

# Burnout and psychological symptoms in healthcare workers during the COVID-19 pandemic: Comparisons of different medical professions in a regional hospital in Turkey

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## Abstract.

**BACKGROUND:** Early studies have revealed the psychological effects of the COVID-19 outbreak on healthcare workers (HCWs). Burnout and psychological outcomes of different medical professions during the pandemic have not yet been addressed.

**OBJECTIVE:** The study aimed to investigate the burnout, depression, anxiety, and psychological distress levels of HCWs, and to determine the predictive factors of burnout in different professions of frontline HCWs during the pandemic.

**METHODS:** This cross-sectional study included 253 HCWs (79 physicians, 95 nurses, and 79 other-HCWs). The Maslach Burnout Inventory, Beck Depression Inventory, Beck Anxiety Inventory, and Impact of Event Scale-Revised, and Sociodemographic Form were used.

**RESULTS:** Emotional exhaustion was significantly higher in physicians and nurses than in other frontline HCWs. While depersonalization was significantly higher in physicians than nurses / other HCWs, levels of avoidance, hyperarousal and intrusion were found to be higher in other HCWs / nurses than physicians. Depression was the most effective predicting variable for burnout, following age, quarantine, supervisor's/team leader's attitude, hyperarousal and avoidance.

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**CONCLUSIONS:** It has been observed that depending on the uncertainty and life risk of the pandemic in HCWs involved in the treatment of COVID-19, physicians who are the decision-making authorities in the treatment process used more depersonalization than nurses and other HCWs. Nurses and other-HCWs had significantly higher distress symptoms than physicians. Both future research and psychosocial services should address those with high depressive symptoms as a potentially fragile subgroup for burnout among HCWs, and investigate and develop evidence-based interventions that can provide mental well-being, and prevent burnout.

Keywords: COVID-19, anxiety, depression, depersonalization, distress

## 1. Introduction

Corona Virus Disease 2019 (COVID-19) was first detected in Wuhan, China, in early December 2019, as novel pneumonia-causing severe acute respiratory infection. The disease spread rapidly around the world, with approximately 178 million confirmed cases and approximately 3.8 million deaths in 191 countries [1]. During the pandemic, it is clear that healthcare workers (HCW) were exposed to serious psychological stress with many difficulties such as increased workload, remaining incapable of upbringing their children, the risk of exposure to the virus and the risk of infecting their relatives, being isolated from their families, and witnessing the death of patients [2–5]. Due to the rapid transmission of COVID-19 and its mortal characteristics, lack of understanding of the dynamics of the pandemic, insufficient psychological providence, and overwhelming workload, development of various problems such as anxiety disorders, depression, avoidance behavior, musculoskeletal pain, burnout syndrome and distress have been reported particularly for the front-line HCWs struggling with the pandemic in this period [4, 6–8].

Adding pandemic stressors to the already high workload that existed before the COVID-19 process poses a high risk of burnout for HCWs. The development of HCWs' psychological burden and burnout in HCWs seriously affect health systems. Burnout is a clinical phenomenon characterized by many symptoms. They include the emotional exhaustion (EE) which is the feeling emotionally drained by one's contact with other people, the depersonalization (DP) known as negative feelings and cynical attitudes toward the recipients of one's service or care and reduced personal accomplishment (RPA) indicating a tendency to evaluate negatively one's work. It is considered a consequence of long-term work-related stress [9]. It has been shown in previous studies that burnout of HCWs is over 40% [10]. Two studies

conducted during this pandemic reported that HCWs were at great risk of burnout and worse mental health during the pandemic [11, 12]. Babamiri et al. stated that burnout is one of the most important factors that should be taken into consideration by occupational health professionals in the current pandemic conditions since increased burnout also has long-term consequences in previous pandemics [13].

Burnout and psychological burden are not new phenomena, but their impact on healthcare workers during this pandemic period is significant. Due to the rapid spread of the COVID-19 disease, uncertainty, unpredictability, workplace safety and lack of adequate support mechanisms, the burnout and psychological problems of HCWs are an issue that needs to be identified and addressed rapidly [14, 15]. It has been reported that healthcare workers showed higher rates of anxiety, stress and depression during this epidemic [15]. An increase in stress and anxiety does not directly indicate an increase in burnout. Identifying each is important. When you're under stress, you have a hard time dealing with pressures. But when burnout prevails, you may lose all hope of overcoming obstacles. Burnout symptoms persist over time and not only endanger the health of HCWs, but they also make them unwilling to work, lowering the quality of services supplied to patients. Although the psychological symptoms of physicians and nurses during the pandemic have been discussed in previous several studies, there has been limited research on burnout issues [12, 16] and on other medical professions, such as medical technicians and supporting staff, who are other active participants of medical teams. In this study, we aimed to investigate the burnout, depression, anxiety and psychological distress levels of HCWs, and determine the predictive factors of burnout in diverse positions of frontline healthcare workers (HCWs) during the pandemic and in order to facilitate the development of effective strategies for stress reduction programs in the hospitals during and after the pandemic.

## 2. Methods

### 2.1. Participants and procedures

This cross-sectional study was conducted between April 1, 2020, and May 1, 2020, among HCWs at Health Sciences University, Istanbul Bagcilar Training and Research Hospital in Turkey. All procedures performed in this study followed the ethical standards of the institutional and/or national research committee and with the Helsinki declaration and its later amendments or comparable ethical standards. The ethical approval for the study was received from the Ethics Committee of Health Sciences University, Istanbul Bagcilar Training and Research hospital (#079/2020). During data collection, the number of HCWs in the hospital was 2750, and seven hundred HCWs of them were working in the frontline at the beginning of the pandemic. 700 frontline HCWs were invited to participate in the study via e-mail and SMS. The sample size was determined using a web calculator (<https://www.surveymonkey.com/mp/sample-size-calculator/>), and it was found that 249 participants with a 95% confidence interval and a 5% margin of error would be ideal for the study. Following the signed of an online written informed consent, participants were invited to answer a self-reported online battery of questionnaires made available through the Survey Monkey platform (<https://tr.surveymonkey.com/>). The inclusion criteria were; working in the frontline from the beginning of the pandemic; having work experiences above one year; having no self-reported chronic physical illness or mental disorder, being over 18 years old. The exclusion criterion was refusal to participate. The STROBE checklist of cross-sectional studies was followed in this study report [17].

### 2.2. Survey instrument

#### 2.2.1. Sociodemographic and work-related characteristics form

The sociodemographic information form consisted of 15 questions aiming to collect information in line with the purpose of the study, such as age, gender, marital status, weekly working hours during the pandemic, and Job [physician, nurse, and other-HCWs (Other-HCWs include; medical staff such as surgery technician, anesthesia technician, laboratory technician, etc., and non-medical staff such as administrators, secretary, security staff, cleaning staff, medical technologist, etc.)] of participants were determined.

#### 2.2.2. Maslach Burnout Inventory (MBI)

Burnout was measured by the MBI [18]. On the scale, (0) Never (1) Very rare (2) Sometimes (3) Most of the time (4) Always was used as a 5-point rating. The Turkish adaptation of the scale was performed in 1995 [19]. The Coefficient alpha of the MBI were calculated in the present study and found to be as follows: EE = 0.89; DP = 0.76; PA = 0.75

#### 2.2.3. The Impact of Event Scale-Revised (IES-R)

Psychological distress was measured by the IES-R, which is a 22-item and 5-point scale ranging from 0 (not at all or hardly ever) to 4 (a great deal); higher total scores indicate severe distress. The IES-R includes three subscales that measure the three main symptoms of distress: avoidance (8 items), intrusion (7 items) and hyperarousal (7 items) [20]. The validity and reliability studies of the Turkish version of the IES-R were performed [21]. The instructions and items of the scale were adapted to refer to the current COVID-19 crisis. The internal consistency of the scores was good for the three subscales (intrusion:  $\alpha = 0.91$ ; hyperarousal:  $\alpha = 0.77$ ; avoidance:  $\alpha = 0.86$ ) and for the total scale ( $\alpha = 0.93$ ) in this study.

#### 2.2.4. Beck Anxiety Inventory (BAI)

BAI is a self-report scale that aims to measure the frequency of anxiety symptoms [22]. The scores range from 0–63. Higher total scores indicate severe anxiety. The Turkish validity and reliability study of the scale was conducted [23].

#### 2.2.5. The Beck Depression Inventory (BDI)

BDI is a clinical scale developed to evaluate depressive symptoms [24]. The scores range from 0–63. Higher total scores indicate severe depression. The Turkish version of the scale was adapted [25].

### 2.3. Statistical analysis

The descriptive statistics were presented in mean, standard deviation, and minimum-maximum for the quantitative variables; and frequencies and percentages for the categorical variables. Before conducting the analysis, the normality of the items and the scale were checked. It was seen that the skewness and kurtosis value of most of the items were between  $-1$  to  $+1$  and some items' skewness and kurtosis value were between  $-2$  to  $+2$ . The data can be considered

to be normally distributed [26, 27] Therefore, parametric one-way ANOVA Test reported for physicians ( $n=79$ ), nurse ( $n=95$ ), and other-HCWs ( $n=79$ ) comparisons with pairwise comparisons of the means using Tukey's Honestly Significant Difference (HSD) procedure. Multiple linear regression models were used with the stepwise backward method to investigate potentially predictive factors for the EE, DP, and PA in the frontline HCWs and in the occupational subgroups (physicians, nurses and other-HCWs) of the frontline HCWs. The variables evaluated were determined as significant variables derived from our results and literature review, following clinical experience. The variables used for all the models are as follows; hyperarousal, avoidance, depression, sex, age, quarantine, supervisor's attitude, having COVID-19 symptoms. The tests for assumptions-linearity, homoscedasticity, and multicollinearity were carried out by the authors (assumptions met). The internal consistency of the scales and subscales were analyzed by using Cronbach's alpha coefficient and the consistency of the subscales was assessed by confirmatory factor analysis. Statistical analysis was performed using the SPSS® statistical software (version 20.0 for Mac OS; SPSS Inc., Chicago, IL, USA) and consistency of the subscales was assessed by confirmatory factor analysis using LISREL 8.50 [28]. All the analyses were 2-sided with the alpha of 0.05.

### 3. Results

Among 700 frontline HCWs, 662 opened the E-mail or SMS advertising for the survey. From 662 HCWs 352 (53.17%) responded, and 253 (38.21%) of them who completed answers for all surveys were included in the study.

#### 3.1. Socio-demographic and work-related characteristics of participants

Sociodemographic characteristics of the whole sample are presented in Table 1. Of the 253 participants, 154 (60.9%) were females, 99 (39.1%) were males, and the mean age was 33.57 (SD=8.39, range=20 to 56). 79 (31.2%) physicians, 95 (37.5%) nurses and 79 (31.2%) other-HCWs participated in the study. The weekly working hours of HCWs during the pandemic was in average 41.30 (SD=15.09) and ranged from 20 to 96.

Table 1  
Sociodemographic and work-related characteristics, N=253

Variables	n (%)
Sex	
Female	154 (60.9)
Male	99 (39.1)
Marital status	
Unmarried	105 (41.5)
Married	148 (58.5)
Monthly income	
Minimum wage	54 (21.3)
3–5 thousand TL	92 (36.4)
5 thousand TL and above	107 (42.3)
Professions	
Physician	79 (31.2)
Nurse	95 (37.5)
Other-HCWs	79 (31.2)
Family member's has been diagnosed with COVID-19	16 (6.3)
Having adequate PPE	225 (88.9)
Experienced symptoms of suspected COVID-19	112 (44.3)
Being quarantined	34 (13.4)
COVID-19 tested	133 (52.6)
Diagnosed with COVID-19	21 (8.3)
Supervisor's attitude	193 (76.3)
	Mean (SD) / (min-max)
Age (years)	33.57 (8.39) / (20–56)
Education (years)	16.65 (3.98) / (8–25)
Work experience (years)	9.13 (7.38) / (1–33)
Weekly working hours during the COVID-19 outbreak	41.30 (15.09) / (20–96)

HCWs: healthcare workers; PPE: Personal protective equipment.

#### 3.2. The psychometric properties of MBI, BAI, BDI, and IES-R

The psychometric properties of self-rating questionnaires and symptom levels in accordance to questionnaires were presented in Table 2. The MBI subscales indicated that 112 (44.2%) HCWs had high EE scores, 34 (13.4%) had high DP and 89 (35.2%) high RPA scores.

#### 3.3. Comparisons of the frontline HCWs groups in terms of self-rating inventories

The means, standard deviations, 95% Confidence Interval of the means, F values, eta square and results of *post hoc* analysis (as subscripts) are presented in Table 4.

The subscales of MBI, EE [ $F(2,250)=4.53$ ,  $p=0.012$ ,  $\eta^2=0.035$ ] and DP [ $F(2,250)=10.09$ ,  $p=0.000$ ,  $\eta^2=0.075$ ] were significantly different among the HCWs professional groups. Physicians' ( $M=17.44 \pm 8.15$ ) and nurses' ( $M=17.89 \pm 7.61$ ) EE mean scores were significantly higher ( $p=$

Table 2  
Psychometric properties for self-rating scales and subscales

Scales, N = 253	Cronbach $\alpha$			
<b>MBI</b>				
EE, mean, SD, range	16.66	8.25	0–36	0.890
Low (0–11), n (%)	73 (28.9)			
Moderate (12–17), n (%)	68 (26.9)			
High ( $\geq 18$ )*, n (%)	112 (44.2)			
DP, mean, SD, range	4.96	4.08	0–19	0.762
Low (0–5), n (%)	156 (61.7)			
Moderate (6–9), n (%)	63 (24.9)			
High ( $\geq 10$ )*, n (%)	34 (13.4)			
PA, mean, SD, range	22.83	5.33	0–32	0.752
RPA-Low ( $\geq 26$ ), n (%)	78 (30.8)			
RPA-Moderate (22–25), n (%)	86 (34.0)			
RPA-High (0–21)*, n (%)	89 (35.2)			
IES-R total score, mean, SD, Range	24.77	15.81	0–71	0.936
Intrusion, mean, SD, Range	8.75	6.81	0–31	0.913
Hyperarousal, mean, SD, Range	6.76	5.36	0–23	0.778
Avoidance, mean, SD, Range	9.25	5.52	0–26	0.867
BDI- total score	11.45	9.48	0–55	0.909
BAI- total score	14.43	12.25	0–63	0.945

\*At high risk for burnout according to MBI definitions; MBI: Maslach Burnout Inventory; EE: Emotional Exhaustion; DP: Depersonalization; RPA: Reduced Personal Accomplishment; IES-R: Impact of Event Scale-Revised; BDI: Beck Depression Inventory; BAI: Beck Anxiety Inventory.

Table 3  
Mean differences and comparisons of self-rating scales in professional groups

	Physicians (n = 79)		Nurses (n = 95)		Other Health Workers (n = 79)		F (2,250)	p	$\eta^2$
	M (SD)	[95% CI]	M (SD)	[95% CI]	M (SD)	[95% CI]			
MBI-EE	17.44 (8.15) <sub>a</sub>	[15.62, 19.27]	17.89 (7.61) <sub>a</sub>	[16.35, 19.44]	14.39 (8.73) <sub>b</sub>	[12.44, 16.35]	4.53	0.012	0.035
MBI-DP	6.57 (4.60) <sub>a</sub>	[5.54, 7.60]	4.52 (3.53) <sub>b</sub>	[3.80, 5.24]	3.89 (3.71) <sub>b</sub>	[3.05, 4.72]	10.09	<0.001	0.075
MBI-PA	22.10 (4.91)	[21.00, 23.20]	23.77 (5.12)	[23.73, 24.81]	22.46 (5.89)	[21.14, 23.77]	2.42	0.090	0.019
Intrusion	6.06 (6.01) <sub>a</sub>	[4.72, 7.41]	10.40 (6.86) <sub>b</sub>	[9.00, 11.80]	9.48 (6.79) <sub>b</sub>	[7.96, 11.00]	10.05	<0.001	0.074
Hyperarousal	5.18 (4.60) <sub>a</sub>	[4.15, 6.21]	7.46 (5.18) <sub>b</sub>	[6.41, 8.52]	7.51 (5.98) <sub>b</sub>	[6.17, 8.85]	5.19	0.006	0.040
Avoidance	7.76 (5.34) <sub>a</sub>	[6.56, 8.95]	9.79 (5.14) <sub>b</sub>	[8.74, 10.84]	10.10 (5.92) <sub>b</sub>	[8.77, 11.43]	4.37	0.014	0.034
IES-R total	19.00 (14.62) <sub>a</sub>	[15.72, 22.28]	27.65 (15.12) <sub>b</sub>	[24.57, 30.73]	27.09 (16.42) <sub>b</sub>	[23.41, 30.77]	8.12	<0.001	0.061
BDI	10.37 (8.56)	[8.45, 12.28]	11.46 (9.26)	[9.58, 13.35]	12.53 (10.56)	[10.17, 14.90]	1.03	0.359	0.008
BAI	11.76 (11.94)	[9.08, 14.43]	15.59 (11.05)	[13.34, 17.84]	15.72 (13.58)	[12.68, 18.76]	2.78	0.064	0.022

MBI: Maslach Burnout Inventories; EE: Emotional Exhaustion; DP: Depersonalization; PA: Personal Accomplishment; IES-R: Impact of Event Scale-Revised; BDI: Beck Depression Inventory; BAI: Beck Anxiety Inventory. Note. Means with different subscripts differ at the  $p=0.05$  level by Tukey HSD *Post Hoc* Comparison test.

0.050;  $p=0.014$ , respectively) than other-HCWs ( $M=14.39 \pm 8.73$ ). Physicians had significantly higher DP scores ( $M=6.57 \pm 4.60$ ) than nurses ( $M=4.51 \pm 0.60$ ,  $p=0.002$ ) and other-HCWs ( $M=3.88 \pm 3.71$ ,  $p=0.000$ ).

### 3.4. Multiple linear regression analysis for MBI subscales

First, multiple regression analysis covering all occupational groups was performed, then multiple regression analysis was performed for each occupational group separately. Results of multiple regression analysis are presented in Table 4.

A significant regression equation was found ( $F(5, 247)=38.943$ ,  $p<0.001$ ), with an  $R^2$  of 0.441 for EE. As a result of stepwise method evaluation, it was detected that EE significantly predicted by the high depression level (5%), younger age (2%), being in quarantine (1%), excessive hyperarousal (1%), and unattended supervisor's attitude (1%).

The regression equation was found to be statistically significant ( $F(2, 250)=36.356$ ,  $p<0.001$ ), with an  $R^2$  of 0.225 for DP. The individual predictors' examination revealed that DP was significantly predicted by depression (4%), and younger age (2%).

The regression equation was found to be statistically significant ( $F(3, 249)=7.469$ ,  $p<0.001$ ), with

Table 4  
Multiple linear regression analyses for maslach burnout subscales

N = 253	Unstandardized Coefficients					95% CI	
	B	SE	$\beta$	T	p	Lower Bound	Upper Bound
<b>Emotional exhaustion</b>							
Total sample (n = 253)							
Depression	0.403	0.058	0.463	6.940	<0.001	0.289	0.518
Age	-0.168	0.048	-0.171	-3.484	0.001	-0.263	-0.073
Quarantine	-2.612	1.158	-0.108	-2.255	0.025	-4.894	-0.331
Hyperarousal	0.225	0.102	0.146	2.209	0.028	0.024	0.425
Supervisor's attitude	1.840	0.930	0.095	1.979	0.049	0.009	3.671
Physicians (n = 79)							
Depression	0.588	0.085	0.617	6.888	<0.001	0.418	0.758
Nurses (n = 95)							
Depression	0.402	0.078	0.490	5.185	<0.001	0.248	0.556
Supervisor's attitude	4.133	1.528	0.199	2.704	0.008	1.097	7.169
Hyperarousal	0.346	0.139	0.236	2.487	0.015	0.070	0.623
Other Health Workers (n = 79)							
Depression	0.536	0.072	0.648	7.467	<0.001	0.393	0.679
<b>Depersonalization</b>							
Total sample (n = 253)							
Depression	0.179	0.025	0.416	7.321	<0.001	0.131	0.228
Age	-0.077	0.028	-0.159	-2.799	0.006	-0.132	-0.023
Physicians (n = 79)							
Depression	0.300	0.051	0.558	5.899	<0.001	0.199	0.401
Nurses (n = 95)							
Depression	0.161	0.034	0.523	5.388	<0.001	0.116	0.252
Other Health Workers (n = 79)							
Depression	0.160	0.033	0.456	4.870	<0.001	0.095	0.226
Age	-0.139	0.042	-0.308	-3.288	0.002	-0.223	-0.055
<b>Personal accomplishment</b>							
Total sample (n = 253)							
Depression	-0.134	0.039	-0.239	-3.428	0.001	-0.228	-0.076
Avoidance	0.189	0.066	0.196	2.866	0.005	0.059	0.318
Age	0.086	0.039	0.136	2.187	0.030	0.009	0.164
Physicians (n = 79)							
Supervisor's attitude	-3.215	1.225	-0.287	-2.626	0.010	-5.654	-0.777
Nurse (n = 95)							
Depression	-0.135	0.056	-0.244	-2.421	0.001	-0.245	-0.024
Other Health Workers (n = 79)							
Age	0.235	0.075	0.329	3.154	0.002	0.087	0.384
Avoidance	0.242	0.104	0.244	2.339	0.022	0.036	0.448

Quarantine: 0 = Yes, I have, 1 = No, I have not; Supervisor's Attitude: 0 = Attended, 1 = Unattended. B = Unstandardized beta coefficient; SE = Standard error;  $\beta$  = Standardized beta coefficient; CI: Confidence Interval.

an  $R^2$  of .083 for PA. The individual predictors' examination revealed that PA was significantly predicted by low depression score (2%), excessive avoidance (2%) and older age (1%).

#### 4. Discussion

This study focused on the burnout and psychological outcomes of the COVID 19 outbreak in different professions of frontline HCWs and predictive factors of burnout, which are already gaps in the literature. Generally, all scale scores showed mild to moderate impairment. The study was conducted at the beginning of the COVID-19 pandemic. Therefore, we can assume that in the later stages of the pandemic, the

burnout level of HCWs may be further adversely affected by the increase in the number of cases and death rates.

This study measured the burnout by MBI. The sub-dimensions of the burnout scale were divided into three groups as EE, DP and PA. The high score obtained from the EE and DP sub-dimensions, and the low score obtained from the PA sub-dimension indicated high burnout. In this study, burnout scores were evaluated as low, moderate and high levels compatible with the related literature. (EE: low: 0–11, medium 12–17, high: high 18; DP: low: 0–5, medium: 6–9, high:  $\geq 10$  and PA: low:  $\geq 26$ , medium: 22–25, high: 0–21). During the pandemic management, physicians and nurses are in direct contact with COVID-19 patients and take an active and decisive

role in the treatment of the disease, which means high responsibility and a high workload [29]. It was shown in our study that this increased workload increased the feelings of EE, especially in nurses and physicians. This level of burnout is a dire picture for long-term health care quality outcomes. It requires prioritizing doctors and nurses for potential psychological interventions. While nurses and physicians did not differ in terms of EE, DP was also significantly higher in physicians compared to nurses and other-HCWs. This result may be related to more desensitization because physicians are more involved in the decision-making process as team leader. The physician may be using desensitization more as a defense mechanism to be able to continue with his professional duties calmly and to be more objective in his decisions without being overwhelmed by the intense anxiety of deep uncertainties. Tsan et al. found that 55.3% (47) anesthesiologists who are at the frontline in the pandemic were classified as having burnout based on high scores in the EE and/or DP indices [30]. Khasne et al. found that the doctors were 1.64 times and the support staff were five times more likely to experience pandemic-related burnout [31]. Dinibutun et al. showed that the EE of the physicians was at the medium level, DP and PA were low level [32]. In general, although the results are not consistent, it seems that burnout is generally spreading among all HCWs.

Zhang et al. reported that health workers showed higher prevalence rates of anxiety and depression during this outbreak in China [33]. Kang et al. reported that 63% of doctors and nurses had mild to severe mental health disturbances in the epidemic [34]. Zhang et al. had grouped the participants as medical and non-medical HCWs and found that medical health workers had a higher prevalence of anxiety, depression than nonmedical health workers in this outbreak. Also, our study supported that HCWs have high levels of distress, depression and anxiety during this pandemic. We also grouped the participants according to their professions [33]. Regarding the levels of depression and anxiety, there was no significant difference among frontline HCWs in our study. This may be due to the rapid increase in patients and HCWs had to start working in the frontline, regardless of their area of expertise.

In general, all regression equations for MBI revealed that depression was the main predictor for burnout in frontline HCWs. HCWs who were depressive, young, quarantined, hyperaroused and unattended by their supervisor were more likely to develop EE. So, these predictors of burnout should be

taken into consideration when planning the psychological interventions for HCWs. Separate regression analysis for each professional group indicated that depression predicts physicians' and other-HCWs' EE. Similarly, depression was a highly predicting variable for the nurses' EE, besides the unattended supervisor's attitude and hyperarousal. Nurses in the frontline, especially in the intensive care unit were in very close contact with the COVID-19 patients. Although they were applying the treatment that was ordered to them, they did not have primary control over the treatment protocol. The fact that the treatment of COVID-19 cases was not directly under their direct control may make nurses more alert and anxious. Therefore, especially close contact with supervisor and attended/supportive supervisor's positive attitude would decrease nurses' EE level [35, 36]. Also, To avoid burnout and continue to deliver nursing services, it was also noted that establishing a sufficient staff needs plan, preparing proper training for nurses, and proactive psychological support were all vital [8]. The regression equation for DP revealed that increased depression and younger age the only predictors for DP in general and each professional group. As it was mentioned before, even though DP is a subscale of burnout, under the very uncertain circumstances of the pandemic, DP may serve as an emotionally protective factor: Depressive and younger HCWs were more likely attuned to keep themselves emotionally away from COVID-19 cases for being able to practice professionally [37]. PA significantly predicted decreased depression level, increased avoidance and older age for frontline HCWs. In addition, attended/supportive supervisor's attitude significantly predicted physicians' PA, while decreased depression level significantly predicted nurses' PA. On the other hand, older age and increased avoidance level significantly predicted other-HCWs PA. According to Greenberg et al., avoidance is a core symptom of trauma; HCWs who deal with COVID-19 and lack of team leader support more likely to develop avoidance under this circumstances [38]. In addition, Beck et al. accentuate that subscale of avoidance in IES-R measures mainly active avoidance rather than emotional numbing. Under these conditions, avoidance may be enabled HCWs to cope with distress and hyperarousal for performing their job [39]. Concerning, multiple regression outcome for other-HCWs increased avoidance level significantly predicts PA. Other-HCWs were not directly in the control mechanisms for COVID-19 treatment; they were in a position of

applying ordered duty and observing ‘the uncertainty’. Avoidance may be enabled them to perform their job while emotionally ignoring the very close dangerous impacts of the pandemic.

This research had some limitations. Since the study was a cross-sectional study only the relationship could be implied, not causation. There may be a potential response bias as some exhausted respondents may not have completed the questionnaire due to the time constraints and high workload caused by the pandemic; conversely, it is possible that more distressed respondents participated, as the topic of the survey is about them. Therefore, when compared to structural interviews, surveys may not be available as complete or complex information. It was not possible to be sure of the impact of the pandemic because the characteristics of the participants were not investigated before the pandemic. Longitudinal studies are required. Since the study was conducted in only one hospital, it was difficult to draw conclusions among other hospitals. Factors that were not examined in our survey may be also affected the findings. Another limitation is that this study did not include a control group. However, it has been reported in previous studies that front-line healthcare workers are more affected than second-line healthcare workers [15, 34], and in this study, it was primarily aimed to determine the predictive factors of burnout in various positions of front-line HCWs.

## 5. Conclusion

In conclusion, EE was higher in physicians and nurses than in other-HCWs. DP was significantly higher in physicians, compared to other-HCWs and nurses. DP may be allowing physicians to be more ‘rational’ and objective towards their patients by isolating themselves emotionally. Nurses and other-HCWs seem to be exhibited more over-arousal, intrusion of disturbing memories/re-living and avoidance behaviors due to the COVID-19 process. This may be related to more distress for nurses as they spend more time with patients, and other-HCWs’ obligation to fulfill the task assigned to them, rather than being in the decisive control mechanisms during the treatment process. Depression was the most effective predicting variable for burnout in general. So it is highly recommended to address healthcare workers’ depressive symptoms to prevent burnout. Although physicians, nurses, and other- HCWs showed different symptoms profiles related to the pandemic stress,

this study reveals a high risk of burnout, distress, depression and anxiety in HCWs during the pandemic. This study presented the relations among the subscales of burnout and depression, anxiety, distress symptoms and other investigated factors in detail. In the light of our findings and the findings in the literature, it is recommended to investigate and develop evidence-based interventions that can provide mental well-being, and prevent burnout.

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## Conflict of interest

The authors report no conflicts of interest. The authors alone are responsible for the content and writing of the paper.

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