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Anxiety due to COVID-19 among healthcare providers during pandemic: A web-based cross-sectional survey in Iran

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Abstract

Aim: The main purpose of this study was to assess the levels of anxiety, depression, and stress among healthcare providers in Iran.

Methods: This descriptive cross-sectional survey was performed on healthcare providers selected through the convenience sampling method from April 6 to May 19, 2020, during the COVID-19 pandemic. To this end, a self-report web-based questionnaire made up of a sociodemographic characteristics information form, Depression, Anxiety, and Stress Scale (DASS), and Corona Disease Anxiety Scale (CDAS) was distributed. Descriptive statistics, chi-square test (χ^2), and univariate and multivariate logistic regression models were accordingly practiced to analyze the data using the Statistical Package for Social Sciences (SPSS) software.

Results: Of 1343 healthcare providers, 45.8% and 73.0% had moderate physical and psychological anxiety symptoms, respectively. The logistic regression model similarly demonstrated that anxiety caused by COVID-19 was significantly correlated with the age ranges of 41-50 ($P = .007$) and 51-60 ($P = .014$) years as well as male participants ($P < .001$). In addition, the prevalence rates of depression and stress were, respectively, reported by 35.1% and 27.8%. There was correspondingly a significant relationship between depression and age as well as stress and gender.

Conclusions: It seems that healthcare managers need to focus more attention on psychological aspects in healthcare providers during this pandemic and plan to teach them about coping strategies.

KEYWORDS

anxiety, coronavirus, depression, healthcare workers, infection, stress

1 | INTRODUCTION

The coronavirus disease 2019 (COVID-19), primarily detected in the city of Wuhan, China, has currently converted into an ongoing pandemic.[1] As declared by the World Health Organization[2] on May 14, 2020, a total number of 4 258 666 confirmed cases of COVID-19 and 294 190 deaths had been reported all over the world.[2] So far, no specific and proven medication has been introduced for treatment of this infection.[3] Moreover, quarantine and rapid increase in being infected with coronavirus (CoV) had harmful psychological effects on people including depression, anxiety, stress, and panic disorder,[4,5] which may aggravate if no treatment is proposed.[6] Also, lockdown,[7] wearing mask,[8] and social distancing[9] had reverse effects on mental health. At the onset of the COVID-19 pandemic, Wang et al[10] had reported that CoV outbreak had led to severe psychological effects on 53.8% of people. Another study in Iran had further found that 47% of Iranian citizens had experienced mild-to-moderate distress caused by COVID-19 with different predictors from other countries including China.[11] Accordingly, healthcare providers (HCPs) can be more often susceptible to many physical and psychosocial problems due to fears of transmitting the infection to their families, wearing protective clothing, and withholding food and drink in infectious diseases wards.[12–14] Thus, these individuals are at higher risk with respect to the nature of their professions.[15] So that, mortality rates may not be different between HCPs and general population.[15] These situations can also bring about psychological distress in HCPs including anxiety, depression, and poor sleep quality.[16] Likewise, increased workload among HCPs can make them quit their jobs and pose threats to healthcare facilities in terms of shortage of personnel.[17] In China, 23.02% and 27.39% of HCPs had, respectively, experienced anxiety and anxiety disorder during the COVID-19 outbreak.[18] As well, 23.6% of the HCPs had reported the highest rate of poor sleep quality.[18] An Italian study had additionally revealed that 49.38% of the HCPs had manifested post-traumatic stress disorder (PTSD) and 24.73% of the cases had been presented with severe depression. Moreover, 19.80% and 8.27% of these individuals had suffered from anxiety and insomnia.[19] In other studies conducted in Iran, 39.6%-65.6% of hospital staff had been subjected to moderate-to-severe anxiety and 42.3% of the cases had shown moderate-to-severe depression during the COVID-19 outbreak.[20,21]

Regarding the results of previous studies, the spread of the COVID-19 pandemic, and the rising trend in the number of infected people and HCPs, the main purpose of the present study was to assess the levels of depression, anxiety, and stress caused by COVID-19 among HCPs in Mazandaran Province, northern Iran.

2 | METHODS

This descriptive cross-sectional survey was conducted on HCPs selected through the convenience sampling method from April 6 to May 19, 2020, during the COVID-19 pandemic in Mazandaran Province, northern Iran, with at least 60 cities, as one of the first hotspots with a high prevalence rate of CoV infection. Following the COVID-19 outbreak, a self-report web-based questionnaire was distributed through the cyberspace including popular messaging apps, that is WhatsApp, Instagram, and Short Message Service (SMS). An online informed consent was also signed by the participants before their inclusion in the study. The HCPs were comprised of doctors, nurses, dentists, pharmacists, laboratory personnel, radiologists, midwives, medical residents, medical students, and all staff who had interacted directly or indirectly with COVID-19 patients in inpatient and outpatient wards of hospitals, fever clinics, prehospital emergencies, and primary healthcare centers. The sample size was also determined by 1318 participants with respect to the results of the study by Zhu et al,[22] assuming 95% confidence interval (CI) and 13% of completion defects. The inclusion criteria were all HCPs who had experienced interactions with COVID-19 patients directly or indirectly, showing willingness to participate in the study. Incomplete questionnaires were additionally excluded.

The given questionnaire consisted of three parts: the sociodemographic characteristics information form, Depression, Anxiety, and Stress Scale (DASS), and Corona Disease Anxiety Scale (CDAS).

The sociodemographic data included gender, age, marital status, place of living, level of education, field of study, working position, years of experience, history of mental and physical problems, number of children, and working units (inpatient or outpatient).

The DASS was also used to evaluate the levels of depression, anxiety, and stress during the last week. This four-point Likert-type scale was scored with no, low, moderate, and high options respectively from 0 to 3. In this scale, depression had been divided into normal (0-9), mild (10-13), moderate (14-20), severe (21-27), and very severe (28 and more). Anxiety could be correspondingly rated as normal (0-7), mild (8-9), moderate (10-14), severe (15-19), and very severe (20 and more). In addition, stress points were normal (0-14), mild (15-18), moderate (19-25), severe (26-33), and very severe (34 and above). The internal consistency reliability of the

TABLE 1 Participants' sociodemographic characteristics

Sociodemographic characteristics	Frequency (%), N = 1343
Age groups (y)	
20-30	498 (37.1)
31-40	459 (34.2)
41-50	296 (22.0)
51-60	83 (6.2)
>61	7 (0.5)
Gender	
Male	336 (25.0)
Female	1007 (75.0)
Marital status	
Single	347 (25.8)
Married	964 (71.8)
Divorced or widowed	32 (2.4)
Having children	
Yes	747 (55.6)
No	596 (44.4)
Level of education	
Undergraduate	133 (9.9)
Bachelor's degree	768 (57.2)
Master's and PhD degree	172 (12.8)
General and special professional doctorate	270 (20.1)
Occupation	
Clinician	322 (24.0)
Nurse	570 (42.4)
Midwife	279 (20.8)
Other	172 (12.8)
Working experience	
0-5	487 (36.3)
5-10	252 (18.8)
10-15	253 (18.8)
15-20	151 (11.2)
>20	200 (14.9)
Employment status	
Conscription	217 (16.2)
Contractual	234 (17.4)
Corporate	114 (8.5)
Temporary-to-permanent	117 (8.7)
Permanent	497 (37.0)
Other	164 (12.2)
Working in isolated wards	
Yes	747 (55.6)
No	596 (44.4)
Working units	
Hospitals	4157 (54.5)

(Continues)

TABLE 1 (Continued)

Sociodemographic characteristics	Frequency (%), N = 1343
Outpatient clinics	751 (9.8)
Laboratories	210 (2.8)
Imaging centers	99 (1.3)
Others	2409 (31.6)
Working hours with COVID-19 patients	
0	210 (15.6)
1-2	214 (15.9)
2-4	127 (9.5)
4-6	182 (13.6)
6-8	436 (32.5)
>8	174 (13.0)
History of physical illnesses	
Yes	328 (24.4)
No	1015 (75.6)
History of psychiatric disorders	
Yes	132 (9.8)
No	1211 (90.2)

construct with Cronbach's alpha values had been further reported at the range of .83-.86.[23] In its Persian version, the reliability of this instrument had been assessed by Jafari et al and respectively reported by 0.86, 0.76, and 0.79 for the dimensions of depression, anxiety, stress. The validity of the given questionnaire had been also reported with Cronbach's alpha coefficient greater than .7.[24] Also, it was validated in different cultures during COVID-19 pandemic.[25–28]

The CDAS had been designed and validated to measure anxiety caused by CoV infection in Iran. The final version of this tool contained 18 items and two components (psychological and physical symptoms) scored from never (0) to always (3), so that, the highest and the lowest scores obtained by the respondents in this questionnaire could be between 0 and 54. Psychological symptoms were also rated as no or mild (0-5), moderate (6-19), and severe (20-27). As well, physical symptoms consisted of no or mild (0-1), moderate (2-9), and severe (10-27). High scores on this questionnaire could indicate a higher level of anxiety. The reliability of this tool had been further measured using Cronbach's alpha method for the first factor ($\alpha = .879$), the second factor ($\alpha = .861$), and the whole questionnaire ($\alpha = .919$).[29]

This research project was approved by the Ethics Committee of Mazandaran University of Medical Sciences (IR.MAZUMS. REC.1399.7333), Sari, Iran. At the end of the questionnaire, the scores were also given as feedback to the participants. They were additionally assured that these scores were being used merely for screening purposes, but not treatment. Moreover, the HCPs who got high scores could contact the phone number 4030 (designed for free consultations by the Ministry of Health and Medical Education). In addition, the link of the educational files included videos and pamphlets

TABLE 2 Prevalence of anxiety based on CDAS and DASS

Questionnaire domains and severity				
	Severity of anxiety, N = 1343 (%)			
CDAS	Without or mild		Moderate	Severe
Physical symptoms	509 (37.9)		615 (45.8)	219 (16.3)
Psychological symptoms	134 (10.0)		980 (73.0)	229 (17.1)
	Severity of depression, anxiety, and stress, N = 1343 (%)				
DASS	Normal	Mild	Moderate	Severe	Very severe
Depression	872 (64.9)	173 (12.9)	159 (11.8)	59 (4.4)	80 (6.0)
Anxiety	879 (65.5)	96 (7.1)	227 (16.9)	57 (4.2)	84 (6.3)
Stress	977 (72.7)	133 (9.9)	104 (7.7)	79 (5.9)	50 (3.7)

prepared according to the HCPs' knowledge to teach them how to cope with depression, anxiety, and stress during this condition.

Descriptive analysis was conducted to define the sociodemographic characteristics of the HCPs. The prevalence rate of depression, anxiety, and stress caused by COVID-19 was also reported, and chi-square test (χ^2) was used to compare the differences between the groups. Univariate and multivariate logistic regression models were subsequently performed to explore potential predictors for anxiety during the COVID-19 outbreak. Odds ratio (OR) and 95% CI were similarly obtained from the logistic regression models. All the data were analyzed using the Statistical Package for Social Sciences (SPSS) software (version 24.0). P-values less than .05 were considered statistically significant.

3 | RESULTS

3.1 | Sociodemographic characteristics information

The sociodemographic characteristics of the HCPs are shown in Table 1. A total number of 1343 HCPs participated in this study. The statistical tests also revealed that most of the participants aged 20-30 years (37.1%). They were female (75.0%), married (71.8%), and had children (55.6%). These individuals were also holding a Bachelor's degree (57.2%), and they were nurses (42.4%), with working experience of 5 years or lower (36.3%), and permanent employment status (37.0%). These HCPs were working in isolated wards (55.6%), for 6-8 hours with COVID-19 patients (32.5%), and had no physical illnesses (75.6%) along with any major psychiatric disorders based on their self-report (90.2%).

3.2 | Prevalence of anxiety based on CDAS

The CDAS results are presented in Tables 2 and 3. Accordingly, 45.8% and 73.0% of the HCPs respectively had moderate physical and psychological anxiety symptoms. The results also showed that anxiety caused by COVID-19 was significantly correlated with gender, age, level of

education, occupation, working experience, employment status, working hours with COVID-19 patients, and history of physical illnesses ($P < .05$).

3.3 | Prevalence of depression based on DASS

The DASS results are shown in Tables 2 and 4. In this regard, 35.1% of the HCPs had experienced depression during this pandemic. In addition, depression was significantly correlated with age, marital status, having children, working experience, employment status, and history of mental problems ($P < .05$).

3.4 | Prevalence of anxiety based on DASS

The DASS results are illustrated in Tables 2 and 4. In this line, 34.5% of the HCPs showed anxiety that was significantly different in terms of gender, age, level of education, occupation, and history of physical and mental illnesses ($P < .05$).

3.5 | Prevalence of stress based on DASS

The DASS results are provided in Tables 2 and 4. Accordingly, 27.8% of the HCPs lived through stress during this situation. The participants' stress was also significantly different with regard to gender, age, having children, working experience, working in isolated wards, and history of mental problems ($P < .05$).

3.6 | Logistic regression for predictors of anxiety caused by COVID-19

Table 5 shows the predictors of anxiety in relation to COVID-19. The logistic regression model also revealed that anxiety caused by COVID-19 was significantly correlated with age groups of

TABLE 3 CDAS in participants during COVID-19 outbreak in Mazandaran Providence population stratified by sociodemographic variables (N = 1343)

Variables	Physical symptoms of anxiety					Psychological symptoms of anxiety					Total score of CDAS			
	Without to mild (%)	Moderate to severe (%)	Very severe (%)	χ^2	P-value	Without to mild (%)	Moderate to severe (%)	Very severe (%)	χ^2	P-value	Without anxiety (%)	With anxiety (%)	χ^2	P-value
Gender														
Male	161 (12.0)	140 (10.4)	35 (2.6)	23.062	<.001	61 (4.5)	235 (17.5)	40 (3.0)	37.555	<.001	221 (16.5)	115 (8.6)	25.701	<.001
Female	348 (25.9)	475 (35.4)	184 (13.7)			73 (5.4)	745 (55.5)	189 (14.1)			502 (37.4)	505 (37.6)		
Age groups														
20-30	191 (14.2)	219 (16.3)	88 (6.6)	9.381	.311	39 (2.9)	351 (26.1)	108 (8.0)	22.161	.005	246 (18.3)	252 (18.8)	16.104	.003
31-40	166 (12.4)	227 (16.9)	66 (4.9)			49 (3.6)	336 (25.0)	74 (5.5)			244 (18.2)	215 (16.0)		
41-50	110 (8.2)	131 (9.8)	55 (4.1)			33 (2.5)	220 (16.4)	43 (3.2)			169 (12.6)	127 (9.5)		
51-60	39 (2.9)	34 (2.5)	10 (0.7)			12 (0.9)	67 (5.0)	4 (0.3)			59 (4.4)	24 (1.8)		
>60	3 (0.2)	4 (0.3)	0 (0.0)			1 (0.1)	6 (0.4)	0 (0.0)			5 (0.4)	2 (0.1)		
Marital status														
Single	142 (10.6)	153 (11.4)	52 (3.9)	5.916	.206	34 (2.5)	249 (18.5)	64 (4.8)	3.840	.428	186 (13.8)	161 (12.2)	0.407	.816
Married	350 (26.1)	452 (33.7)	162 (12.1)			95 (7.1)	706 (52.6)	163 (12.1)			518 (38.6)	446 (33.2)		
Divorced or widowed	17 (1.3)	10 (0.7)	5 (0.4)			5 (0.4)	25 (1.9)	2 (0.1)			19 (1.4)	13 (1.0)		
Having children														
Yes	266 (19.8)	353 (26.3)	128 (9.5)	3.826	.148	85 (6.3)	545 (40.6)	117 (8.7)	5.216	.074	398 (29.6)	349 (20.6)	0.209	.648
No	243 (18.1)	262 (19.5)	91 (6.8)			49 (3.6)	435 (32.4)	112 (8.3)			325 (24.2)	271 (20.2)		
Level of education														
Undergraduate	61 (4.5)	46 (3.4)	26 (1.9)	20.788	.002	25 (1.9)	85 (6.3)	23 (1.7)	27.027	<.001	74 (5.5)	59 (4.4)	15.652	.001
Bachelor's degree	267 (19.9)	357 (26.6)	144 (10.7)			59 (4.4)	559 (41.6)	150 (11.2)			380 (28.3)	388 (28.9)		
Master's and PhD degree	68 (5.1)	84 (6.3)	20 (1.5)			23 (1.7)	131 (9.8)	18 (1.3)			100 (7.4)	72 (5.4)		
General and special professional doctorate	113 (8.4)	128 (9.5)	29 (2.2)			27 (2.0)	205 (15.3)	38 (2.8)			169 (12.6)	101 (7.5)		

(Continues)

TABLE 3 (Continued)

Variables	Physical symptoms of anxiety					Psychological symptoms of anxiety					Total score of CDAS			
	Without to mild (%)	Moderate to severe (%)	Very severe (%)	χ^2	P-value	Without to mild (%)	Moderate to severe (%)	Very severe (%)	χ^2	P-value	Without anxiety (%)	With anxiety (%)	χ^2	P-value
Occupation														
Clinician	135 (10.1)	146 (10.9)	41 (3.1)	16.063	.013	35 (2.6)	238 (17.7)	49 (3.6)	12.389	.054	196 (14.6)	126 (9.4)	17.059	.001
Nurse	188 (14.0)	275 (20.5)	107 (8.0)			40 (3.0)	424 (31.6)	106 (7.9)			271 (20.2)	299 (22.3)		
Midwife	111 (8.3)	129 (9.6)	39 (2.95)			34 (2.5)	199 (14.8)	46 (3.4)			159 (11.8)	120 (8.9)		
Others	75 (5.6)	65 (4.8)	32 (2.4)			25 (1.9)	119 (8.9)	28 (2.1)			97 (7.2)	75 (5.6)		
Working experience														
0-5	204 (15.2)	210 (15.6)	73 (5.4)	11.387	.328	43 (3.2)	356 (26.5)	88 (6.6)	17.470	.065	266 (19.8)	221 (16.5)	17.784	.007
5-10	90 (6.7)	115 (8.6)	47 (3.5)			21 (1.6)	175 (13.0)	46 (4.2)			119 (8.9)	133 (9.9)		
10-15	86 (6.4)	125 (9.3)	42 (3.1)			30 (2.2)	178 (13.3)	45 (3.4)			133 (9.9)	120 (8.9)		
15-20	53 (3.9)	73 (5.4)	25 (1.9)			16 (1.2)	116 (8.6)	19 (1.4)			87 (6.5)	64 (4.8)		
>20	76 (5.7)	92 (6.8)	32 (2.4)			24 (1.7)	155 (11.5)	21 (1.6)			118 (8.7)	82 (6.1)		
Employment status														
Conscription	79 (5.9)	102 (7.6)	36 (2.7)	21.025	.021	15 (1.1)	156 (11.6)	46 (3.4)	11.487	.321	108 (8.0)	109 (8.1)	11.361	.045
Contractual	84 (35.9)	114 (48.7)	36 (15.4)			27 (2.0)	167 (12.4)	40 (3.0)			128 (9.5)	106 (7.9)		
Corporate	36 (2.7)	50 (3.7)	28 (2.1)			11 (0.8)	78 (5.8)	25 (1.9)			48 (3.6)	66 (4.9)		
Temporary-to-permanent	45 (3.4)	54 (4.0)	18 (1.3)			15 (1.1)	86 (6.4)	16 (1.2)			63 (4.7)	54 (4.0)		
Permanent	181 (13.5)	239 (17.8)	77 (5.7)			47 (3.5)	377 (28.1)	73 (5.4)			277 (20.6)	220 (16.4)		
Other	84 (6.3)	56 (4.2)	24 (1.8)			19 (1.4)	116 (8.6)	29 (2.2)			99 (7.4)	65 (4.8)		
Working in isolated wards														
Yes	211 (15.7)	283 (21.1)	90 (6.7)	2.967	.227	61 (4.5)	416 (31.0)	107 (8.0)	1.632	.442	310 (23.1)	274 (20.4)	0.235	.628
No	298 (22.2)	332 (24.7)	129 (9.6)			73 (5.4)	564 (42.0)	122 (9.1)			413 (30.8)	346 (25.8)		
Working units														
Hospitals	223 (16.6)	293 (21.8)	293 (21.8)	10.46	.401	48 (3.6)	460 (34.3)	111 (8.3)	16.010	.099	322 (24.0)	297 (22.1)	6.525	.258
Outpatient clinics	69 (5.1)	103 (7.7)	103 (7.7)			16 (1.2)	157 (11.7)	30 (2.2)			102 (7.6)	101 (7.5)		
Laboratories	14 (1.0)	15 (1.1)	5 (0.4)			6 (0.4)	24 (1.8)	4 (0.3)			21 (1.6)	13 (1)		
Imaging centers	8 (0.6)	7 (0.5)	1 (0.1)			1 (0.1)	13 (1)	2 (0.1)			9 (0.7)	7 (0.5)		
Other	195 (14.5)	197 (14.6)	79 (5.9)			63 (4.7)	326 (24.3)	82 (6.1)			269 (20.1)	202 (15)		

(Continues)

TABLE 3 (Continued)

Variables	Physical symptoms of anxiety					Psychological symptoms of anxiety					Total score of CDAS			
	Without to mild (%)	Moderate to severe (%)	Very severe (%)	χ^2	P-value	Without to mild (%)	Moderate to severe (%)	Very severe (%)	χ^2	P-value	Without anxiety (%)	With anxiety (%)	χ^2	P-value
Working hours with COVID-19 patients														
0	96 (7.1)	88 (6.6)	26 (1.9)	17.012	.074	33 (2.5)	151 (11.2)	26 (1.9)	36.057	<.001	137 (1.2)	73 (5.4)	23.618	<.001
1-2	82 (6.1)	102 (7.6)	30 (2.2)			23 (1.7)	162 (12.1)	29 (2.2)			120 (8.9)	94 (7.0)		
2-4	43 (3.2)	64 (4.8)	20 (1.5)			7 (0.5)	104 (7.7)	16 (1.2)			70 (5.2)	57 (4.2)		
4-6	78 (5.8)	78 (5.8)	26 (1.9)			22 (1.6)	133 (9.9)	27 (2.0)			107 (8.0)	75 (5.6)		
6-8	143 (10.6)	206 (15.3)	87 (6.5)			27 (2.0)	320 (23.8)	89 (6.6)			205 (15.3)	231 (17.2)		
>8	67 (5.0)	77 (5.7)	30 (2.2)			22 (1.6)	110 (8.2)	42 (3.1)			84 (6.3)	90 (6.7)		
History of physical illnesses														
Yes	105 (7.8)	146 (109)	77 (5.7)	17.803	<.001	29 (2.2)	239 (17.8)	60 (4.5)	0.954	.621	159 (11.8)	169 (12.6)	5.015	.025
No	404 (30.1)	469 (34.9)	142 (10.6)			105 (7.8)	741 (55.2)	169 (12.6)			564 (42.0)	451 (33.6)		
History of psychiatric disorders														
Yes	42 (3.1)	61 (4.5)	29 (2.2)	4.313	.116	115 (1.1)	83 (6.2)	34 (2.5)	8.832	.012	64 (4.8)	68 (5.1)	1.686	.194
No	467 (34.8)	554 (41.3)	190 (14.1)			119 (8.9)	897 (66.8)	195 (14.5)			659 (49.1)	552 (41.1)		

41-50 years (OR = 0.493, 95% CI: 0.249-0.828, *P* = .007), 51-60 years (OR = 0.370, 95% CI: 0.167-0.819, *P* = .014), working experience for 5-10 years (OR = 1.545, 95% CI: 1.076-2.219, *P* = .019), and 20-25 years (OR = 2.176, 95% CI: 1.169-4.048, *P* = .014), male participants (OR = 0.530, 95% CI: 0.401-0.700, *P* < .001), working in hospitals (OR = 0.657, 95% CI: 0.454-0.950, *P* = .026), and working 6-8 hours (OR = 2.019, 95% CI: 1.357-3.003, *P* = .001) and more than 5 hours (OR = 2.098, 95% CI: 1.304-3.375, *P* = .002) with COVID-19 patients.

4 | DISCUSSION

The main purpose of this study was to assess the levels of depression, anxiety, and stress among HCPs in Mazandaran Province, northern Iran. Most of the HCPs reported moderate physical (45.8%) and psychological (73%) symptoms of anxiety according to the CDAS. However, 34.5% of the HCPs showed anxiety based on the DASS. It meant that they had moderate anxiety caused by COVID-19. In a study that conducted on Asian countries revealed Iran was the third country to experience the psychological effects of the COVID-19 pandemic.[30] Another Iranian study revealed COVID-19 had been developed psychological distress among HCPs.[31] In this line, Noorbala et al[32] had demonstrated that about 29.5% of the Iranian population had anxiety. Roy et al[33] had further reported that approximately 72% of the Indian citizens were being worried about themselves and their close family during the COVID-19 pandemic. As well, Moghanibashi-Mansourieh[34] had reported that 50.9% of the Iranian population had shown mild-to-very-severe anxiety in times of the COVID-19 outbreak. A study in Tehran Province, Iran, had additionally revealed that 39.6% of 1038 HCPs had moderate-to-severe anxiety during the COVID-19 pandemic.[20]

In the present study, the level of anxiety was also significantly different in terms of age, gender, level of education, occupation, working experience, working hours with COVID-19 patients, and history of physical illnesses based on the CDAS. Accordingly, 16.5% of the HCPs with working experience less than 5 years showed anxiety symptoms. In addition, being female and younger was associated with higher prevalence rate of anxiety, supporting the results of the survey by Elbay et al.[35] Nevertheless, Elbay et al believed that frontline workers had more anxiety, but in the present study, working in the isolated wards led to no significant discrepancy. In some hospitals in Iran, once the patients were presented with clinical symptoms of COVID-19, they would not be transferred to an isolated ward for COVID-19 until the tests were positive and the disease was verified. This could cause anxiety among HCPs even in nonisolated wards. On the other hand, HCPs with high risk for underlying conditions and anxiety disorder may not be employed in high-risk wards.

Moreover, 35.1% of the participants showed mild-to-very-severe depression that was significantly different in terms of age, marital status, having children, working experience, employment status, and history of psychiatric disorders. These results were consistent with the study conducted in New York, where the researchers reported that 48% of the HCPs had depressive disorder symptoms.[36] Noorbala et al[32] had further found that 10.39% of the Iranian population had been diagnosed with suspected severe depression. Although the present study was conducted in the second months of the COVID-19 outbreak, depression may be higher than now. Liu et al[37] had also reported that HCPs and other individuals, spending time in quarantine because of an infectious disease outbreak, might be at high risk for depression, even over 3 years later. With respect to the upward trend in the number of COVID-19 patients, the HCPs have to face massive workload.[8] One survey had similarly demonstrated that depressive disorder symptoms in medical residents could be significantly associated with the number of working hours per week.[38] However, in the present study, working hours with patients were not significantly correlated with depression. A previous study had further described that the years of being employed in hospitals had been significantly and inversely correlated with symptoms of depression.[39] Approximating to the findings of the present study, HCPs with less than 15 years of working experience had shown more depressive disorder symptoms than those with more than 15 years of experience (26.9% vs 8.7%, respectively). Married HCPs could also feel more depressed compared with other participants. Although marital satisfaction has been conceived as a protective factor in the development of depression,[40] marital status may be an additional psychological pressure and a source of anxiety during this pandemic and even lead to depression in HCPs.

Likewise, the statistical tests revealed no significant relationship between men and women. But, in other studies, female HCPs had more symptoms of depression than males.[18,41] In the present study, the HCPs who were 40 years old and younger showed more depressive disorder symptoms. In line with the study by Huang and Zhao,[18] HCPs who were under 35 years of age had been more likely to develop symptoms of depression than other age groups. In addition, depressive disorder had shown higher prevalence rates among people younger than 45 years old. The average age of the onset of recurrent unipolar major depressive episode could also fall between the ages of 30 and 35 years.[42]

Furthermore, stress was significantly diverse in terms of gender, age, working experience, working in isolated wards, and history of mental illnesses. In this vein, Zhang and Ma[43] had reported that COVID-19 had a mild stressful impact on different populations. Jahrami et al[44] had also reported that 85% of the HCPs had moderate-to-severe stress; however, in the present study, 27.8% of the individuals had stress symptoms. In the Wang et al[45] study, the prevalence of stress was 8.1%. This discrepancy might be due to different healthcare systems and the time of study implementation. Therefore, after a while, the HCPs had learned how to behave during this pandemic. As well, Alipoor et al[46] had observed that the longer the working experience, the lower the stress, which was consistent with the present study. In addition, stress symptoms in the present study were not significantly correlated with occupation. But, in the study by Jahrami,[44] nurses had more stress than others. Shechter et al[36] also believed that nurses had higher rates of positive acute

TABLE 4 Prevalence of depression, anxiety, and stress based on DASS

Variables	Severity of depression							Severity of anxiety		
	Normal (%)	Mild (%)	Moderate (%)	Severe (%)	Very severe (%)	χ^2	P-value	Normal (%)	Mild (%)	Moderate (%)
Gender						7.405	.116			
Male	235 (17.5)	33 (2.5)	41 (3.1)	12 (0.9)	15 (1.1)			259 (19.3)	15 (1.1)	35 (2.6)
Female	637 (47.7)	140 (10.4)	118 (8.8)	47 (3.5)	65 (4.8)			620 (46.2)	81 (6.0)	192 (14.3)
Age groups						41.82	<.001			
20-30	295 (22.0)	62 (4.6)	64 (4.8)	40 (3.0)	37 (2.8)			306 (22.8)	40 (3.0)	84 (6.3)
31-40	302 (22.5)	59 (4.4)	57 (2.2)	14 (1.0)	27 (2.0)			294 (21.9)	36 (2.7)	82 (6.1)
41-50	206 (15.3)	43 (3.2)	28 (2.1)	5 (0.4)	14 (1.0)			208 (15.5)	14 (1.0)	49 (3.6)
51-60	64 (4.8)	9 (0.7)	8 (0.6)	0 (0.0)	2 (0.1)			66 (4.9)	6 (0.4)	10 (0.7)
>60	5 (0.4)	0 (0.0)	2 (0.1)	0 (0.0)	0 (0.0)			5 (0.4)	0 (0.0)	2 (0.1)
Marital status						18.408	.018			
Single	203 (15.1)	42 (3.1)	53 (3.9)	24 (1.8)	25 (1.9)			224 (16.7)	29 (2.2)	52 (3.9)
Married	648 (48.3)	128 (9.5)	100 (7.4)	34 (2.5)	54 (4.0)			632 (47.1)	66 (4.9)	169 (12.6)
Divorced or widowed	21 (1.6)	3 (0.2)	6 (0.4)	1 (0.1)	1 (0.1)			23 (1.7)	1 (0.1)	6 (0.4)
Having children						17.178	.002			
Yes	499 (37.2)	102 (7.6)	85 (6.3)	18 (1.3)	43 (3.2)			491 (36.6)	52 (3.9)	133 (9.9)
No	373 (27.8)	71 (5.3)	74 (5.5)	41 (3.1)	37 (2.8)			388 (28.9)	44 (3.3)	94 (7.0)
Level of education						21.009	.05			
Undergraduate	87 (6.5)	9 (0.7)	22 (1.6)	4 (0.3)	11 (0.8)			92 (6.9)	6 (0.4)	17 (1.3)
Bachelor's degree	491 (36.6)	108 (8.0)	85 (6.3)	41 (3.1)	43 (3.2)			475 (35.4)	65 (4.8)	143 (10.6)
Master's and PhD degree	126 (9.4)	20 (1.5)	12 (0.9)	4 (0.3)	10 (0.7)			120 (8.9)	12 (0.9)	28 (2.1)
General and special professional doctorate	168 (12.5)	36 (2.7)	40 (3.0)	10 (0.7)	16 (1.2)			192 (14.3)	13 (1.0)	39 (2.9)
Occupation						15.529	.214			
Clinician	196 (14.6)	41 (3.1)	46 (3.4)	17 (1.3)	22 (1.6)			226 (16.8)	14 (1.0)	42 (3.1)
Nurse	365 (27.2)	86 (6.4)	57 (4.2)	29 (2.2)	33 (2.5)			350 (26.1)	52 (3.9)	108 (8.0)
Midwife	193 (14.4)	30 (2.2)	32 (2.4)	7 (0.5)	17 (1.3)			183 (13.6)	22 (1.6)	52 (3.9)
Others	118 (8.8)	16 (1.2)	24 (1.8)	6 (0.4)	8 (0.6)			120 (8.9)	8 (0.6)	25 (1.9)
Working experience						33.162	.032			
0-5	300 (22.3)	52 (3.9)	68 (5.1)	32 (2.4)	35 (2.6)			310 (23.1)	44 (3.3)	70 (5.2)
5-10	162 (12.1)	42 (3.1)	23 (1.7)	10 (0.7)	15 (1.1)			166 (12.4)	13 (1.0)	50 (3.7)
10-15	168 (12.5)	30 (2.2)	31 (2.3)	11 (0.8)	13 (1.0)			159 (11.8)	18 (1.3)	49 (3.6)
15-20	100 (7.4)	25 (1.9)	16 (1.2)	5 (0.4)	5 (0.4)			100 (7.4)	11 (0.8)	27 (2.0)
>20	142 (10.5)	24 (1.8)	21 (1.6)	6 (0.5)	12 (0.9)			144 (10.7)	10 (0.7)	31 (2.3)
Employment status						32.409	.039			
Conscription	128 (9.5)	23 (1.7)	34 (2.5)	16 (1.2)	16 (1.2)			133 (9.9)	18 (1.3)	32 (2.4)
Contractual	155 (11.5)	37 (2.8)	22 (1.6)	9 (0.7)	11 (0.8)			163 (12.1)	14 (1.0)	35 (2.6)
Corporate	73 (5.4)	15 (1.1)	15 (1.1)	6 (0.4)	5 (0.4)			65 (4.8)	12 (0.9)	27 (2.0)
Temporary-to-permanent	77 (5.7)	21 (1.6)	9 (0.7)	5 (0.4)	5 (0.4)			78 (5.8)	8 (0.6)	22 (1.6)
Permanent	341 (25.4)	62 (4.6)	51 (3.8)	15 (1.1)	28 (2.1)			331 (24.6)	34 (2.5)	88 (6.6)
Other	98 (7.3)	15 (1.1)	28 (2.1)	8 (0.6)	15 (1.1)			109 (8.1)	10 (0.7)	23 (1.7)

Severe (%)	Very severe (%)	χ^2	P-value	Severity of stress					χ^2	P-value
				Normal (%)	Mild (%)	Moderate (%)	Severe (%)	Very severe (%)		
8 (0.6)	19 (1.4)	28.856	<.001	270 (20.1)	22 (1.6)	19 (1.4)	17 (1.3)	8 (0.6)	13.871	.008
49 (3.6)	65 (4.8)			707 (52.6)	111 (8.3)	85 (6.3)	62 (4.6)	42 (3.1)		
33 (2.5)	35 (2.6)	28.878	.025	326 (24.3)	62 (4.6)	47 (3.5)	37 (2.8)	26 (1.9)	36.943	.002
14 (1.0)	33 (2.5)			335 (24.9)	40 (3.0)	40 (3.0)	29 (2.2)	15 (1.1)		
10 (0.7)	15 (1.1)			237 (17.6)	23 (1.7)	16 (1.2)	12 (0.9)	8 (0.6)		
0 (0.0)	1 (0.1)			73 (5.4)	7 (0.5)	1 (0.1)	1 (0.1)	1 (0.1)		
0 (0.0)	0 (0.0)			6 (0.4)	1 (0.1)	0 (0.0)	0 (0.0)	0 (0.0)		
17 (1.3)	25 (1.9)	4.472	.812	237 (17.6)	40 (3.0)	32 (2.4)	23 (1.7)	15 (1.1)	6.965	.54
39 (2.9)	58 (4.3)			715 (53.2)	89 (6.6)	70 (5.2)	56 (4.2)	34 (2.5)		
1 (0.1)	1 (0.1)			25 (1.9)	4 (0.3)	2 (0.1)	0 (0.0)	1 (0.1)		
24 (1.8)	47 (3.5)	5.135	.274	567 (42.2)	67 (5.5)	51 (3.8)	38 (2.8)	24 (1.8)	8.6	.072
33 (2.5)	37 (2.8)			410 (30.5)	66 (4.9)	53 (3.9)	41 (3.1)	26 (1.9)		
7 (0.5)	11 (0.8)	22.534	.032	103 (7.7)	8 (0.6)	8 (0.6)	10 (0.7)	4 (0.3)	9.896	.625
34 (2.5)	51 (3.8)			548 (40.8)	84 (6.3)	63 (4.7)	44 (3.3)	29 (2.2)		
1 (0.1)	11 (0.8)			134 (10.0)	14 (1.0)	9 (0.7)	7 (0.5)	6 (0.6)		
15 (1.1)	11 (0.8)			192 (14.3)	27 (2.0)	24 (1.8)	18 (1.3)	9 (0.7)		
20 (1.5)	20 (1.5)	23.669	.023	226 (16.8)	32 (2.4)	28 (2.1)	21 (1.6)	15 (1.1)	19.494	.077
22 (1.6)	38 (2.8)			403 (30.0)	68 (5.1)	42 (3.1)	38 (2.8)	19 (1.4)		
10 (0.7)	12 (0.9)			207 (15.4)	26 (1.9)	25 (1.9)	14 (1.0)	7 (0.5)		
5 (0.4)	14 (1.0)			141 (10.5)	7 (0.5)	9 (0.7)	6 (0.4)	9 (0.7)		
31 (2.3)	32 (2.4)	28.198	.105	335 (24.9)	52 (3.9)	44 (3.3)	35 (2.6)	21 (1.6)	36.224	.014
8 (0.6)	15 (1.1)			177 (13.2)	29 (2.2)	20 (1.5)	13 (1.0)	13 (1.0)		
8 (0.6)	19 (1.4)			180 (13.4)	28 (2.1)	21 (1.6)	16 (1.2)	8 (0.6)		
5 (0.4)	8 (0.6)			116 (8.6)	10 (0.7)	14 (1.0)	11 (0.8)	0 (0.0)		
5 (0.3)	10 (0.7)			169 (12.6)	14 (1.0)	5 (0.4)	4 (0.3)	8 (0.5)		
16 (1.2)	18 (1.3)	23.721	.255	145 (10.8)	23 (1.7)	22 (1.6)	15 (1.1)	12 (0.9)	28.784	.092
11 (0.8)	11 (0.8)			172 (12.8)	25 (1.9)	18 (1.3)	12 (0.9)	7 (0.5)		
4 (0.3)	6 (0.4)			79 (5.9)	12 (0.9)	14 (1.0)	5 (0.4)	4 (0.3)		
4 (0.3)	5 (0.4)			89 (6.6)	11 (0.8)	6 (0.4)	10 (0.7)	1 (0.1)		
14 (1.1)	30 (2.2)			385 (28.7)	46 (3.4)	26 (1.9)	23 (1.7)	17 (1.3)		
8 (0.6)	14 (1.0)			107 (8.0)	16 (1.2)	18 (1.3)	14 (1.0)	9 (0.7)		

(Continues)

TABLE 4 (Continued)

Variables	Severity of depression							Severity of anxiety		
	Normal (%)	Mild (%)	Moderate (%)	Severe (%)	Very severe (%)	χ^2	P-value	Normal (%)	Mild (%)	Moderate (%)
Working in isolated wards										
Yes	372 (27.7)	82 (6.1)	71 (5.3)	25 (1.9)	34 (2.5)	1.469	.832	374 (27.8)	42 (3.1)	105 (7.8)
No	500 (37.2)	91 (6.8)	88 (6.6)	34 (2.5)	46 (3.4)			505 (37.6)	54 (4.0)	122 (9.1)
Working units										
Hospitals	397 (29.6)	85 (6.3)	77 (5.7)	25 (1.9)	35 (2.6)	13.517	.854	392 (29.2)	52 (3.9)	109 (8.1)
Outpatient clinics	130 (9.7)	27 (2.0)	23 (1.7)	12 (0.9)	11 (0.8)			140 (10.4)	14 (1.0)	26 (1.9)
Laboratories	24 (1.8)	3 (0.2)	3 (0.2)	0 (0.0)	4 (0.3)			25 (1.9)	1 (0.1)	4 (0.3)
Imaging centers	11 (0.8)	2 (0.1)	2 (0.1)	1 (0.1)	0 (0.0)			12 (0.9)	0 (0.0)	3 (0.2)
Other	310 (23.1)	56 (4.2)	54 (4.1)	21 (1.6)	30 (2.2)			310 (23.1)	29 (2.1)	85 (6.4)
Working hours with COVID-19 patients										
0	142 (10.6)	20 (1.5)	28 (2.1)	9 (0.7)	11 (0.8)	17.061	.649	144 (10.7)	10 (0.7)	37 (2.8)
1-2	137 (10.2)	30 (2.2)	16 (1.2)	12 (0.9)	19 (1.4)			137 (10.2)	13 (1.0)	41 (3.1)
2-4	81 (6.0)	17 (1.3)	15 (1.1)	7 (0.5)	7 (0.5)			92 (6.9)	7 (0.5)	17 (1.3)
4-6	121 (9.0)	22 (1.6)	23 (1.7)	4 (0.3)	12 (0.9)			130 (9.7)	7 (0.5)	28 (2.1)
6-8	275 (20.5)	65 (4.8)	54 (4.0)	21 (1.6)	21 (1.6)			266 (19.8)	43 (3.2)	78 (5.8)
>8	116 (8.6)	19 (1.4)	23 (1.7)	6 (0.4)	10 (0.7)			110 (8.2)	16 (1.2)	26 (1.9)
History of physical illness										
Yes	208 (15.5)	42 (3.1)	48 (3.6)	7 (0.5)	23 (1.7)	8.872	.064	190 (14.1)	24 (1.8)	65 (4.8)
No	664 (49.4)	131 (9.8)	111 (8.3)	52 (3.9)	57 (4.2)			689 (51.3)	72 (5.4)	162 (12.1)
History of psychiatric disorders										
Yes	53 (3.9)	18 (1.3)	29 (2.2)	9 (0.7)	23 (1.7)	60.872	<.001	62 (4.6)	5 (0.4)	31 (2.3)
No	819 (61.0)	155 (11.5)	130 (9.7)	50 (3.7)	57 (4.2)			817 (60.8)	91 (6.8)	196 (14.6)

TABLE 5 Logistic regression for predictors of anxiety

Variables	Univariate			Multivariate		
	OR	95% CI	P-value	OR	95% CI	P-value
Age						
20-30	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
31-40	0.860	0.667-1.109	.245	0.695	0.477-1.013	.058
41-50	0.734	0.549-0.980	.036	0.493	0.249-0.828	.007
51-60	0.397	0.239-0.659	<.001	0.370	0.167-0.819	.014
>60	0.390	0.075-2.032	.264	0.455	0.071-2.908	.405
Marital status						
Single	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Married	0.995	0.778-1.272	.966	1.061	0.796-1.415	.686
Divorced or widowed	0.790	0.379-1.651	.531	0.833	0.383-1.812	.645
Working experience (y)						
0-5	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
5-10	1.345	0.992-1.825	.057	1.545	1.076-2.219	.019
10-15	1.086	0.801-1.473	.596	1.445	0.927-2.254	.104
15-20	0.885	0.612-1.280	.518	1.360	0.789-2.344	.268

Severe (%)	Very severe (%)	χ^2	P-value	Severity of stress					χ^2	P-value
				Normal (%)	Mild (%)	Moderate (%)	Severe (%)	Very severe (%)		
29 (2.2)	34 (2.5)	2.602	.626	410 (30.5)	70 (5.2)	46 (3.4)	41 (3.1)	17 (1.3)	9.575	.048
28 (2.1)	50 (3.7)			567 (42.2)	63 (4.7)	58 (4.3)	38 (2.8)	33 (2.5)		
27 (2.0)	39 (2.9)	15.393	.753	444 (33.1)	71 (5.3)	47 (3.5)	37 (2.8)	20 (1.5)	18.243	.571
9 (0.7)	14 (1.0)			149 (11.1)	16 (1.2)	15 (1.1)	14 (1.0)	9 (0.7)		
0 (0.0)	4 (0.3)			28 (2.1)	1 (0.1)	1 (0.1)	0 (0.0)	4 (0.3)		
0 (0.0)	1 (0.1)			14 (1.0)	1 (0.1)	0 (0.0)	1 (0.1)	0 (0.0)		
21 (1.5)	26 (2.0)			342 (25.5)	44 (3.3)	41 (3.1)	27 (2.0)	17 (1.3)		
8 (0.6)	11 (0.8)	21.146	.389	158 (11.8)	16 (1.2)	19 (1.4)	10 (0.7)	7 (0.5)	9.891	.97
8 (0.6)	15 (1.1)			151 (11.2)	21 (1.6)	18 (1.3)	16 (1.2)	8 (0.6)		
3 (0.2)	8 (0.6)			88 (6.6)	17 (1.3)	10 (0.7)	9 (0.7)	3 (0.2)		
7 (0.5)	10 (0.7)			137 (10.2)	17 (1.3)	11 (0.8)	11 (0.8)	6 (0.4)		
20 (1.5)	29 (2.9)			321 (23.9)	45 (3.4)	29 (2.9)	23 (1.7)	18 (1.3)		
11 (0.8)	11 (0.8)			122 (9.1)	17 (1.3)	17 (1.3)	10 (0.7)	8 (0.6)		
19 (1.4)	30 (2.2)	14.206	.007	231 (17.2)	37 (2.8)	22 (1.6)	19 (1.4)	19 (1.4)	6.754	.149
38 (2.8)	54 (4.0)			746 (55.5)	96 (7.1)	82 (6.1)	60 (4.5)	31 (2.3)		
14 (1.0)	20 (1.5)	46.189	<.001	68 (5.1)	11 (0.8)	20 (1.5)	18 (1.3)	15 (1.1)	57.726	<.001
43 (3.2)	65 (4.8)			909 (67.7)	122 (9.1)	84 (6.3)	61 (4.5)	35 (2.6)		

TABLE 5 (Continued)

Variables	Univariate			Multivariate		
	OR	95% CI	P-value	OR	95% CI	P-value
20-25	1.164	0.780-1.737	.456	2.176	1.169-4.048	.014
25-30	0.486	0.290-0.814	.006	1.119	0.514-2.435	.777
Level of education						
Under graduate	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Bachelor's degree	1.281	0.884-1.854	.190	0.904	0.584-1.400	.652
Master's and PhD degree	0.903	0.572-1.426	.662	0.754	0.457-1.244	.269
General and special professional doctorate	0.750	0.492-1.143	.180	0.782	0.412-1.483	.451
Occupation						
Clinician	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Nurse	1.716	1.300-2.266	<.001	1.253	0.725-2.166	.418
Midwife	1.174	0.847-1.626	.335	0.927	0.530-1.620	.789
Others	1.203	0.826-1.751	.355	0.968	0.583-1.741	.913

TABLE 5 (Continued)

Variables	Univariate			Multivariate		
	OR	95% CI	P-value	OR	95% CI	P-value
Gender						
Male	0.517	0.400-0.669	<.001	0.530	0.401-0.700	<.001
Female	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Working in isolated wards						
Yes	1.055	0.850-1.310	.628	0.942	0.717-1.237	.666
No	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Working hours with COVID-19 patients						
0	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
1-2	1.470	0.994-2.175	.054	1.494	0.980-2.277	.062
2-4	1.528	0.974-2.398	.065	1.544	0.950-2.509	.080
4-6	1.315	0.873-1.198	.190	1.254	0.798-1.970	.326
6-8	2.115	1.504-2.973	<.001	2.019	1.357-3.003	.001
>8	2.011	1.133-3.033	.001	2.098	1.304-3.375	.002
Working units						
Hospital	1.139	0.874-1.485	.335	0.657	0.454-0.950	.026
Outpatient clinics	1.223	0.864-1.723	.257	0.978	0.653-1.466	.916
Laboratory	0.765	0.371-1.577	.468	0.652	0.283-1.504	.316
Imaging centers	0.961	0.350-2.639	.938	0.678	0.231-1.986	.478
Others	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.

stress due to their different responsibilities. They were additionally spending more time delivering direct patient care.[36] As stated by Jahrami et al (2020), long working hours per week, anxiety, and being an only child in family were among the important factors developing stressful conditions among nurses. Accordingly, stress was positively correlated with anxiety, so that the higher the stress load, the higher the anxiety. In spite of a significant difference in terms of anxiety among various occupations, nurses (22.3%), clinicians (9.4%), and midwives (8.9%) included in the present study had no significant differences with regard to stress symptoms.

The finding of the present study showed the side effects of COVID-19 pandemic on mental health HCPs. It is recommended that healthcare managers provide a better work environment, internet psychotherapy, cognitive behavior therapy (CBT), especially internet CBT to protect mental health and prevent spread of COVID-19 disease.[47,48]

The study was limited to a group of individuals having access to the Internet and social media, so it could not be generalized to general population. Also, the structured clinical interview and functional neuroimaging is necessary to definitive psychological diagnosis[49,50] but this study used self-reported questionnaires to assess psychiatric symptoms.

5 | CONCLUSION

Among the participants completing the questionnaire, most of the HCPs had moderate physical and psychological symptoms induced by COVID-19. In addition, about one-third of the cases had mild-to-very-severe depression and stress. Accordingly, healthcare managers must focus more attention on psychological aspects among HCPs during this pandemic and plan to teach them about coping strategies.

CONFLICT OF INTEREST
The authors declared no competing interests in this study.

AUTHOR CONTRIBUTIONS
MK participated in collecting the data, interpreted findings, drafted the manuscript, and revised the manuscript. MM performed the statistical analysis. MA participated in study design, interpreted findings, and revised the manuscript. RG participated in collecting the data. MHR participated in revised the manuscript. FE participated in study design, collecting the data, re-evaluated the data, interpreted the findings, and revised the manuscript. All authors read and approved the final manuscript.

INFORMED CONSENT

This research project was approved by the Ethics Committee of Mazandaran University of Medical Sciences (IR.MAZUMS. REC.1399.7333), Sari, Iran. At the end of the questionnaire, the scores were also given as feedback to the participants. They were additionally assured that these scores were being used merely for screening purposes, but not treatment. Moreover, the HCPs who got high scores could contact the phone number 4030 (designed for free consultations by the Ministry of Health and Medical Education). In addition, the link of the educational files included videos and pamphlets prepared according to the HCPs' knowledge to teach them how to cope with depression, anxiety, and stress during this condition.

REGISTRY AND THE REGISTRATION NO. OF THE STUDY/TRIAL

Not applicable.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request to corresponding author based on reasonable request.

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