

# The relationship between psychological resilience, burnout, stress, and sociodemographic factors with depression in nurses and midwives during the COVID-19 pandemic: A cross-sectional study in Turkey

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## Abstract

**Purpose:** This study aims to determine the relationship between psychological resilience, burnout, stress, and sociodemographic factors with depression in nurses and midwives during the coronavirus disease 2019 pandemic.

**Design and Method:** This cross-sectional study included 377 midwives and nurses.

**Results:** The prevalence of depression in midwives and nurses in our sample was 31.8%. In the logistic regression analysis, the risk of depression in midwives was 1.92 times higher than that of nurses. A high perceived stress score increased the risk of depression by 1.16 times, and a high emotional exhaustion score increased the risk of depression by 1.11 times. A high psychological resilience score was found to be protective against depression (<0.001).

**Practice Implications:** The results showed that one-third of midwives and nurses had symptoms of depression.

## KEYWORDS

burnout, depression, health care workers, psychological resilience, stress

## 1 | INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic has increased the mental burden on midwives and nurses. During this period, excessive workload, caring for critical patients with COVID-19, the high risk of infection, uncertainty and stigmatization, lack of personal protective equipment (PPE) and critical medicines, and overcapacity have caused psychological pressure on healthcare professionals.<sup>1,2</sup> Several studies that examined mental health in frontline healthcare professionals dealing with the COVID-19 outbreak have reported high levels of stress, anxiety, and depression symptoms among these professionals,<sup>1-3</sup> and this effect may be long-lasting.<sup>1</sup>

Psychological distress has been reported in more than 70% of healthcare professionals during the acute period of the epidemic in Wuhan and Hubei.<sup>1</sup> In a review study examining the psychological stress caused by the COVID-19 outbreak in healthcare professionals,

Bohlken et al.<sup>3</sup> found a prevalence of mental symptoms between 2.2% and 14.5%. In a study conducted in Iran, the frequency of depression in healthcare professionals has been found to be 30%,<sup>4</sup> while a frequency of 50% has been reported in China.<sup>1</sup>

In another study, it was reported that psychological problems, such as difficulty sleeping, nervousness, decreased appetite, indigestion, frequent crying, long-term fatigue, and suicidal thoughts are common in nurses working in emergency departments in Wuhan.<sup>2</sup> It has been also found that the severity of mental symptoms varies by gender, age, occupation, specialization, type of activities performed, and proximity to COVID-19 patients.<sup>3</sup> Other causes of stress in healthcare professionals include organizational factors, such as lack of PPE; assignments to services, such as intensive care units; and insufficiency or deficiency of medication, ventilators, and patient beds.<sup>5</sup> Nurses, female healthcare professionals, and frontline healthcare professionals have been reported to experience more

severe symptoms of depression than healthcare professionals in other groups.<sup>1</sup>

Healthcare professionals spend physical, emotional, and mental energy on patient care and treatment. The recent COVID-19 outbreak increases the risk of burnout, as it creates a crisis in the health system.<sup>6</sup> Factors, such as prolonged working times, excessive workload, and high risk of contamination may cause excessive energy consumption, thereby creating a risk for burnout syndrome.<sup>6,7</sup> During the COVID-19 pandemic period, few studies on burnout levels among healthcare professionals have been conducted.<sup>7</sup>

In the acute period of traumatic or compulsive life events (e.g., loss of a loved one, terrorist attack), individuals may experience negative emotional states; however, they can often adapt over time.<sup>8</sup> In adapting, which is a time-consuming and ongoing process, the effort required to take action and to recover effectively is called psychological resilience. Psychological resilience has an important role in enabling healthcare professionals to adapt to and deal with the COVID-19 outbreak effectively. In the literature, psychological resilience has been defined as a protective factor against stress and depression. Within this scope, many studies have been conducted to examine the mental health of healthcare professionals. However, to our knowledge, there are no studies demonstrating the effect of psychological resilience on depression.

In the battle against COVID-19, it is necessary to evaluate the mental health of healthcare professionals and to monitor the long-term effects of this pandemic on mental health.<sup>2</sup> Supporting the mental well-being and resilience of nurses and midwives is thought to be important for achieving success in the fight against COVID-19. Therefore, this study aims to investigate the relationship between stress, psychological resilience, burnout syndrome, and socio-demographic factors with depression in midwives and nurses during the COVID-19 outbreak. The evaluation and monitoring of depression and the factors affecting depression will be important for future studies and interventions.

## 1.1 | Population and sample

The study population consisted of midwives and nurses ( $N = 219.883$ ) in Turkey. For this cross-sectional study, the sample size was aimed to reach at least 384 people with 50% unknown prevalence, 1% absolute deviation and 95% confidence level. A total of 395 midwives and nurses participated in the study. Eighteen participants were excluded due to missing data; thus, the study sample consisted of 377 midwives and nurses. This sample size was calculated using OpenEpi, Version 3 (2013), an open-source calculator.

### 1.1.1 | Data collection tools

The data collection tools used were a descriptive data form, the perceived stress scale (PSS), the Beck depression inventory (BDI),

the Maslach burnout inventory (MBI)—human services survey for medical personnel, and the adult psychological resilience scale.

## 1.2 | Descriptive data form

This form consists of 22 questions regarding the sociodemographic characteristics of the nurses and midwives, their professional experience, the care of COVID-19 patients, the risk of infection, and anxiety. The form was created by the researchers conducting this study and was based on the literature.<sup>1,4,5,7,9,10</sup> Within the scope of the face validity testing, two experts in the field of public health were asked for their opinions. The questionnaire was completed by 10 randomly selected midwives or nurses for the pilot application, and the finality of the questionnaire was assessed.

## 1.3 | Perceived stress scale

The PSS, developed by Cohen, Kamarck, and Mermelstein,<sup>11</sup> is a self-assessment scale developed to measure the level of stress and to what extent the respondent's life is uncontrollable and overloaded. On this scale, individuals are asked to rate how often they have experienced certain emotions or thoughts in the past month. The stress level perceived by the respondent is determined by collecting the points obtained from the items.<sup>11</sup> High scores on the scale indicate a high level of perceived stress. The scale was adapted to Turkish and a validity and reliability study was conducted by Eskin, Harlak, Demirkiran, and Dereboy,<sup>12</sup> who found that the internal consistency coefficient of the scale was 0.82. In the present study, Cronbach's  $\alpha$  coefficient of the PSS was 0.79.

## 1.4 | Beck depression inventory

As a self-reported tool, BDI, which was developed by Beck, Ward, Mendelson, J Mock, and Erbaugh,<sup>13</sup> is the most widely used depression measurement tool worldwide. Total scores range from 0 to 63, and high total scores indicate a high severity of depression.<sup>13</sup> The BDI was adapted to Turkish by Hisli,<sup>14</sup> and its reliability coefficient was reported to be 0.74. The cutoff score of the scale was determined to be 17, and those who score 17 and above are considered to have probable depression.<sup>14</sup> Cronbach's  $\alpha$  coefficient of the BDI was 0.89 in the present study.

## 1.5 | Maslach burnout inventory—human services survey for medical personnel

The MBI was developed by Maslach and Jackson.<sup>15</sup> The MBI, which consists of 22 questions, evaluates the concept of burnout in three subdimensions: emotional exhaustion, depersonalization, and reduced personal accomplishment. To determine burnout, scores from

three subscales are evaluated separately. High burnout scores indicate high emotional exhaustion and depersonalization and reduced personal accomplishment.<sup>15</sup> The Turkish adaptation of this scale was carried out by Ergin.<sup>16</sup> Cronbach's  $\alpha$  coefficient was found to be 0.83, 0.65, and 0.62 for the emotional exhaustion, depersonalization, and reduced personal accomplishment subscales, respectively.<sup>16</sup> In this study, the Cronbach's  $\alpha$  coefficient calculated for the MBI subdimensions was found to be 0.88 for emotional exhaustion, 0.81 for depersonalization, and 0.79 for personal accomplishment.

## 1.6 | Resilience scale for adults

The resilience scale for adults (RSA) was developed by Friborg et al.<sup>17</sup> to measure the psychological resilience of individuals. It consists of 33 items and six subdimensions: "Perception of self," "Perception of future," "Social competence," "Family cohesion," "Social resources," and "Structured Style."<sup>17</sup> The scale was adapted to Turkish and the validity and reliability tests were conducted by Basım and Çetin.<sup>18</sup> In their study, Cronbach's  $\alpha$  coefficient was 0.86 for the entire RSA and ranged between 0.68 and 0.81 for its subdimensions.<sup>18</sup> In the present study, Cronbach's  $\alpha$  coefficient of the RSA was 0.91 and was between 0.65 and 0.74 for its subdimensions.

## 1.7 | Data collection

Due to the COVID-19 outbreak, the data were collected via Google Forms. The survey was shared electronically using Google Drive's online service system (<https://docs.google.com/forms/d/1fHVVG-CWeXHGHyBdZG5TiFoQYzWwjB9oU-nhQ8oO3Ns/edit>), then on Facebook, WhatsApp, and Instagram. It was published between May 30 and June 13, 2020 for 2 weeks with five announcements. Individuals who had access to the survey link answered the questions. The data were downloaded in CSV format and analyzed after being revised and standardized.

### 1.7.1 | Research ethics

This study was conducted in accordance with the principles of the World Medical Association Declaration of Helsinki. Ethics approval was obtained from Sakarya University Medical Faculty Clinical Research Ethics Committee (Date: May 29, 2020, no: 304). In conducting research over the internet, the recommendations of the Association of Internet Researchers were utilized.<sup>19</sup> The consent form was on the first page of the survey. Participants were assured that they had the right to refuse to participate in the research and that all information to be provided would be kept confidential. The midwives and nurses participating in the study declared that they had read, understood, and agreed to participate voluntarily by marking the "I agree" option, then completed the other parts of the questionnaire. Google Forms has privacy standards that include

protecting, not using, data; not sharing data without permission; and not selling personal information. Personal and institutional information were not requested in our study.

## 1.8 | Statistical analysis

Statistical analysis was performed using SPSS 20.0 statistical software. Descriptive data are presented as mean, standard deviation, number, and percentage. Shapiro–Wilk tests of normality were used to determine whether the data showed normal distribution. Because the data showed normal distribution, parametric tests were used in the analysis. Burnout levels, perceived stress, depression, and psychological resilience total scores and subscales were evaluated by Pearson correlation analysis. Depression severity was grouped based on the cutoff point for the BDI (<17,  $\geq$ 17). The relationship between the participants' sociodemographic, professional, and COVID-19-related variables with depression score was evaluated by Pearson's  $\chi^2$  analysis. The relationship between burnout subdimensions, perceived stress, psychological resilience total score, and depression risk was evaluated with the independent samples *t* test. Logistic regression analysis was performed to identify the factors affecting the risk of depression. The model included age (<35,  $\geq$ 35), title (midwife, nurse), weekly working hours ( $\leq$ 48,  $\geq$ 49), perception of health (good/bad/moderate), economic status (high/low/middle), anxiety about COVID-19 infection (low/high), anxiety about COVID-19 infection of the family (low/high), care for patients with COVID-19 (yes/no), perceived stress, burnout subdimensions, and psychological resilience total scores, which was statistically significant in  $\chi^2$  analysis. The enter method was performed in logistic regression analysis and odds ratio (OR) values were presented in a 95% confidence interval (95% CI). Results were considered statistically significant if the *p* value obtained in the analysis was <0.05 and bidirectional.

## 2 | RESULTS

The mean age of the healthcare professionals who participated in this study was  $32.20 \pm 8.11$  (min: 20, max: 54). Of the participants, 54.1% were midwives, 5.6% were high school graduates, 55.4% were married, and 48.3% had children. In addition, 10.3% of the participants stated that they had chronic diseases. Seventy-eight percent of the healthcare professionals worked in public hospitals, 9.3% worked in family health centers, and 3.7% worked in private hospitals, with 9.3% working in COVID-19 intensive care units and 3.7% in COVID-19 services. The mean weekly working hours was  $45.57 \pm 11.26$  (min: 40, max: 120), the length of the working year was  $9.74 \pm 8.55$  (min: 1, max: 32), and the mean number of patients examined daily was  $21.95 \pm 47.85$ . Among the study participants, 5.3% stated that they were diagnosed with COVID-19, 34.5% cared for patients with COVID-19, and 65.8% provided care to patients with suspected COVID-19.

The mean BDI score of the participants was  $13.60 \pm 9.00$ . A positive, moderate, and significant correlation was found between the depression and perceived stress scores ( $r = 0.59, p < 0.001$ ; Table 1). There was a significant relationship between the depression and burnout subdimensions. A weak negative relationship was found between depression and personal accomplishment ( $r = -0.10, p < 0.05$ ), a weak positive relationship was found between depression and depersonalization ( $r = 0.20, p < 0.001$ ), and a moderate positive relationship existed between depression and emotional exhaustion ( $r = 0.49, p < 0.001$ ). There was a negative, weak, and significant correlation between depression and all subdimensions of resilience ( $p < 0.001$ ; Table 1).

The risk of depression was significantly higher in midwives, those who were under 35, those who worked 49 h or more per week, those who stated their health status as bad or moderate, and those who evaluated their economic status as low or middle ( $p < 0.05$ ; Table 2).

There was no significant relationship between the risk of depression and the institution or service in which the midwives and nurses worked. The risk of depression was 2.95 times higher in healthcare professionals who had anxiety about COVID-19 infection for themselves (95% CI: 1.85–4.69), 1.80 times higher in midwives and nurses who were highly anxious that their family would be infected (95% CI: 1.06–3.05,  $p < 0.05$ ), and 1.35 times higher in midwives and nurses who cared for patients diagnosed with COVID-19 (95% CI: 1.01–1.82,  $p = 0.04$ ; Table 3).

The mean PSS score was significantly higher in midwives and nurses with high depression scores ( $p < 0.001$ ). The mean scores for emotional exhaustion and depersonalization were significantly higher in midwives and nurses with high depression scores, while the personal accomplishment score was significantly lower in this group. According to the burnout subscales, burnout, depersonalization, and low personal achievement were significant in midwives and nurses who had high depression scores ( $p < 0.01$ ). The mean psychological resilience score was significantly lower in midwives and nurses with high depression scores ( $p < 0.001$ ; Table 4).

A one-unit increase in PSS score increased the risk of depression 1.16 times (95% CI: 1.08–1.26,  $p < 0.001$ ), and a one-unit increase in emotional exhaustion score increased the risk of depression 1.11 times (95% CI: 1.05–1.17,  $p < 0.001$ ). High psychological resilience was found to be protective against depression risk (OR: 0.95, 95% CI: 0.93–0.96,  $p < 0.0001$ ). The risk of depression was 1.92 times higher in midwives than in nurses (95% CI: 1.08–3.41; Table 5).

### 3 | DISCUSSION

Our study aimed to determine the factors affecting the risk of depression in frontline and second-line nurses and midwives working in the fight against COVID-19. This cross-sectional study was carried out with nurses and midwives during the COVID-19 pandemic in Turkey. The first COVID-19 case in Turkey was seen on March 11, 2020. Public health measures were implemented on March 16 and included the closure of schools, cafes, mosques, and parks; curfew; travel ban; the priority of COVID-19 treatment services. With the

**TABLE 1** Correlation analysis between the depression, perceived stress, burnout, and resilience subdimensions

	Mean	SD	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	X11	X12
X1: Perceived stress	23.39	5.23	1											
X2: Depression	13.60	9.00	.59***	1										
<b>Burnout</b>														
X3: Personal accomplishment	22.70	7.88	-0.10*	-0.12*	1									
X4: Depersonalization	6.42	4.67	0.20**	0.25***	-0.15**	1								
X5: Emotional exhaustion	20.06	7.88	0.51***	0.49***	-0.93 (0.07)	0.60***	1							
<b>Resilience</b>														
X6: Social resources	28.32	4.59	-0.23	-0.32***	-0.17***	-0.23***	-0.12*	1						
X7: Family cohesion	23.19	4.79	-0.15**	-0.30***	0.11*	-0.11*	-0.06	0.58***	1					
X8: Social competence	22.31	4.60	-0.15**	-0.35***	0.29	-0.18***	-0.20***	0.53***	0.37***	1				
X9: Structured style	14.04	3.52	-0.15**	-0.26***	0.25	-0.12*	-0.15**	0.33***	0.24	0.28***	1			
X10: Perception of future	14.49	3.52	-0.35***	-0.51***	0.26	-0.21	-0.35***	0.42	0.28	0.40***	0.46***	1		
X11: Perception of self	22.50	4.51	-0.25**	-0.45***	0.36	-0.22	-0.26***	0.42	0.33	0.47***	0.45***	0.60***	1	
X12: Total psychological resilience	124.87	18.43	-0.23**	-0.51***	0.33	-0.25	-0.26***	0.78***	0.68	0.73***	0.61***	0.71***	0.47***	1

\* $p < 0.05$ .

\*\* $p < 0.01$ .

\*\*\* $p < 0.001$ .

**TABLE 2** The relationship between sociodemographic characteristics and depression scores ( $n = 377$ )

Variables		Depression score		OR	95% CI	p Value*
		17 < n (%)	17 ≥ n (%)			
Title	Midwife	130 (63.7)	74 (36.3)	0.63	0.40–0.99	<b>0.04</b>
	Nurse	127 (73.4)	46 (26.6)			
Age	<35	153 (64.6)	84 (35.4)	0.61	0.38–0.97	<b>0.03</b>
	≥35	104 (74.8)	35 (25.2)			
Education	High school	14 (66.7)	7 (33.3)	0.93	0.36–2.36	0.87
	University	243 (68.3)	113 (31.7)			
Marital status	Married	115 (68.5)	53 (31.5)	1.02	0.66–1.58	0.91
	Single/divorced	142 (67.9)	67 (32.1)			
Children	Yes	128 (70.3)	54 (29.7)	1.21	0.78–1.87	0.38
	No	129 (66.2)	66 (33.8)			
Family type	Nuclear family	231 (68.3)	107 (31.7)	1.07	0.53–2.18	0.83
	Extended family	26 (66.7)	13 (33.3)			
History of chronic disease	Yes	54 (67.5)	26 (32.5)	0.96	0.56–1.63	0.88
	No	203 (68.4)	94 (31.6)			
Number of patients per day	0–10	183 (69.3)	81 (30.7)	1.17	0.73–1.88	0.50
	11+	73 (65.8)	38 (34.2)			
Work experience	<10 years	146 (66.1)	75 (33.9)	0.78	0.50–1.23	0.29
	≥10 years	111 (71.2)	45 (28.8)			
Working hours	≤48	212 (71.4)	85 (28.6)	1.94	1.16–3.22	<b>0.01</b>
	≥49	45 (56.2)	35 (43.8)			
Health status	Good/very good	202 (73.5)	73 (26.5)	2.36	1.47–3.79	<b>&lt;0.0001</b>
	Bad/moderate	55 (53.9)	47 (46.1)			
Economic status	High	140 (73.7)	50 (26.3)	1.67	1.08–2.59	<b>0.021</b>
	Low/middle	117 (62.6)	70 (37.4)			

Note: Bold indicates statistical significance, Pearson  $\chi^2$  test.

Abbreviations: CI, confidence interval; OR, odds ratio.

\* $p < 0.05$ .

decrease in the cases and COVID-19-related deaths, "controlled social life" started on May 6.<sup>20</sup> We found that the risk of depression in midwives was higher than in nurses. The increase in perceived stress score increased the risk of depression, as did increases in emotional exhaustion scores. A high psychological resilience score was found to be protective against depression.

According to Chirico et al., it is necessary to protect healthcare professionals and deal with the burden on healthcare institutions during the COVID-19 pandemic by adopting necessary social distancing measures and implementing a lockdown.<sup>21</sup> In our study, the prevalence of depression in midwives and nurses was 31.8%. The prevalence of depressive symptoms among healthcare professionals varies by country. Among the frontline medical staff, the prevalence of depression symptoms was 43.0% in China,<sup>22</sup> 9% in Singapore, 12.4% in India,<sup>23</sup> and 20.3% in Italy,<sup>24</sup> while in the meta-analysis by Pappa et al.,<sup>25</sup> the prevalence of depression symptoms was found to be 22.8%. In this period, the experience with COVID-19 and

mortality rates of this disease were different in each country. It is thought that many factors, such as the number of hospital beds, intensive care occupancy rate, availability of PPE, difficulty in accessing the necessary medicines, number of patients per day, mortality rate, mortality and morbidity among healthcare workers, and time at which a study is conducted (e.g., in the initial, peak, or late period of an outbreak) may affect depressive symptoms.

Most medical staff participated in the fight against COVID-19 in Turkey. The midwives and nurses working in the family healthcare centers followed up with quarantined people and individuals with suspected COVID-19 contact either by phone or at their homes. Midwives and nurses working in the provincial and district health directorate served in the filiation and followed up individuals who came from abroad and quarantined for 14 days by keeping watch in the dormitories. No significant relationship was found between depression and working in the pandemic hospital, the intensive care units, or COVID-19 services. Similarly, in the literature, there was no

**TABLE 3** The relationship between work characteristics and depression scores ( $n = 377$ )

Variables		Depression score		OR	95% CI	p Value*
		17 < n (%)	17 < n (%)			
Institution	Public Hospital	205 (69.7)	89 (30.3)			0.60
	Private Hospital	8 (57.1)	6 (42.9)			
	Provincial-District Health Directorate	21 (61.8)	13 (38.2)			
	Family Health Center	23 (65.7)	12 (34.3)			
Service	Frontline	33 (67.3)	16 (32.7)	1.04	0.55–1.98	0.89
	Second-line	224 (68.3)	104 (31.7)			
COVID-19 diagnosis	Yes	14 (70.0)	6 (30.0)	1.09	0.41–2.92	0.85
	No	243 (68.1)	114 (31.9)			
The anxiety about COVID-19 infection	Low	141 (80.1)	35 (19.9)	2.95	1.85–4.69	<b>&lt;0.01</b>
	High	116 (57.7)	85 (42.3)			
The anxiety about COVID-19 infection of family members	Low	77 (77.0)	23 (23.0)	1.80	1.06–3.05	<b>0.02</b>
	High	180 (65.0)	97 (35.0)			
The presence of an individual over 65 at home	Yes	28 (66.7)	14 (33.3)	0.92	0.59–1.43	0.82
	No	229 (68.4)	106 (31.6)			
The presence of a child at home	Yes	134 (71.7)	53 (28.3)	1.37	0.89–2.12	0.14
	No	123 (64.7)	67 (35.3)			
Is the hospital worked at a pandemic hospital? ( $n = 294$ )	Yes	141 (68.1)	66 (31.9)	0.76	0.43–1.34	0.35
	No	64 (73.6)	23 (26.4)			
Caring for patients with COVID-19	Yes	80 (61.5)	50 (38.5)	1.35	1.01–1.82	<b>0.04</b>
	No	177 (71.7)	70 (28.3)			
Caring for COVID-19 suspected patients	Yes	169 (68.1)	79 (31.9)	0.99	0.63–1.57	0.98
	No	88 (68.2)	41 (31.8)			

Note: Bold indicates statistical significance, Pearson  $\chi^2$  test.

Abbreviation: CI, confidence interval; COVID-19, coronavirus disease 2019; OR, odds ratio.

\* $p < 0.05$ .

difference between anxiety and depression levels in healthcare professionals working in units with COVID-19 infection risk and in units without COVID-19 infection risk.<sup>9</sup> Although frontline healthcare professionals work directly with infected patients, they have been reported to be less worried about infection.<sup>5</sup> While the risk of depression was significantly correlated with several factors in univariate analysis, in multivariate analysis, there was no significant relationship between depression and high weekly working hours, poor health perception, low economic status, young age, and anxiety about infection of their family members. Similarly, in a letter to the editor, Chen et al.<sup>10</sup> reported that there was no relationship between sociodemographic factors with depression in healthcare workers.

It was also observed that the severity of depression increased as the perceived stress score increased. This finding is similar to previous published results.<sup>26</sup> Shortages of protective equipment, certain medicines, ventilators, and hospital beds, as well as the rapid changes in information regarding COVID-19, may cause stress among healthcare professionals. In addition, lack of support and tests, anxiety about infection of self and family members, and heavy workload are other risk factors for depression.<sup>5</sup> Work-related stress may also be an important risk factor for the development of depression during the pandemic.

It has been suggested that occupational health services for healthcare professionals are important during the COVID-19 pandemic in Italy. Emotional overload and stress are being experienced



**TABLE 4** The relationship between perceived stress, burnout, and psychological resilience with depression scores

Variables	Depression score				p Value
	17 < n (%)		17 ≥ n (%)		
	Mean	SD	Mean	SD	
Perceived stress	21.97	4.99	26.44	4.38	<b>&lt;0.001</b>
Burnout sub-dimensions					
Emotional exhaustion	17.89	7.52	24.75	6.52	<b>&lt;0.001</b>
Depersonalization	5.70	4.39	7.97	4.91	<b>&lt;0.001</b>
Reduced personal accomplishment	23.21	5.12	21.65	4.67	<b>0.004</b>
Psychological resilience	129.78	17.85	114.35	14.95	<b>&lt;0.001</b>

Note: Bold indicates statistical significance, independent sample t test.

by all healthcare professionals. Providing psychological and emotional support under the scope of occupational health surveillance program is thought to be important for PHPs in Italy. The program to be implemented is advised to cover two main areas: providing enough information and training to healthcare professionals and giving psychological support to overcome anxiety. The measures to be taken and programs to be implemented should also include extreme scenarios.<sup>27</sup> The most important point to be considered for policy makers is the protection of the mental well-being of healthcare professionals, because as the physical and mental burdens on healthcare professionals increase, they tend to make more mistakes and may be more susceptible to infections.<sup>27</sup> In their systematic review, Bianchi et al.<sup>28</sup> discovered that burnout and depression were different in terms of their connections to job-related and generic factors. However, this difference was difficult to define, as burnout is not a single concept.<sup>29</sup>

In our study, a significant relationship was found between depression levels and emotional exhaustion. It was noted that as the level of depression increased, emotional exhaustion increased. Among the subdimensions of burnout among healthcare professionals in Italy, emotional exhaustion was the most commonly detected, and approximately half of the participants in that study experienced somatic symptoms, such as increased irritability, change in food habits, difficulty in falling asleep, and muscle tension.<sup>6</sup> According to the literature, it is accepted that there is a significant relationship between burnout and depression and that they can be seen together.<sup>30</sup> In particular, negative feelings, such as emotional exhaustion, depression, insecurity, despair, and uneasiness are increasing.<sup>31</sup> Emotional exhaustion, which can be defined as the feeling of excessive physical and emotional fatigue, is related to excessive workload, time pressure, job stress, lack of adequate PPE, and exposure to COVID-19 patients.<sup>2,6,22</sup> Similarly, in Italy, intense emotional and mental burden was found to create anxiety and depression, which may eventually cause burnout syndrome and suicidal thoughts among professionals.<sup>27</sup>

The main strength of our study was that the frequency and causes of depression in nurses and midwives in Turkey during the

**TABLE 5** Logistic regression model analysis with some variables and depression

Variables	OR	95% CI	p Value
Perceived stress	1.16	1.08–1.26	<b>&lt;0.001</b>
Psychological resilience	0.95	0.93–0.96	<b>&lt;0.001</b>
Emotional exhaustion	1.11	1.05–1.17	<b>&lt;0.001</b>
Depersonalization	0.96	0.89–1.04	0.38
Reduced personal accomplishment	0.98	0.92–1.04	0.52
Title			
Nurse (ref)	1.00		
Midwife	1.92	1.08–3.41	<b>0.02</b>
Health Status			
Good/very good (ref)	1.00		
Bad/moderate	1.48	0.78–2.83	0.25
Economic status			
High/very high (ref)	1.00		
Low/middle	0.87	0.48–1.59	0.66
The anxiety about COVID-19 infection			
Low (ref)	1.00		
High	1.45	0.75–2.78	0.26
The anxiety about COVID-19 infection of family members			
Low (ref)	1.00		
High	1.35	0.63–2.86	0.43
Caring for patients with COVID-19 diagnosis			
No (ref)	1.00		
Yes	1.07	0.58–1.99	0.81
Weekly working hours			
≤48 (ref)	1.00		
≥49	1.93	0.96–3.87	0.06
Age (years)			
<35	1.24	0.68–2.27	0.46
≥35 (ref)	1.00		

Note:  $p < 0.05$ ; bold indicates statistical significance.

Abbreviations: CI, confidence interval; COVID-19, coronavirus disease 2019; OR, odds ratio.

COVID-19 pandemic were identified. In future prospective studies, it will be important to evaluate the severity of depression among healthcare professionals.

The most important limitations of this study were that the study was cross-sectional and that the data were collected through the healthcare professionals' statements. In addition, as the study was not carried out prospectively, the mental health symptoms of healthcare professionals may have become more severe during this increasingly difficult situation. It will be important to further investigate the long-term effects of the COVID-19 pandemic on the mental well-being of healthcare professionals. Therefore, our findings should be validated by prospective studies. Notably, in this

study, depression was defined as having a score of  $\geq 17$ , the cutoff point of the BDI. This is not a clinical diagnosis, and some healthcare professionals may have obtained scores at or above 17 for a number of reasons other than depression. Finally, as the study was not community-based, an online survey was performed. Therefore, the findings cannot be generalized to all healthcare professionals in Turkey.

In conclusion, no relationship was found between depressive symptoms and sociodemographic factors. Approximately one-third of midwives and nurses were found to have symptoms of depression. In particular, midwives with a high level of stress and emotional exhaustion were found to have a high risk of depression. Psychological resilience was found to be an important protective factor against depression symptoms.

## 4 | IMPLICATIONS FOR NURSING PRACTICE

It is important to evaluate the mental health of healthcare professionals and to monitor the long-term effects of dealing with COVID-19 in each country. It is thought that psychological problems may cause other, permanent problems in the long term if not handled early. In terms of the continuity of health services during the COVID-19 pandemic, it is necessary to provide the necessary protective and supportive services to protect the mental well-being of healthcare professionals, as well as their physical health. The physical and mental well-being of healthcare professionals is important to win the fight against COVID-19. Healthcare professionals and their families should be provided with access to psychiatric care, pharmacological interventions, and individual or group psychotherapy. In the long run, increasing mental health screenings will be important for preventive mental health services. Administrators can improve the situation by being attentive to the psychological, mental, and psychosocial needs of healthcare professionals. It is important to establish a communication network between healthcare professionals, administrators, and health institutions. Systems should be developed to provide adequate opportunities for resting and relaxing to prevent burnout.

In our study, the risk of depression was significantly higher in midwives than in nurses. In Turkey, midwives, like nurses, work not only in the units related to birth, but also in other services. In our study, 8% of midwives were working in COVID-19 services and intensive care units. It is thought that monitoring and determining the causes of depression in the midwives will be important for the mental health of the professionals.

We also found that psychological resilience was protective against depression symptoms. Psychological resilience is important in adapting to and struggling against challenging life events. According to the correlation analysis in our study, the greater the psychological resilience of healthcare professionals, the better their mental health. Increased psychological resilience is associated with reduced symptoms of stress, emotional exhaustion, depersonalization, and depression.

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## CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

## AUTHOR CONTRIBUTIONS

Selda Yörük participated in the design of the study and acquisition of data, performed the statistical analysis, and drafted the manuscript. Döndü Güler participated in the design of the study, drafted the manuscript, and acquired data. All authors read and approved the final manuscript.

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