to COVID-19 and the decision to not pursue neurosurgery again if given the choice. Burnout was also found to be negatively associated with the post-graduate years [24].

Our study established a statistically significant difference in the MBI depersonalization subscale scores between healthcare workers from HRCI and LRCI units, and found that working in HRCI units, young age, male gender, and being a physician affected the depersonalization subscale as independent risk factors. There was no statistically significant relationship between the years of professional experience and depersonalization. Due to the lack of cut-off points for the MBI in Turkish population, burnout was not classified as present or absent in our study.

Burnout can be affected by many individual, social, and work-related factors. These factors include, but are not limited to, gender, age, educational status, marital status, family structure, social support levels, workload, and the structure of the working system [25]. These variables might be the reason for differences in study results. A meta-analysis reported that resilience reduced burnout [26]. Therefore, it is necessary to identify the burnout-related factors during the COVID-19 pandemic, and develop interventions accordingly to minimize risk and accelerate adaptation.

The study by Wen Lu et al. with 2299 participants (2042 medical staff and 257 administrative staff) during the pandemic assessed fear, anxiety, and depression and reported statistically significantly higher mean scores on the Fear Scale and Hamilton Anxiety and Depression scales in medical staff compared to administrative staff. In addition, it was found that the medical staff working in respiratory, emergency, infectious diseases departments and intensive care units with a high risk of infection with the virus, compared to non-clinical staff, had statistically significantly higher scores on the Fear Scale and Hamilton Anxiety and Depression scales and reported that medical staff from risky units became more susceptible to psychological disorders [27]. A multicenter study by Lai et al. with 1257 participants used the Patient Health Questionnaire, Generalized Anxiety Disorder Scale, Insomnia Severity Index, and Impact of Event Scale and reported depression in 50.4%, anxiety in 44.6%, insomnia in 34%, and distress symptoms in 71.5% participants. The authors further reported statistically significantly higher scores on all scales in nurses, women, COVID-19 frontline workers, and those working in Wuhan [28].

Our study identified female gender and presence of chronic diseases independent potential risk factors for phobic anxiety, as well as working in LRCI units. A significant portion of the studies in the literature evaluating gender and presence of chronic diseases has reported higher risk of depression, anxiety, and stress in women and those with chronic diseases [29-31]. In the present study, male gender was identified as an independent potential risk factor for depersonalization. Similarly, the study by Hu et al. from Wuhan found that the level of depersonalization was statistically significantly higher in men than in women among COVID-19 frontline nurses [32]. Findings regarding the effect of gender on burnout vary across studies. Some studies have reported that women have a higher level of emotional exhaustion compared to their male counterparts [14,33], also indicating that men are likely to experience fewer somatic symptoms [14]. One study reported female gender in emergency intensive care units to be a risk factor for burnout [34], while another study reported no relationship between burnout and gender [26].

Although studies have reached different conclusions, psychopathologies were usually reported to be more common in healthcare workers from HRCI units [27,28]. However, it is an interesting finding that the present study established a significantly higher level of phobia in healthcare workers from LRCI units compared to those from HRCI units. The higher GHQ scores of those working in low-risk units also suggest the high level of anxiety in this group. Our results can be explained through the mind's mechanisms of adaptation to challenging situations. The human mind, conditioned to survive, has to quickly adapt to positive or negative emotional experiences [35]. One of the results of our study was the high level of depersonalization in high-risk unit workers. It seems that developing depersonalization has become one of the adaptation mechanisms among healthcare workers who have to compete against the fatal symptoms of their patients and who, at the same time, have to protect their own health. Depersonalization here may have been developed not only

against the pain, distress, and anxiety of patients but also against the risk. The development of depersonalization while there is no difference in emotional exhaustion and personal accomplishment can be explained by hedonic adaptation theory [35]. In fact, a field study conducted in England determined the anxiety level of 49.6% of the population to be 5.2 out of 10 between March 20 and 30 at the beginning of the quarantine, while the rate of individuals reporting great anxiety decreased to 37%, and the level of anxiety decreased to 4.0 between April 30 and May 10, which was explained by the researchers using the "hedonic adaptation" theory [36]. According to this theory, especially when the same stimulus is exposed repeatedly, the impact of the event decreases as the effect of novelty disappears [37]. As individuals tend to stay at a certain level of stable internal health, get rid of the effects of harmful events, and get used to the good ones, they develop a hedonic adaptation to both positive and negative life events and try to return to their former comfort level as soon as possible [38]. Although hedonic adaptation, another adaptation mechanism developed to adjust to changing conditions is a kind of depersonalization; there are some differences in between. In hedonic adaptation, as in depersonalization, the perception of the positivity or negativity of the stimulus changes so that the feeling of the situation that is perceived as positive or negative at the beginning does not be an emotional burden [39]. However, in hedonic adaptation, one becomes more sensitive to small differences in stimuli [40]. In depersonalization, in turn, the emotional burden of the problem is reduced by keeping the patient's health problem separate from the patient's subjectivity. However, since a great threat is involved, the healthcare worker must continue to pay attention to the risk for infection and the fight against the disease without developing phobic anxiety. Therefore, high-risk workers might have adapted to this dangerous new situation faster than those under at risk in our study.

Conclusion

The remarkable findings of our study were that healthcare workers at high risk during the COVID-19 pandemic develop a higher level of depersonalization and a lower level of phobic anxiety than those working in a lower-risk environment, and that phobic anxiety levels were higher among healthcare workers from LRCI units. Individuals who have responsibilities toward the health of others in situations such as pandemics, war, and natural disasters, where there is a fight for survival, need to adapt quickly to dangerous new situations. We believe that more comprehensive studies on this subject will further contribute to the research domain.

This study has some limitations. The study was cross-sectional, not longitudinal; there was no information on participants' burnout levels before the pandemic; and the groups were not similar in terms of gender and profession, all of which might have affected the results. In addition, scales were used in the study for mental state assessment, and therefore it was not possible to discuss diagnoses. Due to the risk of COVID-19 infection, no psychiatric interviews were conducted with the participants to minimize contact, evaluation was made using scales and the focus was on the level of symptoms.

Conflict of interests
The authors have no conflict of interest to declare.

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Ethical approval
The study was approved by the Clinical Research Ethics Committee of Inonu University (06.16.2020–2020/676).

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