Original Article

Health care worker burnout during the COVID-19 pandemic

A cross-sectional survey study in Saudi Arabia

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ABSTRACT

الأهداف: تقدير مدى انتشار الاحتراق الوظيفي لدى العاملين في القطاع الصحي في السعودية خلال جائحة كوفيد– 19، واستكشاف العوامل الفردية وتلك المتعلقة بطبيعة العمل المتعلقة بهذا الاحتراق الوظيفي.

المنهجية: هذه دراسة مسحية مقطعية أقيمت بين شهري يونيو وأغسطس من عام 2020م، قمنا بدعوة العاملين في مجال الرعاية الصحية عبر القنوات الاجتماعية لملء استبيان الكتروني. احتوى الاستبيان عن الخصائص السكانية والعوامل المتعلقة الاحتراق الوظيفي، كما قمنا باستخدام مقياس CBI لمعرفة مدة انتشار الاحتراق الوظيفي بين المشاركين. عدد اجمالي المشاركين كان 646 عامل صحي

النتائج: متوسط عمر المشاركين يساوي 34.1 سنة (الانحراف المعياري: 9.5). واحد وستون بالمئة كانوا إناث. مدى انتشار الاحتراق الوظيفي بين المشاركين يساوي 75%. كانت العوامل المؤثرة على انتشار الاحتراق الوظيفي هي العمر، والمسمى الوظيفي، وسنوات الخبرة، وزيادة ساعات العمل أثناء الوباء، ومتوسط ساعات النوم في اليوم، وكمية التعامل مع المرضى المصابين بكوفيد– 19 وعدد مرات إجراء اختبار كوفيد– 19، والشعور بالضغط للتعامل مع مرضى كوفيد– 19.

الخلاصة: العاملون الصحيون هم الخط الأمامي العامل، وهم يواجهون الكثير من التحديات خلال الجائحة بحكم طبيعة عملهم. يجب أن تبذل الجهود لتعزيز المرونة النفسية للعاملين في مجال الرعاية الصحية أثناء الجوائح. هذه الدراسة توضح مدى حجم الانتشار والعوامل المؤثرة التي يجب التعامل معها.

Objectives: To estimate the prevalence of burnout among health care workers (HCWs) who are working in Saudi Arabia during the Coronavirus disease 2019 (COVID-19) pandemic, and explore individual and work-related factors associated with burnout in this population.

Methods: In this cross-sectional study conducted between June to August of 2020, we invited HCWs through social channels to complete a questionnaire. The questionnaire inquired about demographics, factors related to burnout, and used the Copenhagen Burnout Inventory scale to indicate burnout. A total of 646 HCWs participated.

Results: The mean (SD) age of participants was 34.1 (9.5) years. Sixty-one percent were female. The prevalence of burnout among HCWs was 75%. Significant factors associated with burnout were age, job title, years of experience, increased working hours during the pandemic, average hours of sleep per day, exposure to patients with COVID-19, number of times tested for COVID-19, and perception of being pushed to deal with COVID-19 patients.

Conclusion: Health care workers as frontline workers, face great challenges during this pandemic, because of the nature of their work. Efforts should be made to promote psychological resilience for HCWs during pandemics. This study points out the factors that should be invested in and the factors that may not be influential.

Keywords: health care workers, burnout, pandemic, Coronavirus disease-2019, depression, anxiety

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Approaching the end of 2019, a newly discovered virus in Wuhan, China, was later called severe acute respiratory syndrome coronavirus-2 (SARS CoV-2), severe acute respiratory syndrome coronavirus 2.[1] Early in March 2020, the first case of Coronavirus disease 2019 (COVID-19), caused by SARS CoV-2, was confirmed in Saudi Arabia.[2] As of 13th June 2020, the total number of reported cases in Saudi Arabia was 119,942, with 893 deaths.[2] Coronavirus disease 2019 is an acute fatal disease, which has progressive respiratory complications.[3] Infectious disease outbreaks are known to have psychological impacts on health care workers (HCWs) as well as the general population.[4,5] Coronavirus disease 2019 pandemic was found to be associated with fear of contagion, anxiety, and depression among HCWs, reported by several studies.[6] Health care workers, who deal with patients' needs on a daily basis, have an increased risk of getting infected by the virus, which causes them to worry on transmitting the infection to family members.[7,8] A recent study in China reported increased rates of depression (50.4%), anxiety (44.6%), and insomnia (34%) among HCWs during the COVID-19 pandemic.[9]

By definition, burnout syndrome is a psychological state resulting from prolonged stress and reduced levels of motivation and interest in the job.[8] High levels of job burnout were found among HCWs, especially in the emergency and intensive care unit (ICU) environment.[10] Factors that contribute to a high risk of job burnout include excessive workload, high time pressure, high mortality rate, and lack of time to adequately address patient needs.[8] In Ireland, HCWs suffer from a lack of management and government support, with unrealistic expectations from the public and doubt on the ability of HCWs to make changes exacerbate the problem.[11] A recent cross-sectional study conducted in almost 60 countries, but not Saudi Arabia, to investigate burnout during COVID-19 reported that 51% of HCWs had burnout.[12] This study used only a simple question to ask the presence of burnout, not a validated scale, which we used in our study.

Immediate interventions are important to promote psychological well-being and strengthen the health care system's capacity, since HCWs are on the frontlines and are our main asset protecting and saving our lives during the pandemic.[13] Communicating clearly, decreasing shift hours, providing more areas for rest, and providing fast access to and detailed instructions on the use of protective equipment are some of the necessary interventions.

As Saudi Arabia has not been one of the main countries studied in this regard, we focused to fill the literature gap. We aimed to study the prevalence of burnout among HCWs working in Saudi Arabia during the COVID-19 pandemic using a validated burnout scale, and identify the factors that increase stress and burnout among HCWs, while improving the quality of services.

Methods. This cross-sectional study involved a descriptive and analytical survey of HCWs working in various regions in Saudi Arabia during the COVID-19 pandemic, including doctors, nurses, and allied HCWs. Participants were invited through social media websites, Twitter and WhatsApp groups, and applications to participate in the study by filling in a questionnaire. This study was conducted between June and August 2020. Prior researches within the same area of interest were searched for in scientific engines, related results were discussed in different parts of this study. Participation in the study was optional and anonymous. The study protocol and instrument were revised and approved on the 24th of June, 2020 by the Unit of Biomedical Ethics, Research Committee, College of Medicine, King Abdulaziz University, Saudi Arabia (Reference number: 326-20). This study was conducted following the Helsinki declaration. We calculated the sample size using recent statistics from the Saudi Ministry of Health (MOH) that estimated the total number of HCWs in Saudi Arabia is 402,938.[14] At least 385 participants were needed to achieve a confidence level of 95% with a margin of error of 5% to estimate the prevalence of burnout among HCWs in Saudi Arabia during the COVID-19 pandemic.

All HCWs who filled in the questionnaire and matched our inclusion criteria were included in the sample. The inclusion criteria were: i) HCWs, ii) working in hospitals during the COVID-19 pandemic, and iii) working in Saudi Arabia. No exclusion criteria were applied.

The first page of the questionnaire was designed to obtain informed consent from the participants: if they agreed, the questionnaire would move forward to the next page, otherwise, it would end. Each device was allowed to fill in the questionnaire once only to ensure accuracy of the data. The survey took between 6 to 9 minutes to complete. Out of 999 participants who filled up the survey, 37 participants refused to give consent and 316 failed to complete the questionnaire; the remaining 646 were the focus of this study.

The main outcome was HCWs burnout which was assessed using the work-related burnout part of the Copenhagen Burnout Inventory (CBI). The original inventory contains 3 parts: personal burnout, work-

related burnout, and patient-related burnout. The 3 separate parts of the inventory were designed to be applied in different domains and were found to have very high internal reliability.[15,16] We used the work-related burnout part only, as this was our main concern. The work-related burnout scale taken from the CBI consists of 7 questions, each question answer was given a score ranging from 0.0, 0.25, 0.50, 0.75 to 1.0. If less than 4 questions were answered, the respondent was classified as a non-responder. A final score of 2.99 or lower indicated no job burnout, while a score of 3.00 or higher was interpreted as indicating job burnout. This was the threshold used and validated in previous studies.[8,17] The studies used Cronbach's alpha, content validity, and test-retest reliability method to assess the internal consistency, validity, and reliability of the questionnaire. They concluded, the job burnout scale from the CBI offers adequate validity and reliability to study job burnout among the HCWs.

A set of variables was selected from a literature review for analysis: age, gender, nationality, marital status, social status, number of children, job title, years of experience, region of employment, type of hospital, and comorbidities. Another set of factors associated with burnout included: sleeping hours, usual working hours, increased working hours during the pandemic, type of department, number of COVID-19 patients exposed to, training related to COVID-19, and mental support provided.

Statistical analysis. We used the Statistical Package for Social Sciences for Windows, version 24.0 (IBM Corp, Armonk, NY, USA), to analyze the data. The data were presented as mean (SD) or frequency (%) based on their nature, continuous or categorical variables, receptively. The variables were analyzed using bivariate analysis across the gender of HCWs and presence of burnout. The tests used based on the nature of the data. The CBI scale results were converted into categorical variables assigning participants either no burnout or presence of burnout. The prevalence of burnout was then estimated using binomial "exact" calculation. A *p*-value of ≤0.05 was considered statistically significant in all tests.

Results. The mean (SD) age of participants was 34.1 (9.5) years. Sixty-one percent were female and 53% were Saudis. Half of the participants were married, and minorities were either divorced or widowed. Seventy percent of the population were employed in the Riyadh region, 12.7% in Mecca, 11.6% in the Eastern region, and 6% in other regions. Our sample included 16% interns, 19% resident doctors, 4.3% specialist doctors, 6.7% consultant doctors, and 46% nurses. Thirty-seven percent of HCWs worked in the Ministry of Health (MOH) hospitals, while 40% worked in military hospitals. Almost half of the workers worked in medical departments (48%), while 16% worked in surgical and emergency departments. Participants' working experience, in years, ranged from less than one year to more than 10 years. Sixty percent of participants reported 40 to 49 working hours per week, and almost half of the participants reported increased working hours during the pandemic and that this change was mandatory. More than half of the participants slept for between 6 and 8 hours per day. The majority of the participants (78%) did not have any comorbidities. Only 16% were smokers. Nearly half of the population were tested at least once for coronavirus during the pandemic. Thirty-one percent of the workers felt that they were pushed to deal with COVID-19 positive patients and 36% did not have mental or psychological support from their institution (Table 1).

Using the CBI scale to diagnose burnout and a binomial "exact" calculation to estimate the prevalence of burnout among HCWs working during the COVID-19 pandemic, results show a prevalence of 75% (485 out of the total population of 646) among HCWs, with a $p<0.0001$ and 95% CI of 0.71-0.78 (Table 2).

Table 3 shows the factors associated with the presence of burnout among HCWs. Significant factors were age, job title, years of experience, increased working hours during the pandemic, average hours of sleep per day, exposure to patients with COVID-19, number of times tested for COVID-19, and perception of being pushed to deal with COVID-19 patients.

Discussion. We found that 75% of the participants reported burnout. Forty-six percent of the participants were nurses, and 48% were working in medical departments. Many factors were significantly associated with burnout during the COVID-19 crisis, including increased working hours to ensure the delivery of optimal health care services during the crisis, the perception of being pushed to deal with COVID-19 patients, being tested for COVID-19 multiple times, and age group.

The prevalence of burnout as determined in this article is higher than in a similar study conducted on 60 countries, including Turkey, United States, and Italy, where the prevalence of burnout reported was 51%.[12] Moreover, an article published in July revealed that HCWs were at higher risk of developing physiological distress compared to non-HCWs, rated as mild in

Table 1 - Comparison of participants characteristics by gender in a sample of health care workers in Saudi Arabia.

Characteristics	Total	Gender		*P*-value
		Female n (%)	Male n (%)	
Total population	646	398 (100)	248(100.0)	N/A
Age Mean (SD): 34.1 (9.5)				
22 to 26	156	86 (21.6)	70 (28.2)	0.004
27 to 31	181	99 (24.9)	82 (33.1)	
32 to 39	144	98 (24.6)	46 (18.5)	
40 and above	165	115 (28.9)	50 (20.2)	
Nationality				
Saudi	348	156 (39.2)	192 (77.4)	<0.0001
Non-Saudi	298	242 (60.8)	56 (22.6)	
Administration region of employment				
Riyadh region	450	304 (76.4)	146 (58.9)	<0.0001
Mecca region	82	34 (8.5)	48 (19.4)	
Eastern region	75	46 (11.6)	29 (11.7)	
Other regions	39	14 (3.5)	25 (10.1)	
Marital status				
Single	294	183 (46.0)	111 (44.8)	0.070
Married	337	201 (50.5)	136 (54.8)	
Divorced	12	11 (2.8)	1 (0.4)	
Widowed	3	3 (0.8)	0 (0.0)	
Number of children				
No children	351	208 (52.3)	143 (57.7)	<0.0001
One child	111	81 (20.4)	30 (12.1)	
2 to 3 children	137	92 (23.1)	45 (18.1)	
More than 3 children	47	17 (4.3)	30 (12.1)	
Department you are working in (during Coronavirus disease 2019 [COVID-19])				
Other	54	29 (7.3)	25 (10.1)	0.439
Emergency department	102	66 (16.6)	36 (14.5)	
Intensive care unit	55	30 (7.5)	25 (10.1)	
Infectious department	19	10 (2.5)	9 (3.6)	
Surgical departments	107	64 (16.1)	43 (17.3)	
Medical departments	309	199 (50.0)	110 (44.4)	
How many years have you been working as a healthcare provider?				
Less than one year	146	75 (18.8)	71 (28.6)	<0.0001
1-5 years	146	76 (19.1)	70 (28.2)	
5-10 years	115	82 (20.6)	33 (13.3)	
More than 10 years	239	165 (41.5)	74 (29.8)	
Social status of the family:				
Less than 10,000 Saudi Riyal/month	233	186 (46.7)	47 (19.0)	<0.0001
From 10,001 to 20,000 Saudi Riyal/month	236	138 (34.7)	98 (39.5)	
From 20,001 to 40,000 Saudi Riyal/month	124	56 (14.1)	68 (27.4)	
More than 40,000 Saudi Riyal/month	53	18 (4.5)	35 (14.1)	
What's your usual working hours per week?				
<40 h	116	59 (14.8)	57 (23.0)	<0.0001
40-49 h	391	271 (68.1)	120 (48.4)	
50-59 h	73	34 (8.5)	39 (15.7)	
60-69 h	37	21 (5.3)	16 (6.5)	
70 and more	29	13 (3.3)	16 (6.5)	
Comorbidities/chronic diseases				
Yes	142	104 (26.1)	38 (15.3)	0.001
None	504	294 (73.9)	210 (84.7)	

Table 1 - Comparison of participants characteristics by gender in a sample of health care workers in Saudi Arabia (continuation).

Characteristics	Total	Gender		*P*-value
		Female n (%)	Male n (%)	
Have your working hours increased during the Coronavirus disease 2019 [COVID-19]) pandemic?				
Yes	305	180 (45.2)	125 (50.4)	0.200
No	341	218 (54.8)	123 (49.6)	
Previous experience in working during pandemics? (SARS, H1N1, MERS)				
Yes	241	150 (37.7)	91 (36.7)	0.799
No	405	248 (62.3)	157 (63.3)	
Do you smoke?				
Yes	107	28 (7.0)	79 (31.9)	
I quit	34	11 (2.8)	23 (9.3)	<0.0001
No	505	359 (90.2)	146 (58.9)	
Sleeping hours per day (on average):				
More than 8	43	23 (5.8)	20 (8.1)	
6 to 8	364	218 (54.8)	146 (58.9)	0.342
4 to 6	230	151 (37.9)	79 (31.9)	
Less than 4	9	6 (1.5)	3 (1.2)	
During the past 3 months, how many patients with COVID-19 infection were you exposed to?				
None	124	70 (17.6)	54 (21.8)	
1 to 5	183	128 (32.2)	55 (22.2)	
6 to 10	87	57 (14.3)	30 (12.1)	0.013
11 to 20	72	48 (12.1)	24 (9.7)	
21 to 40	55	27 (6.8)	28 (11.3)	
More than 40	125	68 (17.1)	57 (23.0)	
How many times were you tested for COVID-19?				
None	354	230 (57.8)	124 (50.0)	
1	176	114 (28.6)	62 (25.0)	
2	62	32 (8.0)	30 (12.1)	0.004
3 to 5	48	19 (4.8)	29 (11.7)	
More than 5	6	3 (0.8)	3 (1.2)	
Did you test positive for COVID-19?				
Yes	60	32 (8.0)	28 (11.3)	
No	359	218 (54.8)	141 (56.9)	0.213
Did not test	227	148 (37.2)	79 (31.9)	
Have you had any specific training related to the COVID-19 pandemic?				
Yes	325	177 (44.5)	148 (59.7)	<0.0001
No	321	221 (55.5)	100 (40.3)	
Do you feel you are being pushed to deal with COVID-19 patients?				
Yes	205	123 (30.9)	82 (33.1)	
No	313	193 (48.5)	120 (48.4)	0.759
Not sure	128	82 (20.6)	46 (18.5)	
Has your institution made psychological or mental health support available to you?				
Yes	280	197 (49.5)	83 (33.5)	
No	235	123 (30.9)	112 (45.2)	<0.0001
I don't know	131	78 (19.6)	53 (21.4)	

Table 2 - Prevalence of burnout among health care workers working during the COVID-19 pandemic.

Prevalences	N	%	P-value	95% CI
No work burnout	161	24.9	<0.0001	0.71 - 0.78
Work burnout present	485	75.1		
Total	**646**	**100.0**		

Table 3 - Prevalence of burnout, defined by Copenhagen Burnout Inventory (CBI), by multiple factors among health care workers working during the COVID-19 pandemic.

Characteristics	CBI scale		*P*-value
	No work burnout	Work burnout present	
	n (%)	n (%)	
Gender			
Female	96 (24.1)	302 (75.9)	0.551
Male	65 (26.2)	183 (73.8)	
Age			
22 to 26	43 (27.6)	113 (72.4)	<0.0001
27 to 31	28 (15.5)	153 (84.5)	
32 to 39	30 (20.8)	114 (79.2)	
40 and above	60 (36.4)	105 (63.6)	
Nationality			
Saudi	80 (23.0)	268 (77.0)	0.219
Non-Saudi	81 (27.2)	217 (72.8)	
Administration region of employment			
Riyadh region	113 (25.1)	337 (74.9)	0.771
Mecca Region	17 (20.7)	65 (79.3)	
Eastern Region	20 (26.7)	55 (73.3)	
Other Regions	11 (28.2)	28 (71.8)	
Marital status			
Single	69 (23.5)	225 (76.5)	0.097
Married	92 (27.3)	245 (72.7)	
Divorced	0 (0.0)	12 (100)	
Widowed	0 (0.0)	3 (100)	
Number of children			
No children	81 (23.1)	270 (76.9)	0.554
One child	29 (26.1)	82 (73.9)	
2 to 3 children	36 (26.3)	101 (73.7)	
More than 3 children	15 (31.9)	32 (68.1)	
Social status of the family			
Less than 10,000 Saudi Riyal/month	59 (25.3)	174 (74.7)	0.548
From 10,001 to 20,000 Saudi Riyal/month	52 (22.0)	184 (78.0)	
From 20,001 to 40,000 Saudi Riyal/month	35 (28.2)	89 (71.8)	
More than 40,000 Saudi Riyal/month	15 (28.3)	38 (71.7)	
Do you smoke?			
Yes	22 (20.6)	85 (79.4)	0.158
I quit	5 (14.7)	29 (85.3)	
No	134 (26.5)	371 (73.5)	
Job title			
Others	2 (33.3)	4 (66.7)	0.001
Intern	36 (35.0)	67 (65.0)	
Resident doctor	18 (14.6)	105 (85.4)	
Specialist doctor	9 (32.1)	19 (67.9)	
Consultant doctor	19 (44.2)	24 (55.8)	
Nurse	70 (23.3)	231 (76.7)	
Paramedic	2 (11.1)	16 (88.9)	
Allied health care worker	2 (14.3)	12 (85.7)	
Pharmacist	3 (30.0)	7 (70.0)	
Other	15 (27.8)	39 (72.2)	
Emergency department	19 (18.6)	83 (81.4)	0.458
Intensive care unit	13 (23.6)	42 (76.4)	
Infectious	6 (31.6)	13 (68.4)	
Surgical	23 (21.5)	84 (78.5)	
Medical	85 (27.5)	224 (72.5)	
Less than one year	44 (30.1)	102 (69.9)	0.002
1-5 years	20 (13.7)	126 (86.3)	
5-10 years	27 (23.5)	88 (76.5)	
More than 10 years	70 (29.3)	169 (70.7)	

Table 3 - Prevalence of burnout, defined by Copenhagen Burnout Inventory (CBI), by multiple factors among health care workers working during the COVID-19 pandemic (continuation).

Characteristics	CBI scale		*P*-value
	No work burnout n (%)	Work burnout present n (%)	
Comorbidities/chronic diseases:			
Yes	33 (23.2)	109 (76.8)	0.600
None	128 (25.4)	376 (74.6)	
Have your working hours increased during the COVID-19 pandemic?			
Yes	45 (14.8)	260 (85.2)	<0.0001
No	116 (34.0)	225 (66.0)	
Previous experience in working during pandemics? (SARS, H1N1, MERS)			
Yes	57 (23.7)	184 (76.3)	0.565
No	104 (25.7)	301 (74.3)	
Sleeping hours per day (on average)			
More than 8	15 (34.9)	28 (65.1)	
6 to 8	103 (28.3)	261 (71.7)	0.007
4 to 6	43 (18.7)	187 (81.3)	
Less than 4	0 (0.0)	9 (100)	
During the past 3 months, how many people with COVID-19 infection were you exposed to?			
None	52 (41.9)	72 (58.1)	
1 to 5	56 (30.6)	127 (69.4)	
6 to 10	13 (14.9)	74 (85.1)	<0.0001
11 to 20	13 (18.1)	59 (81.9)	
21 to 40	13 (23.6)	42 (76.4)	
More than 40	14 (11.2)	111 (88.8)	
How many times were you tested for COVID-19?			
None	104 (29.4)	250 (70.6)	
1	42 (23.9)	134 (76.1)	
2	8 (12.9)	54 (87.1)	0.010
3 to 5	7 (14.6)	41 (85.4)	
More than 5	0 (0.0)	6 (100)	
Did you test positive for COVID-19?			
Yes	10 (16.7)	50 (83.3)	
No	86 (24.0)	273 (76.0)	0.133
Did not test	65 (28.6)	162 (71.4)	
Have you had any specific training related to the COVID-19 pandemic?			
Yes	84 (25.8)	241 (74.2)	0.585
No	77 (24.0)	244 (76.0)	
Do you feel you are being pushed to deal with COVID-19 patients?			
Yes	20 (9.8)	185 (90.2)	
No	113 (36.1)	200 (63.9)	<0.0001
Not sure	28 (21.9)	100 (78.1)	
Has your institution made psychological or mental health support available to you?			
Yes	79 (28.2)	201 (71.8)	
No	50 (21.3)	185 (78.7)	0.191
I don't know	32 (24.4)	99 (75.6)	

SARS: Severe acute respiratory syndrome, H1N1: swine flu, MERS: Middle East respiratory syndrome

33.7% and severe in 39.9% of the HCWs in Saudi Arabia during the COVID-19 pandemic. A positive correlation between physiological distress and burnout has been documented.[18,19]

A main reason why our estimated prevalence is higher than in other studies is because we used a validated scale to diagnose burnout, rather than a direct question asking participants whether they think they have work burnout, which was used in most studies previously mentioned. Participants could easily believe that they do not have work burnout and answer this question with a "no," but if proper questions composing a scale are asked, they might turn out to have work burnout. Also, nearly half of the respondents in our study were nurses, which might be the reason for the high prevalence of burnout, as the vast majority of health care professionals in hospitals are nurses.[20] Furthermore, multiple studies have demonstrated that nurses have higher rates of stress-related burnout than other HCWs due to the nature of their work and the lack of social support.[21,22] Additionally, almost half of the participants in this study worked in medical departments, which might have led to the high rate of burnout. A previous article revealed that physicians working in the internal medicine departments are at higher risk of developing work-related burnout than other professionals.[23]

In this study, 47% of the participants experienced increased working hours during the COVID-19 pandemic, which was significantly associated with the reported rates of burnout. Similar results were found in previous articles.[24,25] Other studies demonstrated that long working hours were associated with the impaired well-being of HCWs, increasing the risks of developing stress, anxiety, depression, and poor sleep quality, and taking up smoking.[26,27]

This study found that the burnout rate was significantly higher in the age group 27 to 31 and was lowest in the age group 40 and older. This finding is supported by many studies which found that younger HCWs are at higher risk of developing mental stress.[28] One of the theories behind this is that younger age groups are more exposed to social media, which shares huge amounts of information regarding the crisis, and are also more affected by the restrictions on outdoor activities during the lockdown, as they are more involved in such activities than older people.[29] Another theory supported by an article on the knowledge of and attitudes toward COVID-19 is that older people have the ability to manage their stress as they are more knowledgeable regarding this pandemic than younger people.[30]

Study limitations. The data in this study were collected using an online questionnaire, distributed through social media websites and applications. This could have limited the study, lowered the probability of the survey being completed and raised challenges of delivering the survey to all possible participants. However, using an online questionnaire was the preferred method to collect the data in light of the need for social distancing during the COVID-19 crisis. In addition, the sample size of 646 participants was sufficient to estimate the prevalence of burnout among HCWs, but not to conduct within-group analysis of other co-variates. More research is required using official ways of distributing questionnaires asking on burnout and its association with other variables. This is to ensure a large sample size and accurate data. Furthermore, future research should focus to find factors related to HCWs burnout, sub-analyze groups and determine significant association between factors and burnout. This will direct efforts to areas of interest.

This study suggests where efforts should be focused to promote psychological resilience for HCWs during pandemics. The study points out the factors that should be invested in and those that may not be influential. Factors such as age, social status, and state of health showed an effect on the prevalence of burnout among HCWs. Other factors such as nationality and receiving specific training did not show any effect. By understanding the elements that lead to HCW burnout during pandemics, we can better prepare and act. This study shows that there are many integrating factors that play roles in this process, all of which need to be addressed to develop a psychologically healthy environment that promotes HCW performance during pandemics.

In conclusion, during disasters, humans face many challenges that create a significant amount of stress. The COVID-19 pandemic has been a tough experience for people all over the world; no similar event has happened in recent decades. Health care workers, as frontline workers, faced more challenges during this pandemic because of the nature of their work. It is obvious from this study that the workload of HCWs has increased during the pandemic. Psychological well-being is crucial for them to keep performing in their work, especially during disasters when the demands on them are higher. This study showed that burnout and stress are major issues for HCWs, and that many factors affected the incidence of burnout in HCWs during the pandemic. These factors should be addressed by stakeholders to mitigate their effect on HCWs when preparing for or dealing with such pandemics.

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