



# Facing Pandemic: Burnout in Nurses in Turkey

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## Abstract

**OBJECTIVE:** Burnout syndrome is a disorder that characterized by emotional exhaustion, depersonalization, and personal lack of accomplishment perception and it is common in nurses. During the coronavirus disease 2019 pandemic, nurses tried to take care of their patients and protect themselves and their families from disease and death. This study examines the factors affecting nurses' burnout in Turkey during the coronavirus disease 2019 pandemic.

**MATERIAL AND METHODS:** Data were collected from 3523 nurses in 69 cities across Turkey by sociodemographic questions and Maslach Burnout Scale with the electronic questionnaire created in the "SurveyMonkey" application between June 9, 2020 and June 21, 2020. To assess the impact of the pandemic on nurses' burnout, nurses were categorized as those working in pandemic units and others.

**RESULTS:** The response rate was 68%, and 3523 nurses from 69 cities across Turkey participated in the survey. Analyses were conducted with 2386 nurses that answered all questions. 76.45% of the nurses were from tertiary hospitals, and 54.9% (n = 1309) worked in pandemic units. Of 2386 participants, 86.13% (n = 2055) were female, the mean age was 33.9 (±8.43), and 58.76% (n = 1402) were married. Of 2386 participants, 54.9% (n = 1309) worked in pandemic units (outpatient clinics, inpatient clinics, and intensive care units). In multivariate linear regression analyses, the emotional exhaustion score was higher in nurses working in pandemic units ( $P < .05$ ).

**CONCLUSION:** The factors that have been shown to cause burnout in previous studies were similar. However, in this study, it was also seen that the pandemic is a fundamental cause of burnout.

**KEYWORDS:** Burnout, COVID-19, nurses, pandemic

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## INTRODUCTION

Healthcare professionals experience burnout due to extended working hours, excessive workload, assignments in different departments, unclear job descriptions, dangerous working environments, insufficient personal protective equipment, prolonged use of protective equipment, and risk of damage, especially in crises such as epidemics.

There have been outbreaks in different periods, mainly affecting the region where they occurred. In these outbreaks, thousands of healthcare professionals were at the forefront of attempts to diagnose the disease, treat the patient, suppress the epidemic, and provide intensive healthcare. It has been observed that healthcare professionals who struggled with significant outbreaks such as severe acute respiratory syndrome (SARS), H1N1, and Middle East respiratory syndrome (MERS) before the coronavirus disease 2019 (COVID-19) pandemic were significantly affected by these epidemics, experienced burnout, and showed post-traumatic stress disorder symptoms years later.<sup>1-3</sup>

SARS, which emerged in 2002, was the first example of its contagiousness and how quickly it spread to different countries, and many healthcare professionals caught it.<sup>4,5</sup> Symptoms of anxiety and depression have been identified in healthcare workers in areas affected by SARS.<sup>6</sup>

On the other hand, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) is seen to cause significant burnout in healthcare workers due to its contagiousness, mortality, broader and faster spread that affected the whole world, and long duration than SARS in 2002. This situation affects healthcare professionals, the healthcare system, and the struggles against the pandemic.

Burnout is characterized by emotional exhaustion, depersonalization, and personal lack of accomplishment perception.<sup>7</sup> Burnout syndrome has been evaluated in many studies and conducted with participants from different areas of the healthcare sector, such as physicians, nurses, technicians, and administrative workers; it was observed that those who are more directly interested in patient care, especially nurses, have worse results in psychological evaluations.<sup>8-10</sup>

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For example, nurses have had more post-traumatic stress disorder symptoms, higher stress levels, and higher general distress levels than other healthcare professionals.<sup>11</sup> As a result of the studies, burnout was mainly associated with factors such as working hours, monthly income, appreciation from superiors, and support received from the family.<sup>12,13</sup>

Studies conducted during outbreaks show that it was essential to receive special training and be prepared for epidemics.<sup>14</sup> It was stated that healthcare professionals who do not have sufficient confidence in their knowledge and skills about infection control have higher stress levels, higher burnout, and post-traumatic stress disorder.<sup>15</sup>

In studies conducted during the SARS outbreak, nurses' greater reliance on personal protective equipment and infection control procedures has been associated with lower emotional exhaustion.<sup>16</sup> In many studies, working in units considered "high risk" in terms of infection was associated with poor mental health.

This study aimed to determine the burnout levels and related factors in nurses working during the COVID-19 pandemic.

## MATERIAL AND METHODS

### Design and Study Population

This research was designed as a cross-sectional study. The research population is nurses working in Turkey's secondary and tertiary health institutions. For the research to be conducted with broader participation, we aimed to connect with nurses working in 81 provinces. A total of 3523 nurses from 69 provinces were reached in the study, and 2386 nurses who answered the questionnaire completely were included in the study (response rate was 68%). Ministry of Health permission was obtained. Ethical approval was obtained from the institutional ethics committee of Dokuz Eylül University Faculty of Medicine (2020/12-32; June 08, 2020).

### MAIN POINTS

- The coronavirus disease 2019 pandemic is not a short-distance run but a marathon, as in other outbreak cases. Healthcare professionals should be evaluated and intervene early regarding health problems that may arise later, such as psychological and physiological symptoms and post-traumatic stress disorder. It should be kept in mind that the negative consequences of burnout syndrome on healthcare workers lead to suicidal thoughts, physical injury, and death.
- Although healthcare professionals trying to meet the demands of patients in large organizations such as hospitals work under stress throughout the day, burnout is still among the unheeded issues. However, burnout syndrome is a significant indicator of mental illness that requires effective measures at the institutional and individual levels.
- Burnout syndrome adversely affects the healthcare worker and increases the risk of medical errors and patient safety. For this reason, it should be identified early, and it should be known that it is essential to create a healthy working environment by eliminating the causes of burnout.

### Data Collection

The data were collected between June 9 and June 21, 2020 with the electronic survey method prepared on the "SurveyMonkey" application. The questionnaire consisted of 2 parts: the sociodemographic data form and the Maslach Burnout Inventory (MBI). The electronic questionnaire forms were delivered to nurses from the health institutions' WhatsApp communication groups. Reminders were made several times in communication groups.

The sociodemographic data form included the characteristics of the working environment and personal sociodemographic variables that may affect nurses' burnout. The researchers prepared the form, and the pre-test was applied with a small group of nurses.

The MBI-Turkish version was used to evaluate the level of burnout, which is the study's primary outcome. Maslach Burnout Inventory was developed by Maslach and Jackson and translated into Turkish by Canan Ergin.<sup>7,17</sup> (Maslach Burnout Inventory questions are shown in the Supplementary Table 1). Each subscale in the MBI was scored between 0 and 4 as "Never, Several times a year, Several times a month, Several times a week, Every day." The scores obtained from the subdimensions of the scale are between 0 and 36 for emotional exhaustion (EE); it varies between 0 and 20 for depersonalization (D) and 0 and 32 for lack of accomplishment (LA). Burnout was not evaluated with a single score; the scores of each participant from 3 subscales were evaluated separately.

To assess the impact of the pandemic on nurses' burnout, nurses were categorized as those working in pandemic units and others.

### Statistical Analysis

Statistical analysis was performed using the IBM Statistical Package for Social Sciences software (IBM Corp.; Armonk, NY, USA) for Windows version 24.0. Its compatibility with normal distribution was checked by Kolmogorov-Smirnov and Shapiro-Wilk tests. Mann-Whitney *U* and Pearson's chi-square tests were used to compare the mean values of numerical variables of binary groups. Linear regression analysis was used to measure the effects of more than 1 independent variable on its dependent variables. Variables found to be significant in univariate analyses were included in multivariate analyses. Assuming a 0.05 margin of error and 0.9 power, and a possible drop-out rate of 10%, a *P*-value <.05 was considered statistically significant.

## RESULTS

### Demographic Characteristics

In this study, which we conducted with nurses working in outpatient clinics, inpatient units, and intensive care units of hospitals where COVID-19 patients were admitted and hospitalized, a total of 2386 nurses answered all the questions. However, 67.5% of the nurses participating in the study worked in training hospitals (university hospitals or training-research hospitals). In contrast, the others worked in private or state hospitals. Of 2386 participants, 13.87% (n = 331)

**Table 1.** General Demographics and Working Conditions During the Pandemic

	Number (n)	Percent
<b>Total</b>	2386	100
Age; mean (SD)	33.9 ( $\pm$ 8.43)	
Median (minimum–maximum)	33 (20–62)	
Female	2055	86.1
Married	1402	58.8
Those who have children	1227	51.4
Institution		
Public hospital	381	16
Training and research hospital	648	27.2
University	1140	47.8
Private hospital	181	7.6
Private university hospital	36	1.5
Those with chronic disease	890	37.3
Current smokers	789	34.1
Current alcohol drinkers	489	20.5
Working year (>20 years)	511	21.4
Those who think their monthly income was not enough	1630	68.3
Those who did not choose profession willingly	584	24.5
Those who will not choose the same profession again	1417	59.4
Not satisfied with business life	692	29
Working conditions during the pandemic		
Those who worked in pandemic units (outpatient clinics, inpatient clinics, and intensive care units)	1309	54.9
Shift working	1546	64.8
Those who have increased working hours	398	16.7
Weekly working hours (>45 hours)	810	33.9
Those who thinking that not appreciated by the superiors	1181	49.5
Those who thinking that the job description was unclear	1089	45.6
Those who had problems with patient relatives	1135	47.6
Those who had difficulty in attaining PPE	553	23.2
Those who had to work without PPE	706	29.6
Those who had high-risk contact (without PPE) with The COVID-19 patient	194	8.1
Those who thinking that PPE was insufficient	873	36.6
Those who had risk factors for COVID-19 in the family	1103	46.2
Those who had diagnosed with COVID-19	108	4.5
Those who did not spend enough time with the family	1884	79.0
Those who were without emotional support	1180	49.5
Those who were without childcare support	697	29.2
Those who did not feel safe	1404	58.8
Those who did not feel their families in safe	1259	52.8
Those who had to be away from their family members (>1 month)	1446	60.6
Those who had to be away from their child (>1 month)	310	13.0

COVID-19, coronavirus disease 2019; PPE, personal protective equipment.

were male, 86.13% (n = 2055) were female, and the mean age was 33.9 ( $\pm$ 8.43). Table 1 summarizes the general demographic features of the participants and working conditions during the pandemic.

#### Work Environment

Of 2386 participants, 54.9% (n = 1309) worked in pandemic units (outpatient clinics, inpatient clinics, and intensive care units). Weekly working hours were <40 hours in 19.99%,

40-50 hours in 68.69%, and over 50 hours in 11.32%. During the pandemic, 16.7% (n = 398) increased weekly working hours. Most nurses working for more than 20 years have not been assigned to pandemic units (293/511, 57.3%). In the pandemic units, 48.19% (n = 493) of nurses stated that they have been in this profession for 1 to 10 years, and 26.78% (n = 274) of nurses for 11-20 years. However, 75.5% (n = 1802) of the nurses participating in the questionnaire stated that they chose their profession willingly, but the rate of those who said they would choose this profession again was 40.61% (n = 969). Those who thought their monthly income was insufficient were 68.32% (n = 1630).

**Risks of Direct and Indirect Exposure to Coronavirus Disease 2019**

In the whole group, 23.2% (n = 553) of nurses had difficulty attaining personal protective equipment (PPE), and 29.% (n = 706) stated that they had to work without PPE. Those who reported high-risk contact with a patient diagnosed with COVID-19 without PPE were 8.13% (n = 194) of the nurses participating in the study, and 65.50% (n = 1513) of the nurses thought that their PPE was not sufficient or partially inadequate during the pandemic. The number of nurses living in the same house with family members carrying COVID-19 risk factors was 1103 (46.23%). Almost half of the nurses (45.40%, n = 1079) themselves or at least 1 of their relatives had been diagnosed with COVID-19, and 45.27% (n = 1048) of their coworkers were diagnosed with COVID-19.

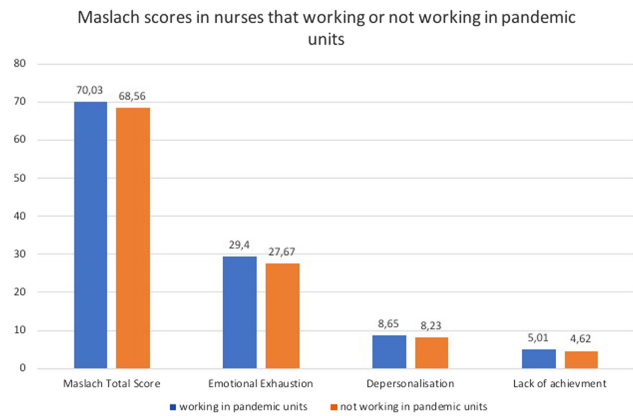
**Physiological and Emotional States**

Of the participants, 79% (n = 1884) did not spend enough time with their families during the pandemic, and even 68.15% (n = 1626) stated that they had to be away from their families, 29.21% (n = 697) of those stated that they had no support for childcare during the pandemic. They stated that they experienced some behavioral symptoms during the pandemic. Although they were not diagnosed with COVID-19, 50.75% (n = 1211) had symptoms, 32.94% had a sore throat, 31.97% had a headache, and 19.57% cough. We found that they frequently feel depressive emotions, get angry very quickly, experience forgetfulness and distraction, and their expressions of hating their work increased. While no physical symptoms were observed in 15.13% (n = 352) of the nurses, the most common complaints were fatigue and lack of energy in most cases.

**Maslach Burnout Inventory**

The mean ( $\pm$ SD) of EE, D, and LA subdimensions of 2386 nurses were 19.42 ( $\pm$ 8.37), 5.80 ( $\pm$ 4.15), and 10.03 ( $\pm$ 5.38), and the median (min-max) was 19 (0-36), 5 (0-20), and 10 (0-32), respectively. All subdimensions scores were statistically significantly higher in nurses working in pandemic units (Table 2, Figure 1). All subdimensions scores were statistically significantly higher in those who were single and did not have children. Table 2 summarizes the factors affecting EE, depersonalization, and LA scores.

As a result of the linear regression analysis of the factors that we show to cause burnout, we have revealed that not choosing the profession willingly and not thinking again, young age, uncertain job descriptions, and problems with patient



**Figure 1.** The subdimensions of burnout in working and non-working groups in the pandemic units.

relatives are the most prominent factors that cause burnout in all subgroups of MBI. Also, monthly income insufficiency and excessive weekly working hours cause burnout. Concerning the pandemic, working without PPE, insufficiency in PPE, not feeling safe, not spending enough time with the family, and being away from family were also evaluated as important factors causing burnout, as summarized in Table 3.

**DISCUSSION**

As a result of the research, the EE score was significantly higher in those working in pandemic units than those who did not work in pandemic services. It can be said that nurses working in pandemic units experienced EE. According to the results from previous outbreaks, healthcare professionals experience high-stress levels in sudden and life-threatening outbreaks.<sup>1-3</sup> Many of the effects of the COVID-19 pandemic on healthcare workers' personal and mental health can have significant consequences. For instance, isolation, lack of social support, and increased workload can severely affect their physical and mental health. With the COVID-19 pandemic, images of patients connected to respiratory support and filling the hospital corridors from various countries and images of the physical fatigue and mask marks on the faces of the healthcare professionals who work tirelessly were shared. With the increasing number of patients, healthcare professionals who did not have time to rest were physically and emotionally exhausted.

Our research observed that insufficient PPE was one of the essential factors of burnout for those working in pandemic units and for all nurses participating in the survey. Nurses are the ones who provide patient care and therefore make the most and closest contact with the patient, and we know that close contact with the COVID-19 patient is the most critical risk factor identified. Therefore, PPE has become the most crucial problem for healthcare professionals.<sup>18</sup> The insufficiency of PPE, difficulties in procuring the equipment, and having to work without PPE have been the most tiring issues for healthcare professionals during the pandemic. The data from various countries show that the frequency of COVID-19 among healthcare workers varies between 1.9% and 12.6%.<sup>19</sup> With the fear of getting the disease and transmitting it to others, this situation may increase the risk of psychological consequences.

**Table 2.** Burnout Levels and Related Factors

Variables	Categories	EE		D		LA	
		Median (Minimum–Maximum)	P	Median (Minimum–Maximum)	P	Median (Minimum–Maximum)	P
Working in PU	Who worked in PU	20 (0-36)	<.001	5 (0-20)	<.001	10 (0-32) <sup>†</sup>	.007
	Who non-worked in PU	18 (0-36)		4 (0-20)		10 (0-32)	
Age	≤35 years	20 (0-36)	<.001	6 (0-20)	<.001	10 (0-32)	<.001
	>35 years	17 (0-36)		4 (0-20)		9 (0-32)	
Gender	Female	19 (0-36) <sup>†</sup>	.193	5 (0-20)	.003	10 (0-32)	.017
	Male	19 (0-36)		6 (0-20)		11 (0-32)	
Married	Single	20 (0-36)	<.001	6 (0-20)	<.001	10 (0-26)	.001
	Married	18 (0-36)		4.5 (0-20)		9 (0-32)	
Having children	Those who have no children	20 (0-36)	<.001	6 (0-20)	<.001	10 (0-26)	<.001
	Those who have children	18 (0-36)		4 (0-20)		9 (0-32)	
Having support for childcare	Have no support	19 (0-36)	.004	5 (0-20)	.005	10 (0-32)	.257
	Who have support	18 (0-36)		4 (0-19)		9 (0-32)	
Choosing the profession willingly or not	Not willingly	23 (0-36)	<.001	6 (0-20)	<.001	11 (0-32)	<.001
	Willingly	18 (0-36)		5 (0-20)		10 (0-32)	
Choosing the same profession again willingly or not	Not willingly	23 (0-36)	<.001	6 (0-20)	<.001	11 (0-32)	<.001
	Willingly	15 (0-36)		4 (0-20)		8 (0-24)	
Monthly income	Insufficient	21 (0-36)	<.001	6 (0-20)	<.001	10 (0-29)	.003
	Sufficient	16 (0-36)		4 (0-19)		9 (0-32)	
Weekly working hours	>45 hours per week	20 (0-36)	<.001	6 (0-20)	<.001	10 (0-32) <sup>†</sup>	.990
	≤45 hours per week	18 (0-36)		5 (0-20)		10 (0-32)	
Shift working	Yes	20 (0-36)	<.001	6 (0-20)	<.001	10 (0-32)	<.001
	No	17 (0-36)		4 (0-20)		9 (0-28)	
Appreciating by the superiors	No	21 (0-36)	<.001	6 (0-20)	<.001	10 (0-29)	<.001
	Yes	17 (0-36)		4 (0-20)		9 (0-32)	
Job description	Unclear	22 (0-36)	<.001	7 (0-20)	<.001	11 (0-29)	<.001
	Clear	17 (0-36)		4 (0-20)		9 (0-32)	
Problems with patient relatives	Yes	22 (0-36)	<.001	7 (0-20)	<.001	10 (0-32)	<.001
	No	17 (0-36)		4 (0-20)		9 (0-32)	
Difficulty in attaining PPE	Yes	23 (0-36)	<.001	7 (0-20)	<.001	10 (0-29) <sup>†</sup>	<.001
	No	18 (0-36)		5 (0-20)		10 (0-32)	
Working without PPE	Yes	22 (0-36)	<.001	7 (0-20)	<.001	10 (0-32) <sup>†</sup>	.005
	No	18 (0-36)		5 (0-20)		10 (0-32)	
Having family members with risk factors for COVID-19	Yes	20 (0-36)	.002	5 (0-20) <sup>†</sup>	.383	10 (0-32) <sup>†</sup>	.429
	No	18 (0-36)		5 (0-20)		10 (0-32)	
Diagnosed COVID-19	Yes	20 (0-36)	.120	5 (0-20) <sup>†</sup>	.387	10 (0-32) <sup>†</sup>	.225
	No	18 (0-36)		5 (0-20)		10 (0-32)	
Spending enough time with the family	No	20 (0-36)	<.001	6 (0-20)	<.001	10 (0-29)	.002
	Yes	16 (0-36)		4 (0-20)		9 (0-32)	
Being without emotional support	Yes	19 (0-36) <sup>†</sup>	.397	5 (0-20) <sup>†</sup>	.832	10 (0-32) <sup>†</sup>	.686
	No	19 (0-36)		5 (0-20)		10 (0-32)	



**Table 2.** Burnout Levels and Related Factors (Continued)

Variables	Categories	EE		D		LA	
		Median (Minimum–Maximum)	P	Median (Minimum–Maximum)	P	Median (Minimum–Maximum)	P
Not feeling safe	Yes	22 (0-36)	<.001	6 (0-20)	<.001	10 (0-32)	<.001
	No	16 (0-36)		4 (0-20)		9 (0-32)	
Not feeling families are safe	Yes	21 (0-36)	<.001	6 (0-20)	<.001	10 (0-32)	<.001
	No	17 (0-36)		4 (0-20)		9 (0-28)	
Be away from families	Yes	20 (0-36)	<.001	6 (0-20)	<.001	10 (0-32)	.060
	No	17 (0-36)		4 (0-20)		9 (0-32)	
Those who think they have difficulty in accessing information	Yes	23.5 (3-36)	<.001	7 (0-20)	<.001	11 (0-28)	.001
	No	<b>18 (0-36)</b>		<b>4 (0-20)</b>		<b>10 (0-32)</b>	

Mann–Whitney U-test results are shown.

\*Those with a higher mean value are shown in categories with similar median values.

COVID-19, coronavirus disease 2019; D, depersonalization; EE, emotional exhaustion; LA, lack of personal accomplishment; PPE, personal protective equipment; PU, pandemic units.

In many previous studies, excessive weekly working hours are essential for burnout. Nurses work in harsh conditions, and it was found that 1 out of every 3 nurses worked more

than 45 hours a week. Although this was an essential factor that causes burnout, nurses cannot spend enough time with their families secondary to intense and long hours of work.

**Table 3.** Multivariate Linear Regression Analysis on EE, D, LA with Burnout-Related Factors

Variables	Emotional Exhaustion B (95% CI)	Depersonalization B (95% CI)	Lack of Personal Accomplishment B (95% CI)
Working in pandemic units	<b>0.67 (0.8, 1.25)*</b>	0.22 (–0.10, 0.53)	0.07 (–0.37, 0.51)
Age (≤35)	<b>1.55 (0.90, 2.21)***</b>	<b>1.64 (1.28, 1.99)***</b>	<b>0.57 (0.08, 1.06)*</b>
Being single	0.33 (–0.28, 0.94)	<b>0.36 (0.03, 0.69) *</b>	–0.01 (–0.46, 0.46)
Not choosing the profession willingly	<b>2.35 (1.68, 3.02)***</b>	<b>0.56 (0.20, 0.93) **</b>	<b>0.60 (0.09, 1.11)*</b>
Not choosing the same profession again willingly	<b>4.89 (4.29, 5.50)***</b>	<b>1.29 (0.96, 1.61)***</b>	<b>1.91 (1.45, 2.36)***</b>
Insufficient of monthly income	<b>1.79 ( 1.20, 2.38)***</b>	<b>0.38 (0.06, 0.70)*</b>	0.23 (–0.21, 0.68)
Weekly working hours (>45)	0.57 (–0.03, 1.18)	0.38 (0.05, 0.71)*	–
Shift working	–0.25 (–0.93, 0.42)	0.01 (–0.36, 0.37)	<b>0.97 (0.48, 1.47)***</b>
Not appreciating by the superiors	<b>0.66 (0.28, 1.05)**</b>	0.19 (–0.02, 0.40)	<b>0.57 (0.28, 0.87)***</b>
Unclear job description	<b>1.45 (0.84, 2.06)***</b>	<b>0.78 (0.45, 1.12)***</b>	<b>1.08 (0.61, 1.54)***</b>
Problems with patient relatives	<b>2.35 (1.77, 2.92)***</b>	<b>1.45 (1.14, 1.76)***</b>	<b>0.57 (0.14, 1.00)*</b>
Difficulty in attaining PPE	<b>0.91 (0.18, 1.65)*</b>	0.10 (–0.30, 0.49)	0.15 (–0.40, 0.71)
Working without PPE	<b>0.64 (0.03, 1.36)*</b>	<b>0.59 (0.23, 0.95)**</b>	–0.10 (–0.61, 0.40)
Having any family member with risk factors for COVID 19	0.48 (–0.07, 1.03)	–	–
Not spending enough time with the family	<b>1.61 (0.89, 2.33)***</b>	0.26 (–0.13, 0.65)	–0.07 (–0.06, 0.46)
Not feeling safe	<b>2.42 (1.82, 3.03)***</b>	<b>0.58 (0.25, 0.90)**</b>	0.30 (–0.15, 0.76)
Be away from families	0.27 (–0.36, 0.89)	–0.21 (–0.55, 0.13)	–
Those who think they have difficulty in accessing information	<b>0.81 (0.02, 1.60)*</b>	0.39 (–0.04, 0.82)	–0.13 (–0.73, 0.46)

\*\*\*P < .001, \*\*P < .01, \*P < .05.

Those that were significant in univariate analyses were included in the multivariate model. Some cells in the table are blank, because those variables were not included in the multivariate model of the relevant subdimension.

B, regression coefficient; COVID-19, coronavirus disease 2019; D, depersonalization; EE, emotional exhaustion; LA, lack of personal accomplishment; PPE, personal protective equipment.

Therefore not being able to allow time for a social life or even not having quality time to spend with the family is an essential factor that has been shown to cause burnout in healthcare professionals.<sup>20</sup> Besides, nurses who did not want to infect their families during the pandemic lived separately for months. The nurses stated they did not feel safe due to COVID-19 and agreed to this mandatory separation to protect their families.<sup>21</sup> It was observed that burnout scores were higher in nurses working in pandemic units separated from their families. In our research, burnout levels were significantly higher in single and childless nurses. In contrast, the rates of not being able to spend enough time with their families, not feeling safe themselves and their families, and having to leave their families were statistically significantly higher in nurses working in pandemic units compared to nurses working in non-pandemic units. Besides, there was no significant difference in EE scores compared to male nurses because the population was mainly female, but depersonalization and personal success scores were significantly higher.

It was observed that nurses working in pandemic units have statistically higher scores on having problems with their relatives. During the COVID-19 pandemic, nurses are crushed in a busy working tempo and under the emotional demands of other people.<sup>22</sup> Nurses experiencing EE feel powerless and inadequate in solving other people's problems. They constantly use the escape route to relieve their emotional burden and minimize their relationships with people. Also, it was thought that the problems with the relatives of the patients have increased because the facial expressions of the nurses due to the protective equipment are not being read, and the interaction and socialization have decreased.

In our research, the expressions of "lack of appreciation from their superiors" and "unclear job descriptions," known as important factors that trigger burnout, showed a statistically significant difference among nurses working in pandemic units compared to those working in non-pandemic services. The existence of role confusion in the work environment, the unclear job description, and the excessive workload cause healthcare professions to feel a loss of control of their work life.

Physical complaints such as fatigue, insomnia, and forgetfulness can be observed in burnout, and burnout syndrome has physical, emotional, and mental symptoms.<sup>23</sup> Fatigue, depressive feelings, irritability, forgetfulness and distraction, and lack of energy were the most common complaints stated in our research.

However, the research was limited based on a cross-sectional design. In our study, to show the effect of the pandemic on burnout, we used working status in pandemic units or not as a predictor. However, it is impossible to say that those who do not work in pandemic units are not affected by the pandemic. Therefore, studies in cohort design are needed to show the effect of the pandemic.

## CONCLUSION

In this study conducted during the COVID-19 pandemic, it was seen that the most important reasons for burnout are

due to administrative gaps. To protect the mental health of employees, it is critical to be aware of psychosocial risks in the workplace and to adopt organizational strategies to prevent them.

**Ethics Committee Approval:** This study was approved by Ethics Committee of Dokuz Eylül University Faculty of Medicine (Approval no: 2020/12-32; Date: June 08, 2020).

**Informed Consent:** Participants who agreed to participate in this study participated by confirming the confirmation button indicating they decided to participate.

**Peer-review:** Externally peer-reviewed.

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## REFERENCES

1. Lin CY, Peng YC, Wu YH, Chang J, Chan CH, Yang DY. The psychological effect of severe acute respiratory syndrome on emergency department staff. *Emerg Med J.* 2007;24(1):12-17. [\[CrossRef\]](#)
2. Matsuishi K, Kawazoe A, Imai H, et al. Psychological impact of the pandemic (H1N1) 2009 on general hospital workers in Kobe. *Psychiatry Clin Neurosci.* 2012;66(4):353-360. [\[CrossRef\]](#)
3. Park JS, Lee EH, Park NR, Choi YH. Mental health of nurses working at a government-designated hospital during a MERS-CoV outbreak: a cross-sectional study. *Arch Psychiatr Nurs.* 2018;32(1):2-6. [\[CrossRef\]](#)
4. Tam CW, Pang EP, Lam LC, Chiu HF. Severe acute respiratory syndrome (SARS) in Hong Kong in 2003: stress and psychological impact among frontline healthcare workers. *Psychol Med.* 2004;34(7):1197-1204. [\[CrossRef\]](#)
5. Chong MY, Wang WC, Hsieh WC, et al. Psychological impact of severe acute respiratory syndrome on health workers in a tertiary hospital. *Br J Psychiatry.* 2004;185(2):127-133. [\[CrossRef\]](#)
6. Chang HJ, Huang N, Lee CH, Hsu YJ, Hsieh CJ, Chou YJ. The impact of the SARS epidemic on the utilization of medical services: SARS and the fear of SARS. *Am J Public Health.* 2004;94(4):562-564. [\[CrossRef\]](#)
7. Maslach C, Schaufeli WB, Leiter MP. Job burnout. *Annu Rev Psychol.* 2001;52(1):397-422. [\[CrossRef\]](#)
8. Maslach C, Leiter MP. Understanding the burnout experience: recent research and its implications for psychiatry. *World Psychiatry.* 2016;15(2):103-111. [\[CrossRef\]](#). Epub 2016/06/07.
9. Liakopoulou M, Panaretaki I, Papadakis V, et al. Burnout, staff support, and coping in Pediatric Oncology. *Support Care Cancer.* 2008;16(2):143-150. [\[CrossRef\]](#)
10. Leiter MP, Maslach C. Nurse turnover: the mediating role of burnout. *J Nurs Manag.* 2009;17(3):331-339. [\[CrossRef\]](#)
11. Dagget T, Molla A, Belachew T. Job related stress among nurses working in Jimma Zone public hospitals, South West Ethiopia: a cross sectional study. *BMC Nurs.* 2016;15:39. [\[CrossRef\]](#)

12. Kaburi BB, Bio FY, Kubio C, et al. Psychological working conditions and predictors of occupational stress among nurses. *Pan Afr Med J.* 2016;320:2019;33:320.
13. Bai Y, Lin CC, Lin CY, Chen JY, Chue CM, Chou P. Survey of stress reactions among health care workers involved with the SARS outbreak. *Psychiatr Serv.* 2004;55(9):1055-1057. [\[CrossRef\]](#)
14. Shiao JS, Koh D, Lo LH, Lim MK, Guo YL. Factors predicting nurses' consideration of leaving their job during the SARS outbreak. *Nurs Ethics.* 2007;14(1):5-17. [\[CrossRef\]](#)
15. Turale S, Meechamnan C, Kunaviktikul W. Challenging times: ethics, nursing and the COVID-19 pandemic. *Int Nurs Rev.* 2020;67(2):164-167. [\[CrossRef\]](#)
16. Wu P, Fang Y, Guan Z, et al. The psychological impact of the SARS epidemic on hospital employees in China: exposure, risk perception, and altruistic acceptance of risk. *Can J Psychiatry Rev Canadienne Psychiatr.* 2009;54(5):302-311. [\[CrossRef\]](#)
17. Ergin C. Adaptation of burnout and Maslach burnout scale in doctors and nurses. [Doktor ve hemsirelerde tukenmislik ve Maslach tukenmislik olceginin uyarlanmasi]. (VII. National Psychology Congress Scientific Studies Hand Book (VII Ulusal Psikoloji Kongresi Bilimsel Calismalari El Kitabı). 1992. Ankara. (Turkish Psychological Association. Publications (Türk Psikologlar Derneği Yayinlari)):143-154.
18. Marjanovic Z, Greenglass ER, Coffey S. The relevance of psychosocial variables and working conditions in predicting nurses' coping strategies during the SARS crisis: an online questionnaire survey. *Int J Nurs Stud.* 2007;44(6):991-998. [\[CrossRef\]](#)
19. Chou R, Dana T, Buckley DI, Selph S, Fu R, Totten AM. Update alert 3: Epidemiology of and risk factors for coronavirus infection in health care workers. *Ann Intern Med.* 2020; 173(6):123-124.
20. Nickell LA, Crighton EJ, Tracy CS, et al. Psychosocial effects of SARS on hospital staff: survey of a large tertiary care institution. *CMAJ Can Med Assoc J = journal de l'Association medicale canadienne.* 2004;170(5):793-798. [\[CrossRef\]](#)
21. Liu CY, Yang YZ, Zhang XM, et al. The prevalence and influencing factors in anxiety in medical workers fighting COVID-19 in China: a cross-sectional survey. *Epidemiol Infect.* 2020;148: e98. [\[CrossRef\]](#)
22. Lai J, Ma S, Wang Y, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease 2019. *JAMA Netw Open.* 2020;3(3):e203976. [\[CrossRef\]](#)
23. Shanafelt TD, Boone S, Tan L, et al. Burnout and satisfaction with work-life balance among US physicians relative to the general US population. *Arch Intern Med.* 2012;172(18):1377-1385. [\[CrossRef\]](#)



### Supplementary Table 1. Maslach Burnout Inventory

#### Maslach Burnout Inventory

1. I feel drained from my job.
2. I feel spiritually exhausted at the end of the workday.
3. I feel fatigued when I wake up in the morning and have to face a new workday.
4. I can immediately understand how my patients feel about many things.
5. I feel that I treat some of my patients as if they were an object devoid of personality.
6. Dealing with people all day is really a tension for me.
7. I deal with my patients' problems effectively.
8. I feel my work is consuming me.
9. I feel that my job positively affects other people's lives.
10. Ever since I started this business, I have been tough with people.
11. I'm afraid this job will harden me.
12. I feel very energetic.
13. I think my job disappointed me.
14. I feel that I am working above my strength in my job.
15. I don't care what happens to the people I meet for my job.
16. Working directly with people causes me a lot of stress.
17. I can easily provide a comfortable atmosphere for my patients.
18. After working closely with my patients, I feel joyful.
19. I have done many valuable things in this profession.
20. I feel so helpless.
21. In my job, I deal with emotional problems very calmly.
22. I feel the patients behaving as if I had created some of their problems.