ORIGINAL ARTICLE

Psychosocial influence of COVID-19 on healthcare workers

Aleksandra Pašić[1], Slavenka Štraus[2], Emina Smajić[3], Ermin Begović[1], Ilirijana Haxhibeqiri-Karabdić[2], Nada Spasojević[4]

[1]Department for Clinical Biochemistry and Immunology, [2]Department of Cardiac Anaesthesia and Intensive Care, Clinic for Cardiovascular Surgery; Clinical Centre of the University of Sarajevo, Sarajevo, [3]Sunce Agram Polyclinic, Sarajevo, [4]Faculty of Health Sciences, University of Mostar, Mostar; Bosnia and Herzegovina

ABSTRACT

Aim To assess a psychosocial impact of the Coronavirus disease 2019 (COVID-19) on health care workers and to quantify the size of depression symptoms, anxiety and stress levels.

Methods This cross-sectional study used an anonymous online survey questionnaire as a research instrument and it included 114 health workers of all profiles from the Sarajevo Canton employed in private and public institutions. The research was voluntary, non-commercial and all participants provided an oral informed consent. Depression, Anxiety and Stress Scale (DASS-21) questionnaire was used for assessing emotional status of depression, anxiety and stress.

Results The mean age of participants was 40.5±8.44 years with male:female ratio of 0.28. Prevalence of depression was 46.5%, anxiety61.4%, and 36.9% stress. Age and gender had no effect on emotional status, but it was revealed that women achieved higher depression, anxiety and stress scores than men (without statistical significance). The most notable effect on the emotional state was found for direct or indirect contact with COVID-19 patients. Medical workers in direct contact with COVID-19 patients achieved greater depression (p=0.005), anxiety (p=0.001), stress (p=0.030) and total DASS-21 (p=0.003) scores.

Conclusion High prevalence of health workers affected by various psychological ailments during the COVID-19 pandemic was found. This evidence underscores the need to address adverse effects of the pandemic on mental health of health care workers.

Key words: anxiety, depression, health personnel, occupational stress, pandemic

Corresponding author:
Aleksandra Pašić
Department for Clinical Biochemistry and Immunology, Clinical Centre of the University of Sarajevo
Bolnička 25, 71000 Sarajevo,
Bosnia and Herzegovina
Phone: +387 33 298 183;
Fax: +387 33 297 844;
E-mail: pasic.sandra71@gmail.com
ORCID ID: https://orcid.org/0000-0001-8588-8042

Original submission:
02 September 2021;
Revised submission:
08 October 2021;
Accepted:
03 November 2021
doi: 10.17392/1425-21

Med Glas (Zenica) 2022; 19(1):

INTRODUCTION

The global crisis caused by the Sars-CoV-2 virus struck society in late 2019. In early March 2020, four months after the first confirmed case in China, the first case of Sars-CoV-2 virus infection was registered in Bosnia and Herzegovina in a person who was temporarily residing in Italy (1,2). Over the past 15 months, the health care system has faced a dramatic pandemic strike and enormous pressure on healthcare workers. During the three epidemic waves, 204,886 cases and 9,648 deaths were confirmed (3).

Coronavirus disease 2019 (COVID-19) has positioned healthcare workers in a long-term state of high alert. Today, when abundant information is available on the epidemiology of the disease, pathogenesis, and infection prevention, literature on interventions to support the psychological well-being of health workers during a pandemic outbreak is scarce (4). A recent study conducted among healthcare workers confirmed the association between the nature of work with an increased risk of infection and disease, but also mortality. Continuous adherence to protection measures and social restrictions are also associated with indirect health consequences, as well as with significant psychological stress, especially anxiety and depression (5).

New and unknown clinical roles, fear of exposure to Sars-CoV-2 virus, lack of family support, continuous emotional stress and physical exhaustion are consequently followed by anxiety in medical staff. Additional aggravating circumstances are moral dilemmas in making decisions about providing care with limited resources (4,6).

Excessive media attention, insufficient and inadequate support from strained healthcare system are cited as causes of additional pressure on healthcare workers (7). Psychological influences on employees have negative consequences for health organizations as well. Extreme pressure increases the risk of burnout, which results in negative outcomes not only for health of an individual, but also directly affects the quality of service provided to patients (6).

Studies have confirmed that healthcare workers generally have a higher risk of mental burdens such as anxiety, depression, and stress (8,9). Studies conducted during previous epidemics of SARS (10) and MERS (11) indicate even more adverse psychological reactions to the epidemic by healthcare professionals.

During the current COVID-19 pandemic, the occurrence of anxiety, depression and stress is associated with fear of infection and generally present stigmatization of healthcare workers, which, combined with an increased workload and difficult working conditions, intensify emotional symptoms (12-16).

The aim of this study was to assess the psychosocial impact of COVID-19 on health care workers in Bosnia and Herzegovina (B&H) by quantifying the size of depression symptoms, anxiety and stress levels. To our knowledge this is the first study assessing psychosocial burden of health care workers in our country caused by the pandemic.

PARTICIPANTSAND METHODS

Participants and study design

A total of 114 health workers of all education profiles employed in private and public institutions in the Sarajevo Canton during the period January-March 2021 were involved.

Along with a questionnaire, basic demographic data (gender, age, education, occupation and place of work) were collected. Given the complete epidemiological situation, in order to prevent the spread of infection, we chose cross-sectional online research and data collection. An anonymous survey was conducted using Google Forms and all participants provided oral informed consent before enrolment. Participants were allowed to discontinue the survey at any time. This research was completely voluntary and non-commercial.

This study was conducted in accordance with the Helsinki Declaration.

Methods

As a research instrument, the Croatian adaptation (17) of the standardized and validated Depression, Anxiety and Stress Scale (DASS) questionnaire (18) was used.

The DASS-21contains 21 items and is a set of three self-assessment scales designed to assess emotional state, depression, anxiety, and stress. Each of the three DASS-21 scales contains 7 items, divided into subscales with similar content.

Before interpreting the scores, the summed numbers in each subscale were multiplied by 2 (because the DASS-21 is the short form of the scale).

Respondents assessed feelings and symptoms in relation to the current state of the pandemic, that is, how often they experienced the condition described by the claim in the past seven days, and answers were offered on a 4-point Likert-type scale (19) (0- the answer did not apply to me at all, 1 - applied to me sometimes, 2 - applied to me often or quite often, 3 - applied to me quite or quite often).

Statistical analysis

Data were presented in the form of tables, using classical methods of descriptive statistics. An assessment of the normality of data was tested by the Shapiro-Wilk and Kolmogorov-Smirnov tests. Nonparametric tests were used in the analysis, Kruskal Wallis and Mann Whitney. The $p<0.05$ for all tests was considered statistically significant. Internal consistency was presented with Cronbach's alpha (α).

RESULTS

Of 114 participants, 89 (78.9%) were females and 25 (21.9%) males with male to female ratio of 0.28. The mean age was 40.51±8.44 years. Concerning education level, majority 82 (71.9%) had a high school education and 32 (28.1%) university degree. Most participants were in direct contact with COVID-19 patients, 70 (61.40%) nurses, doctors and physiotherapist; 44 (38.60%) laboratory professionals were not in direct contact with COVID-19 patients. Internal consistency of the questionnaire presented with Cronbach's alpha (α) was 0.96 for total DASS-21 questionnaire, 0.89 for depression, 0.94 for anxiety and 0.90 for stress subscales (Table 1).

Table 1. Depression, anxiety and stress scale (DASS-21) scores of 114 respondents

DASS-21 scale variable	DASS-21 score		
	Mean±SD	Min.	Max.
Depression	11.0±10.577	0	42
Anxiety	11.74±10.714	0	42
Stress	13.16±10.745	0	42
Total	35.89±30.237	0	120

SD, standard deviation; Min, minimum; Max, maximum;

Of all study participants, 53 (46.5%) had symptoms of depression, 70 (61.4%) anxiety, and 42 (36.9%) stress. For the depression subscale, 18 (15.8%) participants showed mild, 15 (13.2%) moderate, six (5.3%) severe, and 14 (12.3%) extremely severe symptoms of depression. For the anxiety subscale, 14 (12.3%) participants had mild, 21 (18.4%) moderate, eight (7.0%) severe, and 27 (23.7%) extremely severe anxiety symptoms. For the stress subscale, 15 (13.2%) had mild, six (5.3%) moderate, 14 (12.3%) severe, and seven (6.1%) had extremely severe symptoms of depression. Gender differences in the total DASS-21 score or any of the subscale scores were not found (Table 2).

Table 2. Gender differences in depression, anxiety and stress scale (DASS-21) scores

DASS-21 scale variable	DASS-21 score (Median 25-75%)		p
	Males (n=25)	Females (n=89)	
Depression	6.0 (2.0-21.0)	8.0 (2.0-17.0)	0.513
Anxiety	6.0 (2.0-18.0)	10.0 (2.018.0)	0.433
Stress	8.0 (3.0-18.0)	12.0 (2.0-18.0)	0.396
Total	20.0 (9.0-55.0)	32.0 (7.0-55.0)	0.382

Age differences between the three age groups were not found for the total DASS-21 score or any of the subscales (Table 3).

Table 3. Age differences in depression, anxiety and stress scale (DASS-21) scores

Variable	DASS-21 score						p
	<35 years (n=25)		35-50 years (n=72)		>50 years (n=17)		
	Median	Mean rank	Median	Mean rank	Median	Mean rank	
Age (years)	27	13.00	42.0	61.50	53.0	106.00	0.000
Depression	4.0	46.54	10.0	60.91	8.0	59.18	0.166
Anxiety	8.0	54.30	10.0	60.13	8.0	51.09	0.512
Stress	8.0	48.68	12.0	59.60	12.0	61.56	0.310
Total	20.0	49.54	32.0	60.14	30.0	58.03	0.384

Comparing participants by level of education showed no significant differences between the groups, except for the DASS-21 anxiety score (Table 4). Participants with high school education had significantly greater anxiety score than participants with university degree (p=0.015).

Table 4. Level of education differences in DASS-21 questionnaire

Variable	DASS-21 score (Median 25-75%)		p
	HSE (n=82)	UD (n=32)	
Age (years)	40.0 (34.75-43.0)	44.5 (39.5-49.0)	0.02
Depression	10.0 (4.0-18.0)	6.0 (2.0-14.0)	0.118
Anxiety	10.0 (4.0-20.0)	5.0 (0.5-12.0)	0.015
Stress	12.0 (5.5-18.0)	12.0 (2.0-20.0)	0.608
Total	32.0 (16.0-56.0)	22.0 (6.0-52.5)	0.103

HSE, high school education; UD, university degree

The comparison of participants by work position, i.e. being in direct or indirect contact with COVID-19 patients showed statistically significant

differences in total DASS-21 score and all three subscale scores (Table 5). Medical workers in direct contact with COVID-19 patients compared to those with indirect contact achieved greater depression (p=0.005), anxiety (p=0.001), stress (p=0.030) and total DASS-21 (p=0.003) score.

Table 5. Work position (direct/indirect contact with COVID-19 patients) differences in DASS-21 questionnaire

Variable	DASS-21 score		p
	Direct contact (n=70)	**Indirect contact** (n=44)	
	Median (25-75%)	Median (25-75%)	
Age (years)	40.5 (33.75-43.0)	42.5 (38.0-49.0)	0.024
Depression	10.0 (4.0-24.0)	6.0 (2.0-10.0)	0.005
Anxiety	12.0 (4.0-22.5)	5.0 (2.0-10.0)	0.001
Stress	12.0 (5.5-26.0)	10.0 (2.0-14.0)	0.030
Total	34.0 (15.5-68.5)	21.0 (8.5-36.0)	0.003

DISCUSSION

The aim of the study was to assess the psychosocial impact of COVID-19 on health care workers, as well as to quantify the magnitude of depression, anxiety and stress symptoms. Our results for the overall sample and gender distribution are similar to those of Alshekaili et al. (20) where among 1139 health workers, 911 (80.0%) were women and 228 (20.0%) were men, but the subjects were on average younger than in our study (36.3±6.5 versus 40.51±8.44 years).

Descriptive statistics and internal consistency values for the three subscales, and overall score of DASS-21 in our study showed that the Cronbach's alpha coefficient exceeded 0.70 confirming that DASS-21 offers adequate levels of reliability for assessing stress, anxiety, and depression among healthcare professionals involved in the COVID-19 pandemic. Similar to our results, the study of Talaee et al. (21) found Cronbach's alpha between 0.80–0.95 for different parts of the questionnaire, confirming reliability and high repeatability of the questionnaire.

In our study we did not find gender or age differences in the total DASS-21 score, or any of the subscales score. Contrary to our data, a study by Huang et al. (22) conducted in the Chinese population showed an association between age and anxiety and depression, i.e. in health care workers under the age of 35 were at higher risk of anxiety and depression. Furthermore, the same study states that the females were more prone to anxiety symptoms than the males. Median values for depression, anxiety and stress score were higher in females in our study although without statistical significance. Possible reasons for conflicting data regarding age and gender are smaller number of respondents in our study as well as ethnic and social differences.

Other studies (23, 24) on the psychological stress of health workers caused by the COVID-19 pandemic, with a number of participants ranging from 37 to 162.639, found severe symptoms of depression, anxiety and stress. These studies also stated that severity of symptoms was dependant on age, gender and other factors such as occupation, type of activity, socioeconomic and social factors, and especially proximity to COVID-19 patients.

Compared to some studies the prevalence of depression, anxiety and stress, as well as severity of the symptoms in our participants were higher (15,25,26).

In a Chinese study (15) medical workers who were in direct contact with patients showed prevalence of severe anxiety of 2.17%, moderate of 4.78% and mild of 16.09%. According another Chinese study (25), a serious level of anxiety, depression and stress in healthcare workers appears to be particularly high (depression 16.5%, anxiety 28.8% and stress 8.1%) compared to the results of studies conducted in India and Singapore (26), where serious levels of depression of 5.3%, anxiety of 8.7% and stress of 2.2% were recorded.

Other studies (27,28) on the psychological impact of epidemics and pandemics on health workers showed more similar results to ours with high prevalence of depression, anxiety and stress, as well as more severe and pronounced symptoms.

A Pakistani study (29) involving health workers with full time work in COVID-19 isolation ward showed significantly higher results on the DASS-21 scale in relation to our research because working in an infectious isolation ward has far greater consequences for the mental health of healthcare workers than other workplaces.

Our study showed that medical workers in direct contact with COVID-19 patients compared to those with indirect contact achieved greater depression. María et al. (30) referring to various studies have also shown that direct participation in the treatment of patients with COVID-19 increases the possibility of depression, anxiety

and stress. In a study by Jemal et al. (31) (conducted by online Google form), high prevalence of depression, anxiety, and stress symptoms among healthcare workers has been reported. The results of the Jemal study (31) also showed that working at the COVID-19 treatment centre is more significantly associated with symptoms of depression, anxiety, and stress than working in other wards. This coincides with our and the results of studies conducted in China (32,33).

The results of our and many other studies (23-33) can help explain the high psychological burden on medical staff working in areas with a high risk of COVID-19 infection. During the outbreak of any disease, it is vital that health systems provide training and education on prevention and control mechanisms, methods of personal protection and prevention of transmission; moreover, it is especially important to provide timely psychological intervention and support towards health workers. Ensuring protection of staff from COVID-19 is a key to reducing disease transmission and reducing the fear of the pandemic, which in turn can improve mental health outcomes (34).

In conclusion, we found particularly high prevalence of depression, anxiety and stress, as well as severity of symptoms. Empirical evidence underscores the need to address the adverse effects of the pandemic on mental health of healthcare workers. It is important that governing structures take steps to ensure that mental health of healthcare professionals is regularly checked and that efforts are made to reduce their burden.

FUNDING

No specific funding was received for this study.

TRANSPARENCY DECLARATION

Competing interests: None to declare.

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