


Health-care provider burnout in Syria during COVID-19 pandemic's Omicron wave

Sarya Swed, MBBCh^{a,*} , Haidara Bohsas, MBBCh^a, Hidar Alibrahim, MBBCh^a, Wael Hafez, MD^{b,c}, Shiekh Shoib, MD^{d,e}, Bisher Sawaf, MD^f, Mohammed Amir Rais, MD^g, Ahmed Aljabali, MBBCh^h, Nour Shaheen, MBBChⁱ, Mohamed Elsayed, MD^{j,k}, Amine Rakab, PhD^l

Abstract

Health-care workers (HCWs) have dealt with various psychological problems during the COVID-19 epidemic, including sadness, mental discomfort, anxiety, and poor sleep. Burnout is a state of prolonged work-related psychological, emotional, and physical stress brought on by emotional weariness, depersonalization, and decreased professional success. This study aimed to determine how many HCWs burned out during the Omicron wave of the COVID-19 pandemic and determine what factors put them at risk for this psychological effect. This cross-sectional research was performed in Syria during the current Omicron wave of the COVID-19 pandemic to evaluate the burnout experienced by Syrian physicians who treat COVID-19 patients. The inclusion criteria were all Syrian HCWs who treated COVID-19 patients during the current Omicron wave of COVID-19. The data was collected between April 3 and March 20, 2022. We investigated whether the questionnaire used was valid and understandable to the participants. A total of 729 health-care providers were inquired in our study; however, 30 participants were disqualified because their answers were not fully completed. The overall age of the participants was 31 ± 9 , and the ratio of males to females was almost equal. The majority (47.5%) of the sample study's participants are residents, and 72.8% who cared for COVID-19 patients. The prevalence of high levels of burnout in the sample study was 41.6%. Compared to men (22.3%), women were much more likely (27.9%) to report experiencing a high degree of emotional exhaustion; also, the participants who cared for COVID-19 patients were much more likely (30.1%) to report experiencing a high degree of emotional exhaustion compared to others, which individuals who cared for COVID-19 patients were 1.76 times more likely than participants who did not care for COVID-19 patients to experience severe burnout (odds ratio: 1.766, 95% confidence interval: 1.2–2.4, P value < .001). Our research found severe burnout among Syrian health-care providers during the omicron wave of COVID-19, with clinicians caring for COVID-19 patients being considerably more likely to express high burnout than others.

Abbreviations: CI = confidence interval, HCWs = health-care workers, MBI = Maslach Burnout Inventory, OR = odds ratio, WHO = World Health Organization.

Keywords: burnout, COVID-19, health care provider, Omicron wave, Syria

1. Introduction

The World Health Organization (WHO) reported that COVID-19 was initially identified on December 19, 2019, in Wuhan, China, and has subsequently spread globally.^[1] According to the WHO, there are 6,305,358 deaths and 532,201,219 verified cases of the illness.^[2] However, because of its intensity and rapid spread, this pandemic has caused many mental health issues in individuals all around the globe, including anxiety, depression, and other forms of psychological anguish.^[3] The first COVID-19 case was identified in Syria on March 22, 2020, and according to the WHO, there are currently around 55,901 verified cases

with 3150 fatalities.^[4] Furthermore, since health-care workers (HCWs) are the initial point of contact with COVID-19 patients, they have a very high incidence of transmitting the virus to them, which might negatively impact the clinical results of HCWs and the healthcare system.^[5] On April 9, 2020, the CDC reported 9282 confirmed cases of COVID-19 among HCWs in the US.^[6] Numerous risk factors for HCWs have been found through observational research. They handle COVID-19 patients who lack or have insufficient personal protective equipment, have been exposed to sick patients, have a work overload, have poor infection management, and have previous medical conditions.^[7] Public hospitals in Syria were integral to the country's healthcare

The authors have no funding and conflicts of interest to disclose.

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

^a Faculty of Medicine Aleppo University, Aleppo, Syria, ^b NMC Royal Hospital, Khalifa City, Abu Dhabi, UAE, ^c Medical Research Division, Department of Internal Medicine, The National Research Centre, Cairo, Egypt, ^d JLNH Hospital, Rainawari, Srinagar, India, ^e Directorate of Health Services, J&K, India, ^f Department of Internal Medicine, Hamad Medical Corporation, Doha, Qatar, ^g Faculty of Medicine of Algiers, University of Algiers, Algeria, ^h Faculty of Medicine, Jordan University of Science and Technology, Irbid, Jordan, ⁱ Alexandria University, Alexandria Faculty of Medicine, Alexandria, Egypt, ^j Department of Psychiatry and Psychotherapy III, University of Ulm, Leimgrubenweg, Ulm, Germany, ^k Department of Psychiatry, School of Medicine and Health Sciences, Carl von Ossietzky University Oldenburg, Oldenburg, Germany, ^l Assistant Professor of Clinical Medicine, Weill Cornell Medical College, Qatar.

* Correspondence: Sarya Swed, Faculty of Medicine Aleppo University, Aleppo 22743, Syria (e-mail: saryaswed1@gmail.com).

Copyright © 2022 the Author(s). Published by Wolters Kluwer Health, Inc. This is an open-access article distributed under the terms of the Creative Commons Attribution-Non Commercial License 4.0 (CCBY-NC), where it is permissible to download, share, remix, transform, and buildup the work provided it is properly cited. The work cannot be used commercially without permission from the journal.

How to cite this article: Swed S, Bohsas H, Alibrahim H, Hafez W, Shoib S, Sawaf B, Rais MA, Aljabali A, Shaheen N, Elsayed M, Rakab A. Health-care provider burnout in Syria during COVID-19 pandemic's Omicron wave. *Medicine* 2022;101:50(e32308).

Received: 29 October 2022 / Received in final form: 19 November 2022 / Accepted: 28 November 2022

<http://dx.doi.org/10.1097/MD.00000000000032308>

system before the conflict, providing patients with access to low-cost or free treatment for long-term illnesses. There are hospitals within the authority of the Ministries of Health, Education, and Defense. However, public hospitals began to decline throughout the war due to destruction, emigration of HCWs, bad working conditions, and significant financial constraints.^[8] HCWs have experienced various psychological issues throughout this pandemic, including depression, mental distress, anxiety, and poor sleep quality. Moreover, during the COVID-19 pandemic, increased levels of obsessive-compulsive disorder symptoms were seen among HCWs.^[9,10] Maslach et al were the first to identify burnout as a condition of psychological, emotional, and physical stress caused by extended exposure to occupational stress, caused by emotional exhaustion, depersonalization, and decreased professional achievement.^[11] Burnout among health-care providers is characterized by emotional weariness, dissatisfaction with one's profession, ineffectiveness, and a propensity to see sick people, trainees, and collaborators as objects rather than as individuals. Its consequences affect health-care providers' health and extend safety and the right to adequate care to their patients.^[12] Since long before the COVID-19 epidemic, burnout has been a significant issue for HCWs. The present emergency has introduced additional social and occupational elements that raise the risk of burnout and have a corresponding impact on the standard of treatment and system effectiveness. As the COVID-19 pandemic spreads, more and more HCWs are exposed to potentially fatal conditions, pathogens, shift overload, and other significant alterations. In addition, the increased surveillance and control decreased the independence of HCWs and their time with patients. During the pandemic, there was a daily rise in the number of COVID-19 cases and a corresponding increase in death rates among patients, medical professionals, and nursing personnel. Overcrowding in public hospitals was a problem, and there was a lack of essential medical equipment.^[13] However, several studies have shown an increase in HCWs burnout during the COVID-19 pandemic due to increased workload, fear of exposure or transmission, anxiety, stress, and depression.^[14,15] Despite the negative impact on the mental health of HCWs, burnout also impacts the quality of healthcare services get from HCWs, as well as the patients' safety and willingness to accept treatment. Several studies have shown an association between HCWs burnout and moderate to severe deterioration in patient care quality. However, more medical mistakes have been associated with HCWs burnout, which may threaten patient safety.^[16,17] The purpose of this research was to determine the extent of burnout among healthcare professionals during the COVID-19 pandemic's Omicron wave and to identify risk variables for this psychological aftereffect.

2. Methods

2.1. Study design

This cross-sectional research was performed in Syria during the current Omicron wave of the COVID-19 pandemic to evaluate the burnout experienced by Syrian physicians who treat COVID-19 patients.

2.1.1. Target population. The inclusion criteria were all HCWs (i.e., doctors, residents, interns, and nurses) who treated COVID-19 patients during the epidemic.

2.1.2. Study environment. All participants have agreed to participate in this online survey performed between April 3 and March 20, 2022. The completing of online questionnaire took between 4 and 10 minutes to finish, and all participants were informed of the study's aims, including the identity of the research group, their ability to withdraw from the study, privacy, and data protection, as well as the fact that only completely registered data would be analysed. However, 12 collaborators were responsible

for data collection, and all data collected were under privacy protection. The data was examined by independent researchers who neither participated in the data-gathering procedure nor had access to personally-identifying information. We used the strategies of convenience and snowball to acquire data from respondents. For security concerns, a Google form questionnaire was constructed and emailed to the responders through social media, such as Facebook, WhatsApp, and Telegram. Sharing the survey link was also an option for participants.

2.1.3. Study tool. The questionnaire was developed from earlier research^[18,19] and revised for Syrian natives. The questionnaire was then translated into Arabic so the individual could comprehend it.

2.1.4. Sample size and sampling method The sample size was computed using the website <https://www.calculator.net/sample-size-calculator.html>. The sample size was estimated using a population proportion of 50%, a confidence level of 95%, and a margin of error of 5%. On the Google form website, a sample of 1728 persons was requested to answer this survey; however, 6 participants declined to participate, and the final sample size was 1722.

2.2. Measures

The questionnaire has 30 questions that are divided into 2 sections. On the first page, there is a question about whether or not you agree to participate in a study.

2.2.1. Sociodemographic variables and work-related characteristics. This portion consists of 10 questions about age, sex, marital status, number of children, job title, place of employment, and years of experience. Additionally, it was asked in this area how many shifts the participant worked each month and how long they spent each shift treating COVID-19 patients.

2.2.2. Burnout during the Omicron wave of the COVID-19 pandemic. A 5-point Likert scale is used to rate each of the 19 questions in this section, which evaluate burnout during the COVID-19 pandemic's Omicron wave. This instrument has been used in several research conducted in various regions of the globe, and the Persian translation has also previously been verified. 2018; Molemi et al the Maslach Burnout Inventory (MBI) for Human Services Survey, a widely used and validated self-report questionnaire for assessing the occupational burnout level, served as the foundation for this section. (1981, Maslach and Jackson) To make the research relevant to burnout during the Omicron wave of the COVID-19 pandemic, the word "due to COVID-19" was added to each question.

In this section, we have 3 subscales, each scored by adding the results from the questions that fall under that scale; items measuring personal success are scored backwards.^[20,21] Seven questions make up the subscale for emotional weariness, which has a potential score range of 0 to 36; 5 questions make up the subscale for depersonalization, which has a possible score range of 0 to 20; and 7 questions make up the subscale for personal achievement, which has a possible score range of 0 to 32. The conventional cutoff values were used to differentiate between low, moderate, and high levels in each measurement.^[20,21] A score of average or high on the emotional fatigue or depersonalization axis, which is thought to be the cause of burnout, was also used to define "severe burnout".^[22] We have paid for the original authors to use their tool for burnout assessment, the MBI.

2.3. Pilot study

In order to prove the questionnaire's validity and clarity, we gave it to 50 members of the general public who were chosen randomly. In response, we modified the study. Our next step

was to run a pilot test with 50 people to determine the survey's validity. After conducting a pilot study and ensuring high levels of internal consistency (Cronbach α ranged from 0.712–0.861), we disseminated the questionnaire.

2.4. Ethical consideration

The ethical approval was granted by the Syrian Ethical Society for Scientific Research.

In addition, Aleppo University granted ethical clearance. Participants were provided with a URL to access the online survey on Google, and on the first page of the survey, they were asked whether they agreed to complete the questionnaire. Before participants fill out the questionnaire, they are sent to the next page, which offers extensive research material. Complete the questionnaire within 5 to 12 minutes. Each answer was stored in a secure online database.

2.5. Statistical analysis

We used SPSS version 28 of the Statistical Package for Social Sciences to perform the statistical analysis. While categorical baseline data employed frequencies and percentages for baseline variables that were categorical, continuous variables were presented as means and standard deviations. The multiple logistic regression test was used to ascertain the anticipated relationship between the high level of burnout and the risk variables. The degree of burnout was compared to other demographic data using the chi-square test. We displayed odds ratios (ORs) together with the corresponding 95% confidence intervals (CIs). A P value of $<.05$ indicated a statistically significant outcome.

3. Results

A total of 729 HCWs completed the online survey, of whom 359 (49.2%) were female. Nearly half of the participants, 377 (51.7%), were single. The overall work experience of the participants was 7.51 ± 7.79 years. The baseline characteristics of the participants and their MBI scores are shown in Table 1. Among respondents (531, 72.8%), most admitted that they had cared for patients with COVID-19 (Table 1). In addition, their total score of burnout was 44.61 ± 17.47 , and they had scores of 18.41 ± 9.67 , 6.58 ± 5.85 , and 19.62 ± 9.54 for emotional exhaustion, personal accomplishment, and depersonalization. Among study participants who cared for COVID-19 patients, 231 (43.5%) had low levels, 140 (26.4%) had moderate levels, and 160 (30.1%) had high levels of emotional exhaustion. According to the depersonalization subscale, 274 (51.6%), 108 (20.3%), and 149 (28.1%) people scored low, moderate, or high, respectively (Table 2). As for the subscale measuring personal accomplishment, 116 (21.8%), 77 (14.5%), and 338 (63.7%) respondents scored low, moderate, and high, respectively. Emotional exhaustion and personal accomplishment scales were significantly correlated with the job category, and with resident participants experiencing higher levels of burnout ($P < .05$). In addition, depersonalization and personal accomplishment subscales were significantly associated with marital status, with single participants experiencing higher levels of burnout ($P < .05$). Significant associations existed between gender, having children, job category, and emotional exhaustion ($P < .05$). Also, marital status had a significant association ($P < .05$) with the depersonalization scale, with females scoring the highest. Among the participants in the study, 44.3% (323 out of 729) reported high burnout levels. Those practising for <5 years and participants <36 years old were significantly more likely to experience burnout ($P < .05$). There was a significant difference between females and males (149 [43.1] vs 154 [42.9] [$P < .05$]). Burnout rates among specialists were significantly lower than

those in other professions. In contrast, the highest levels were associated with having children and caring for COVID-19 patients ($P < .05$) (Table 3). Burnout was associated with caring for COVID-19 patients (OR 1.766, 95% CI: 1.258–2.479). Other variables such as job (nurses, residents, specialists), job (nurses, residents, specialists), age, gender, marital status, having children, job category, years in practice, and average daily workload were not associated with this outcome (Table 4).

4. Discussion

This cross-sectional study demonstrated high burnout levels among Syrian HCWs. The prevalence of high levels of burnout in the sample study was 41.6%, and the individuals who care for COVID-19 patients and have children were more likely than participants who did not care for COVID-19 patients to experience severe burnout treatment. Also, emotional exhaustion among female HCWs is relatively high and worries 179, almost half (49.9%) compared to 166 (48%) men. The only significant risk factor for the prediction of high degrees of burnout that we found was caring for COVID-19 patients. Individuals who cared for COVID-19 patients used to have a 1.76-fold higher likelihood of developing severe burnout than participants who did not care for COVID-19 patients (OR: 1.766, 95% CI: 1.2–2.4, P value < 0.001). According to an Indian cross-section study of 2026 Indian HCWs, the prevalence of personal burnout was 44.6%, comparable to our result. Additionally, work-related burnout was considerably more prevalent among women, which was also in agreement with our findings.^[23] Females have shown greater degrees of burnout than males, which may be explained by the fact that the workplace, coworkers, and managers may be more likely to trigger burnout in women than in men. In addition, women may experience more emotional exhaustion than men since emotional exhaustion has become associated with burnout.^[24] However, research carried out in

Table 1
Baseline characteristics of participants (n = 729).

Variable	Value
Age in yr, mean \pm SD	31.06 \pm 9.07
Gender, n (%)	
Female	359 (49.2)
Male	346 (47.5)
Prefer not to say	24 (3.3)
Marital status, n (%)	
Engaged/in a relationship	102 (14)
Married	227 (31.1)
Separated/divorced	19 (2.6)
Single	377 (51.7)
Widowed	4 (0.5)
Having children, n (%)	
Yes	214 (29.4)
No	515 (70.6)
Job category, n (%)	
Nurse	217 (29.8)
Resident	346 (47.5)
Specialist	166 (22.8)
Years in practice, mean \pm SD	7.51 \pm 7.79
Average daily workload, mean \pm SD	5.28 \pm 4.08
Cared for COVID-19 patients, n (%)	
Yes	531 (72.8)
No	198 (27.2)
Maslach Burnout Inventory score, mean \pm SD	
Total score	44.61 \pm 17.47
Emotional exhaustion subscale score	18.41 \pm 9.67
Depersonalization subscale score	6.58 \pm 5.85
Personal accomplishment subscale score	19.62 \pm 9.54

COVID-19 = corona virus disease 2019, n = number, SD = standard deviation.

Table 2

Participant's level of burnout in each dimension by sociodemographic characteristics and job category, number (%).

Variable	Emotional exhaustion				Depersonalization				Personal accomplishment			
	Low	Moderate	High	P	Low	Moderate	High	P	Low	Moderate	High	P
Age												
≤36 yr	293 (49.4)	144 (24.3)	156 (26.3)	.799	309 (52.1)	121 (20.4)	163 (27.5)	.544	119 (20.1)	91 (15.3)	383 (64.6)	.336
>36 yr	70 (51.5)	34 (25)	32 (23.5)		70 (51.5)	33 (24.3)	33 (24.3)		25 (18.4)	15 (11)	96 (70.6)	
Gender												
Female	180 (50.1)	79 (22)	100 (27.9)	.002	190 (52.9)	75 (20.9)	94 (26.2)	.072	73 (20.3)	48 (13.4)	238 (66.3)	.265
Male	180 (52)	89 (25.7)	77 (22.3)		183 (52.9)	73 (21.1)	70 (26)		70 (20.2)	55 (15.9)	221 (63.9)	
Marital status												
Married	130 (57.3)	52 (22.9)	45 (19.8)	.164	131 (57.7)	43 (18.9)	53 (23.3)	.042	52 (22.9)	27 (11.9)	148 (65.2)	.01
Single	173 (45.9)	97 (25.7)	107 (28.4)		194 (51.5)	79 (21)	104 (27.6)		78 (20.7)	66 (17.5)	233 (61.8)	
Engaged/in a relationship	47 (46.1)	23 (22.5)	32 (31.4)		48 (47.1)	23 (22.5)	30 (30.4)		13 (12.7)	13 (12.7)	76 (74.5)	
Separated/divorced	10 (52.6)	5 (26.3)	4 (21.1)		3 (15.8)	8 (42.1)	8 (42.1)		0 (0)	0 (0)	19 (100)	
Widowed	3 (75)	1 (25)	0 (0)		3 (75)	1 (25)	0 (0)		1 (25)	0 (0)	3 (75)	
Having children												
Yes	122 (57)	52 (24.3)	40 (18.7)	.011	121 (56.5)	43 (20.1)	50 (23.4)	.252	47 (22)	26 (12.1)	141 (65.9)	.379
No	241 (46.8)	126 (24.5)	148 (28.7)		258 (50.1)	111 (21.6)	146 (28.3)		97 (18.8)	80 (15.5)	338 (65.6)	
Job category												
Nurse	107 (49.3)	58 (26.7)	52 (24)	.055	120 (55.3)	43 (19.8)	54 (24.9)	.811	61 (28.1)	25 (11.5)	131 (60.4)	<.001
Resident	158 (45.7)	87 (25.1)	101 (29.2)		176 (50.9)	73 (21.1)	97 (28)		57 (16.5)	63 (18.2)	226 (65.3)	
Specialist	98 (59)	33 (19.9)	35 (21.1)		83 (50)	38 (22.9)	45 (27.1)		26 (15.7)	18 (10.8)	122 (73.5)	
Cared for COVID-19 patients												
Yes	231 (43.5)	140 (26.4)	160 (30.1)	<.001	274 (51.6)	108 (20.3)	149 (28.1)	.442	116 (21.8)	77 (14.5)	338 (63.7)	.061
No	132 (66.7)	38 (19.2)	28 (14.1)		105 (53)	46 (23.2)	47 (23.7)		28 (14.1)	29 (14.6)	141 (71.2)	

Some of missing data are present.

COVID-19 = corona virus disease 2019, n = number.

Accra, Ghana, found that 20.57% of HCWs reported having burnout, which is a low prevalence compared to our findings. Burnout was substantially more likely to occur when health-care providers worked night shifts and at the primary level of healthcare.^[25] Additionally, research conducted in Jordan found that over 57.7% of physicians were burnt out.^[26] Furthermore, burnout was prevalent among Ghanaian health professionals, according to Afulani et al^[27] and insufficient preparation for the COVID-19 pandemic exacerbated the burnout condition even among HCWs who were not in touch with COVID-19 patients. Our results revealed no connection between age and burnout degree; however, almost all research^[27,28] is equivocal, with half reporting no burnout differences between young and senior health professionals. While another study revealed that young health professionals' lack of resilience may be a major contributing factor to their high burnout rate.^[29-31] Another research that included 984 healthcare professionals found a significant incidence of burnout (57.7%) among them. Burnout was not associated with age between 30 and 55, as indicated in,^[32] which may reflect higher adaptability to job stresses provided by experience. These findings might be attributed to the fact that burnout symptoms change with individuals' life phases; nevertheless, various experiences in the competence of job requirements, as well as distinct experiences of work-family conflicts, may occur at different life stages. Burnout was significantly correlated with different factors: being a woman, working in overburdened hospitals, putting in long hours, working nights, not having enough access to personal protective equipment, and having tested positive for severe acute respiratory syndrome coronavirus 2.^[26] The existing state of the Syrian healthcare system explains our findings, which was hampered after 10 years of civil war and was understaffed and unable to manage such a disaster owing to a lack of medical equipment to treat COVID-19 patients, which increases a load of mental health issues on the Syrian physicians.^[33] As a result, poor patient care and follow-up, inadequate treatment that increases patient recurrence rates, and troubled doctor-patient contact may result from this, all of which can have detrimental impacts. The hospital and the healthcare sector suffer from burnout, which also creates anxiety and addictive

behaviors among doctors. Numerous studies have been undertaken to investigate how burnout might be reduced because of its considerable and expensive consequences on healthcare personnel,^[34] we should work on several practice suggestions to solve the current concern among Syrian health-care providers, including the ones listed below

- Its consequences, such as absenteeism, turnover in personal, cynicism, and decreased job satisfaction, can be relatively serious and can cause strong repercussions on health-care practitioners, patients, organizations, and society; hence, promoting HCWs' well-being and reducing burnout are considered critical and urgent changes worldwide and especially in third world countries where healthcare fields are still underdeveloped.^[35]
- It would seem acceptable to take more measures to lessen burnout, such as addressing systemic problems in the clinical care setting.^[35]
- Moreover, creating positive work environments, reducing administrative burdens, providing technology solutions and simple, practical solutions to health-care practitioners, and investing in research are very important in burnout prevention and clinical work enhancement among HCWs.^[36]
- It seems that the war consequences, poverty, and the lack of Humanitarian Activities Plan implantation are extremely relevant factors to be urgently taken into immediate serious, effective consideration.^[37]
- Hiring more employees, having medical assistants input patient data into the Electronic medical records, medical assistant, and routinely partnering MAs with doctors are all instances of shifting non-essential activities to non-physician staff.
- Hold regular meetings for providers to discuss challenging patient-care management concerns and obstacles in their personal and professional lives.

4.1. Limitations of the study

Although the appropriately powered sample size and rigorous research methodology are significant characteristics of our

Table 3
Frequency of high burnout in different groups of participants (n = 729).

Variable	High burnout level, n (%)		P value
	Yes	No	
Age			.810
≤36 yr	264 (44.5)	329 (55.5)	
>36 yr	59 (43.4)	77 (56.6)	
Gender			<.001
Female	154 (42.9)	205 (57.1)	
Male	149 (43.1)	197 (56.9)	
Marital status			.078
Married	87 (38.3)	140 (61.7)	
Single	179 (47.5)	198 (52.5)	
Engaged/in a relationship	48 (47.1)	54 (52.9)	
Separated/divorced	9 (47.4)	10 (52.6)	
Widowed	0 (0)	4 (100)	
Having children			.015
Yes	80 (37.4)	134 (62.6)	
No	243 (47.2)	272 (52.8)	
Job category			.311
Nurse	93 (42.9)	124 (57.1)	
Resident	163 (47.1)	183 (52.9)	
Specialist	67 (40.4)	99 (59.6)	
Years in practice			.075
≤5 yr	197 (47.1)	221 (52.9)	
>5 yr	126 (40.5)	185 (59.5)	
Cared for COVID-19 patients			<.001
Yes	255 (48)	276 (52)	
No	68 (34.3)	130 (65.7)	
Average daily workload*			.494
≤8 h	218 (48.7)	230 (51.3)	
>8 h	37 (44.6)	46 (55.4)	

COVID-19 = corona virus disease 2019, n = number.

*P value<0.05 Statistically significant Value.

investigation, the results should be seen in the light of many limitations. A cross-sectional study cannot create a relationship

despite its affordability and usefulness. Since surveys were completely anonymous, there was no way to get in touch with respondents after completing them to check for unusual responses. Also, not all of the associated causes for burnout in health-care providers were included in the survey. Furthermore, since there was a shortage of research when we developed the questionnaire on burnout among health-care professionals during the COVID-19 pandemic, we based it on the actual situation of Syrian physicians. We may have forgotten certain factors that had an impact on the findings, and we didn't include other medical groups.

5. Conclusion

Our research showed significant burnout, emotional problems, and distress among Syrian allied health-care providers, especially nurses/residents and COVID-19 health-care providers. Due to insufficient assistance and a shortage of basic medical supplies for academic diagnosis and treatment among Syrian physicians, local and international organizations should reevaluate the condition of the Syrian physicians and develop effective interventions toward specific risk groups is needed to reduce burnout while promoting productivity, especially COVID-19 epidemic has exacerbated the strain on Syrian doctors.

Data collection group

Rama Mazen Reslan (Faculty of Medicine, Tishreen University, Lattakia, Syria, ramarslan012@gmail.com); Amal Alshofi (Faculty of Medicine, Tishreen University, Tishreen, Syria, amalsalshofi@gmail.com); Razan Othman (Faculty of Medicine, Damascus University, razanothman32@gmail.com); Ghenaa Shamel Azzam (Faculty of Medicine, Damascus University, Damascus, Syria, ghenaa98@hotmail.com); Ola Alahmad (Faculty of Medicine, Hama University, Hama, Syria, Ola283221@gmail.com); Rasha Jesry (Faculty of Medicine, Aleppo University, Aleppo, Syria, rasha1issa101@gmail.com); Ahmed Zaher Radwan Radwan (Faculty of Medicine, Aleppo

Table 4
Predictors of high level of burnout by multiple logistic regression.

Variable	OR	95% CI for OR		P value
		Lower limit	Upper limit	
Age	1.023	0.967	1.083	.424
Gender				
Male	1			
Female	1.20	0.830	1.74	.331
Marital status				
Single	1			
Engaged/in a relationship	0.704	0.419	1.181	.183
Married	0.449	0.181	1.117	.085
Separated/divorced	0.701	0.187	2.636	.599
Widowed	0.00	0.00	–	.999
Having children				
No	1			
Yes	0.918	0.365	2.310	.856
Job category				
Nurse	1			
Resident	1.067	0.679	1.675	.779
Specialist	1.154	0.628	2.123	.644
Years in practice	0.977	0.919	1.039	.462
Cared for COVID-19 patients				
No	1			
Yes	1.766	1.258	2.479	<.001
Average daily workload	1.037	0.991	1.086	.120

CI = confidence interval, COVID-19 = corona virus disease 2019, OR = odds ratio.

*P value<0.05 Statistically significant Value.

University, Aleppo, Syria, ahmedzaherradwanradwan@gmail.com); AHMAD BASHEER ALSALEH (Faculty of Medicine, Damascus University, Damascus, Syria, elsale7in@gmail.com); Heba Cheikh Othman (Damascus University, Faculty of Medicine, Damascus, Syria, hebashekhothman@gmail.com); Tareq Turk (Faculty of Medicine, Tishreen University, Tishreen, Syria, tareqziadturk@gmail.com).

Author contributions

Conceptualization: Sarya Swed.

Data curation: Hidar Alibrahim.

Formal analysis: Sarya Swed.

Supervision: Wael Hafez.

Writing – original draft: Sarya Swed, Haidara Bohsas, Sheikh Shoib, Bisher Sawaf, Mohammed Amir Rais, Ahmed Aljabali, Mohamed Elsayed, Amine Rakab.

Writing – review & editing: Sarya Swed, Haidara Bohsas, Wael Hafez, Sheikh Shoib, Bisher Sawaf, Mohammed Amir Rais, Ahmed Aljabali, Nour Shaheen, Mohamed Elsayed, Amine Rakab.

References

- Listings of WHO's response to COVID-19. 2020. Available at: <https://www.who.int/news/item/29-06-2020-covid-timeline>.
- WHO reports of COVID-19 Worldwide. 2020. Available at: <https://covid19.who.int/>.
- Jones EAK, Mitra AK, Bhuiyan AR. Impact of COVID-19 on mental health in adolescents: a systematic review. *Int J Environ Res Public Health*. 2021;18:2470.
- Syrian Arab Republic situation of COVID-19. 2020. Available at: <https://covid19.who.int/region/emro/country/sy>.
- Gómez-Ochoa SA, Franco OH, Rojas LZ, et al. COVID-19 in health-care workers: a living systematic review and meta-analysis of prevalence, risk factors, clinical characteristics, and outcomes. *Am J Epidemiol*. 2021;190:161–75.
- Characteristics of health care personnel with COVID-19 - United States, February 12–April 9, 2020. *MMWR Morb Mortal Wkly Rep*. 2020;69:477–81.
- Dzinamarira T, Mhango M, Dzobo M, et al. Risk factors for COVID-19 among healthcare workers. A protocol for a systematic review and meta-analysis. *PLoS One*. 2021;16:e0250958.
- Allahham L, Mouselli S, Jakovljevic M. The quality of Syrian health-care services during COVID-19: a HEALTHQUAL approach. *Front Public Health*. 2022;10:970922.
- Vindegaard N, Benros ME. COVID-19 pandemic and mental health consequences: systematic review of the current evidence. *Brain Behav Immun*. 2020;89:531–42.
- Nie A, Su X, Zhang S, et al. Psychological impact of COVID-19 outbreak on frontline nurses: a cross-sectional survey study. *J Clin Nurs*. 2020;29:4217–26.
- Maslach C, Jackson SE, Leiter MP. Maslach burnout inventory. USA: Scarecrow Education. 1997.
- West CP, Dyrbye LN, Sinsky C, et al. Resilience and burnout among physicians and the general US working population. *JAMA Netw Open*. 2020;3:e209385.
- Leo CG, Sabina S, Tumolo MR, et al. Burnout among healthcare workers in the COVID 19 era: a review of the existing literature. *Front Public Health*. 2021;9:750529–750529.
- Prasad K, McLoughlin C, Stillman M, et al. Prevalence and correlates of stress and burnout among U.S. healthcare workers during the COVID-19 pandemic: a national cross-sectional survey study. *Eclinicalmedicine*. 2021;35:100879.
- Denning M, et al. Determinants of burnout and other aspects of psychological well-being in healthcare workers during the Covid-19 pandemic: a multinational cross-sectional study. *PLoS One*. 2021;16:e0238666.
- Dewa CS, et al. The relationship between physician burnout and quality of healthcare in terms of safety and acceptability: a systematic review. *BMJ Open*. 2017;7:e015141.
- Dall'Ora C, et al. Burnout in nursing: a theoretical review. *Hum Resour Health*. 2020;18:41.
- Jalili M, et al. Burnout among healthcare professionals during COVID-19 pandemic: a cross-sectional study. *Inter Arch Occupat Environ Health*. 2021;94:1345–52.
- Moalemi S, et al. Evaluation of the persian version of maslach burnout inventory-human services survey among Iranian nurses: validity and reliability. *Galen Med J*. 2018;7:e995.
- Maslach C., S. Jackson, M. Leiter. The Maslach burnout inventory manual. 1997. 191–218.
- Maslach C, Jackson SE. The measurement of experienced burnout. *J organiz behavior*. 1981;2:99–113.
- Walkey FH, Green DE. An exhaustive examination of the replicable factor structure of the Maslach burnout inventory. *Educ Psychol Measurement*. 1992;52:309–23.
- Khasne RW, et al. Burnout among healthcare workers during COVID-19 pandemic in India: results of a questionnaire-based survey. *Indian J Crit Care Med*. 2020;24:664–71.
- Purvanova RK, Muros JP. Gender differences in burnout: a meta-analysis. *J Vocational Behav*. 2010;77:168–85.
- Konlan KD, et al. Burnout syndrome among healthcare workers during COVID-19 pandemic in Accra, Ghana. *PLoS One*. 2022;17:e0268404–e0268404.
- Alrawashdeh HM, et al. Occupational burnout and job satisfaction among physicians in times of COVID-19 crisis: a convergent parallel mixed-method study. *BMC Public Health*. 2021;21:811.
- Afulani PA, et al. Inadequate preparedness for response to COVID-19 is associated with stress and burnout among healthcare workers in Ghana. *PLoS One*. 2021;16:e0250294.
- Mbanga C, et al. Determinants of burnout syndrome among nurses in Cameroon. *BMC Res Notes*. 2018;11:893.
- de Paiva LC, et al. Burnout syndrome in health-care professionals in a university hospital. *Clinics (Sao Paulo, Brazil)*. 2017;72:305–9.
- Mohammad J, Jaber Ahmad M, AlBashaire, Mohammad H, AlShatarat, et al. Stress, depression, anxiety, and burnout among healthcare workers during the COVID-19 pandemic: a cross-sectional study in a tertiary centre. 2021. Available at: <https://opennursingjournal.com/VOLUME/16/ELOCATOR/e187443462203140/FULLTEXT/>. [January 1, 2022].
- Smith BW, et al. The brief resilience scale: assessing the ability to bounce back. *Int J Behav Med*. 2008;15:194–200.
- Marchand A, Blanc ME, Beauregard N. Do age and gender contribute to workers' burnout symptoms? *Occup Med (Lond)*. 2018;68:405–11.
- Swed S, et al. COVID-19, war and poverty in Syria. *Ann Med Surg (Lond)*. 2022;75:103382.
- Shanafelt TD, et al. Principles to promote physician satisfaction and work-life balance. *Minn Med*. 2008;91:41–3.
- West CP, et al. Interventions to prevent and reduce physician burnout: a systematic review and meta-analysis. *Lancet*. 2016;388:2272–81.
- Carrau D, Janis JE. Physician burnout: Solutions for individuals and organizations. *Plast Reconstr Surg Glob Open*. 2021;9:e3418.
- Alhaffar BA, Abbas G, Alhaffar AA. The prevalence of burnout syndrome among resident physicians in Syria. *J Occup Med Toxicol*. 2019;14:31.