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PREVALENCE OF BURNOUT AND DEPRESSIVE SYMPTOMS AMONG HEALTHCARE WORKERS IN THE CORONAVIRUS DISEASE 2019 PANDEMIC IN BELGRADE

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A cross-sectional study was conducted among all the employees of the "Barajevo" Health Center using the following questionnaires: Maslach Burnout Inventory-Human Services Survey (MBI-HSS) for measuring three aspects of the burnout syndrome (emotional exhaustion (EE), depersonalization (DP), and personal accomplishment (PA)); Patient Health Quality 9 (PHQ-9) for self-assessment of depressive symptoms, and sociodemographic characteristics of respondents were collected through a general questionnaire. Only completely completed questionnaires were included in the study, which was 71. No statistically significant differences were found between the frequency of depressive symptoms based on the score of the PHQ9 questionnaire among both medical and non-medical personnel as well as among employees in the COVID-19 and non-COVID-19 zones. Based on the average values of the scores of the PHQ9 questionnaire, it was determined that the employees who worked in the COVID-19 zone had a significantly higher ($p < 0.05$) average value of the PHQ9 score (6.84 ± 5.73) compared to the average value of the PHQ9 score of employees in the non-COVID-19 zone (4.00 ± 3.70). A moderate to high level of emotional exhaustion was observed in more than 50% of respondents. Low level of depersonalization was noted in 70.4%, whereas the majority of employees, 53.5%, exhibited low levels of personal accomplishment. Only 1 patient (1.4%) met all three criteria for high burnout, while 67 (94.4%) of them belonged to the moderate overall burnout category.

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Key words: *burnout syndrome, coronavirus disease 2019, healthcare workers, symptoms of depression*

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Introduction

The spread of the SARS-CoV-2 virus and the resulting coronavirus disease 2019 (COVID-19) pandemic have been associated with burnout syndrome (BS), depression and anxiety among healthcare workers (HCWs) (1). In recent years, the effect of work on the physical and mental health of professionals has been an important subject (2). The term work stress was first introduced by McGrath in 1970 and defined as the imbalance perceived between a demand and the individual's capacity to fulfill it under certain conditions where failing to fulfill that demand entails significant consequences (3). Although the initial studies concerning the work satisfaction of health professionals were done by Donabedin in 1966, and later by Freebon and Greenlick in 1973, it was not until 1974 that psychoanalyst Herbert Freudenberger talked of work disease for the first time, defining the burnout syndrome as a state of exhaustion or frustration resulting from dedication to a cause, way of life, or relationship that does not result in the expected reinforcement (3). Christina Maslach, one of the first authors and researchers on this concept, developed the Maslach Burnout Inventory (MBI), which is considered the gold standard for evaluating burnout syndrome. According to Maslach, emotional excitement at work and the way of confrontation have significant consequences on the professional identity of employees and their behavior at work. The most important components of the burnout syndrome are feelings of emotional exhaustion (EE), depersonalization (DP), and perception of reduced personal accomplishment

(PA) (4). Burnout has been associated with impaired job performance and poor health issues, including headaches, sleep disturbances, irritability, marital difficulties, fatigue, hypertension, anxiety, depression, and myocardial infarction, and may contribute to alcoholism and drug addiction. Symptoms of burnout can lead to physician errors, and these errors can, in turn, contribute to burnout. Dissatisfaction and distress have significant costs for physicians and their families, patients and healthcare organizations (5). As we can see from the above, one of the symptoms that can cause burnout syndrome is depression, which, according to some studies, is the most common symptom among health workers (6). Burnout is a syndrome that occurs more frequently in professions that are closely related to helping people, such as social workers, healthcare professionals, teachers and police officers (4). According to Vieira, in health professionals, it occurs at a rate between 30% and 47% (2).

This study aimed to analyze burnout syndrome and depressive symptoms among employees of the healthcare facility "Barajevo" in Belgrade during the COVID-19 pandemic.

Materials and Methods

A cross-sectional study was conducted from June to September 2022 on the population of respondents represented by all employees of the primary Health Center "Barajevo" in Belgrade. The criteria for inclusion of respondents in the research were the following: adults (> 18 years), permanent employment in the mentioned sector and voluntary consent to participate in the study. Exclusion criteria: minors (< 18 years), discontinuity in work for more than a year, and persons who refused to participate. This study was approved by the Board of Directors of the Primary Health Center "Barajevo" in Belgrade on June 9, 2022. The data for this study were obtained by voluntary filling of anonymous questionnaires by the respondents. The representative sample size was 89, of which 71 participants filled out all questionnaires (7).

For this research, a general questionnaire was constructed, and two more were used: BMI-HSS and PHQ-9.

The general questionnaire consisted of 20 questions and was used to collect the basic sociodemographic data of the respondents (gender, age, marital status, education level, work zone (COVID-19 or non-COVID-19), children, length of service, satisfaction with working conditions, housing issue, income issue, illness from COVID-19, vaccination against COVID-19).

The Maslach Burnout Inventory Human Services Survey (MBI-HSS) contains 22 questions with 3 subscales that measure the level of EE, DP and PA. Respondents circled one of the provided answers on a seven-point Likert scale (0—never, 1—few times a year or less, 2—once a month or less, 3—several times a month, once a week, 5—several times a week, 6—every day). Table 1 shows the border values of emotional exhaustion (EE), depersonalization (DP), and personal accomplishment (PA).

Table 1. Border values of emotional exhaustion, depersonalization, and personal accomplishment

Emotional exhaustion	Depersonalization	Personal Accomplishment
Level Value	Level Value	Level Value
Low 0–16 points	Low 0–6 points	Low 0–31 points
Medium 17–26 points	Medium 7–12 points	Medium 32–38 points
High 27 points and more	High 13 points and more	High 39 points and more

The 9 questions contained in the PHQ-9, respondents answered by circling one of the provided answers. The answer to each of 9 questions on a four-point Likert scale was scored 0−3 (not at all = 0, a few days = 1, more than half a day = 2, almost every day = 3), the points were also added depending on the highest score, and the severity of assessed depressive episode (0−4 no depressive symptoms, 5−9 subclinical form of depression, 10−14 mild depressive episode, 15−19 moderately severe and > 20 indicated severe depressive episode).

Statistical analysis

The obtained test results were compared by statistical analysis using Microsoft Excel 2010, GraphPad Prism software, version 9.00 for Windows (GraphPad Software, San Diego, California, USA, www.graphpad.com) and IBM SPSS Statistics 25 software. The chi-square test was used to compare frequencies between sociodemographic characteristics. Differences were considered significant if the observed value was $p < 0.01$ and $p < 0.05$. All values in tables and figures are presented as mean ± standard deviation. Spearman's correlation coefficient (ρ) was used for measurement of the strength and direction of association between two ranked variables.

Results

A total of 71 respondents (13 male and 58 female) participated in the research. The response

rate was 62.28%. Significantly more ($p < 0.01$) employees were women (81.69%), older than 40 years (75%), medical staff (including technicians, nurses, physiotherapists) (57.35%), in either a marital or extramarital union (80.60%), working in shifts and partially satisfied with working conditions (64.79%), having 6–8 hours of sleep (80.28%), length of vacation 31–40 days (70%) and working in the COVID-19 zone (71.43%). More than half of the participants (60.56%) completed primary and secondary school, while 39.44% completed college. There was no statistically significant difference in the level of education in our study population ($p = 0.075$). Significantly fewer ($p < 0.01$) employees had managerial positions (15.38%) and less than 5 years of service (17.91%) (Table 2). The average values of age, length of working hours, length of sleeping hours, years of employment and length of vacation were (47.5 ± 10.33; 7.33 ± 1.26; 6.80 ± 1.29; 18.61 ± 12.9; 32.98 ± 6.53 days). Monthly incomes above the minimum wage had 61.97% employees, less than three-fifths were house owners and 60 (84.50%) had children. Less than three-quarters of respondents were vaccinated against COVID-19 and 43 (60.56%) of them were infected with this disease.

After analyzing the answers received (Figure 1), it was determined that there were 26 medical staff respondents without depressive symptoms (48%), which is significantly more ($p < 0.01$) than the group of medical staff who had mild depressive episodes, (11%) 6 respondents, moderately severe depressive episode, (7%) 4 respondents, and severe depressive episode, (2%) 1 respondent. Further, it was found that there were significantly more respondents who had a subclinical form of depression, (32%) 17 respondents, compared to medical staff with a mild depressive episode ($p < 0.05$), as well as those with moderately severe and severe depressive episode ($p < 0.01$). The average score of the PHQ9 questionnaire for medical staff was 6.15 ± 5.54.

There were no non-medical staff who showed a severe depressive episode according to this questionnaire ($n = 0$), which was significantly less ($p < 0.05$) compared to respondents without depressive symptoms according to the score in the PHQ9 questionnaire, (43%) 6 respondents, and those with a subclinical form of depression, (36%) 5 respondents (Figure 2). The average score of the PHQ9 questionnaire for non-medical staff was 6.00 ± 5.00. No statistically significant differences were found between the frequency of depressive symptoms based on the score of the PHQ9 questionnaire among medical and non-medical staff.

Analyzing the responses of working staff in COVID-19 zone, it was determined that significantly more ($p < 0.01$) respondents were without depressive symptoms (44%; 22) compared to those whose questionnaire score indicated mild (10%; 5), moderately severe (12%; 6) and severe depressive episode (2%; 1). Further, significant differences were found between respondents with a score 5–9 (32%; 16) compared to those with a score of 10–14 and 15–19 ($p < 0.05$), as well as respondents with a score ≥ 20 ($p < 0.01$) (Figure 3). The average value of the PHQ9 questionnaire score for staff in the COVID-19 zone was 6.84 ± 5.73.

There were 60% (12) of employees in the non-COVID-19 zone without symptoms of depression, which was significantly more ($p < 0.01$) than employees who had a score of 10–14 (10%; 2), 15–19 (0%) and ≥ 20 (0%). Further, there were significantly more ($p < 0.05$) employees in the non-COVID-19 zone with a score 5–9 (30%; 6) compared to respondents with a score of 15–19 and ≥ 20 (Figure 4). The average PHQ9 questionnaire score in employees in the non-COVID-19 zone was 4.00 ± 3.70. No statistically significant differences were found between the frequency of depressive symptoms among employees in the COVID-19 and non-COVID-19 zones. No statistically significant correlation was found between the PHQ9 score and the age of the respondents ($p = 0.45$; $r = -0.093$), the length of work experience ($p = 0.90$; $r = 0.01$), as well as the length of vacation ($p = 0.76$; $r = -0.04$), i.e., correlation relationship does not exist. Among the employees who worked in the COVID-19 zone, a significantly higher ($p < 0.05$) average value of the PHQ9 score (6.84 ± 5.73) was found compared to the average value of the PHQ9 score (4.00 ± 3.70) in employees who worked in the non-COVID-19 zone.

After analyzing the answers received from our respondents about presence and level values of burnout syndrome, it was found that the mean score for emotional exhaustion was 17.8 ± 15.5. Moderate to high levels of emotional exhaustion were observed in more than 50% of patients (Table 3). Additionally, the mean score for depersonalization was 4.8 ± 6.6, with scores distributed as 70.4% in the low range, 22.5% in the moderate range, and 7.0% in the high range of burnout. The average personal accomplishment score was 24.1 ± 15.9. Based on these subscale outcomes, it is noteworthy that most patients exhibited low levels of burnout, accounting for 53.5% of the participants.

Overall, only 1 patient (1.4%) met all three criteria for high burnout (high emotional exhaustion, high depersonalization, and low personal accomplishment) and 4.2% of patients met all three criteria for low burnout (low emotional exhaustion, low depersonalization, and high personal accomplishment) revealing that 94.4% of our study population belonged to moderate overall burnout category.

Table 2. Sociodemographic characteristics of employees

Parameter		N	(%)
Gender	Male	13	18.31[A]
	Female	58	81.69[A]
Age*	< 40	17	25.00[A]
	≥ 40	51	75.00[A]
Marital status*	Union (married/extramarital)	54	80.60[A]
	Single	13	19.40[A]
Education*	Primary/Secondary school	43	60.56
	High education	28	39.44
Occupation*	Non-medical staff	14	20.59[A]
	Medical staff (technicians, nurses, physiotherapists)	39	57.35[AB]
	Medical staff (doctors, specialists)	15	22.06[B]
Higher position in company*	Yes	10	15.38[A]
	No	55	84.62[A]
Working in shifts*	Yes	46	64.79[A]
	No	19	35.21[A]
Duration of working hours*	7	42	93.33[A]
	12	3	6.67[A]
Satisfaction with working condition	Yes	10	14.08[A]
	No	15	21.13[B]
	Neither	46	64.79[AB]
Hours of sleep	< 6 hours	9	12.68[A]
	6–8 hours	57	80.28[AB]
	> 8 hours	5	7.04[B]
Length of vacation per day*	Up to 30	18	30.00[A]
	31–40	42	70.00[A]
Years of employment*	Up to 5	12	17.91[AB]
	5–20	24	35.82[A]
	≥ 20	31	46.27[B]
Work zone*	COVID-19	50	71.43[A]
	Non-COVID-19	20	28.57[A]

*If the number of the answer (n) is less than 71, the difference in the number is respondents who did not want to answer the question

A, B–statistically significant difference at the significance level $p < 0.01$

Table 3. Levels of emotional exhaustion, depersonalization, personal accomplishment and overall burnout syndrome

Domain	Mean ± SD	Low, n (%)	Moderate, n (%)	High, n (%)
Emotional exhaustion	17.8 ± 15.5	35 (49.3)	15 (21.1)	21 (29.6)
Depersonalization	4.8 ± 6.4	50 (70.4)	16 (22.5)	5 (7.0)
Personal accomplishment*	24.1 ± 18.9	38 (53.5)	19 (26.8)	14 (19.7)
Overall burnout		3 (4.2)	67 (94.4)	1 (1.4)

* The accomplishment subscale is interpreted in the opposite direction as the emotional exhaustion and depersonalization subscales. High burnout: high emotional exhaustion, high depersonalization, and low personal accomplishment; low burnout: low emotional exhaustion, low depersonalization, and high personal accomplishment.

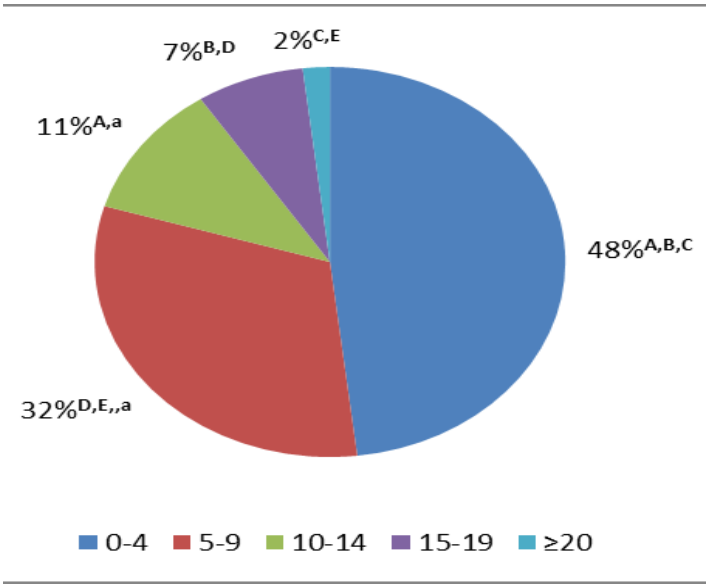

Figure 1. Frequency of depressive symptoms among medical staff according to the score in the PHQ9 questionnaire

A, B, C, D, E–$p < 0.01$; a–$p < 0.05$

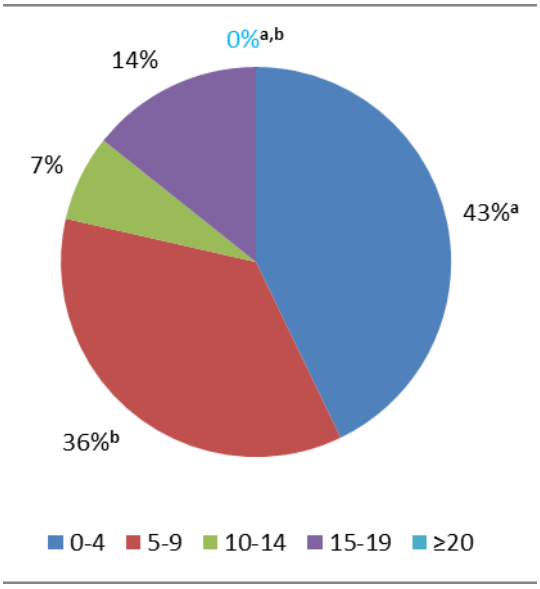

Figure 2. Frequency of depressive symptoms among non-medical staff according to the score in the PHQ9 questionnaire

a, b–$p < 0.05$

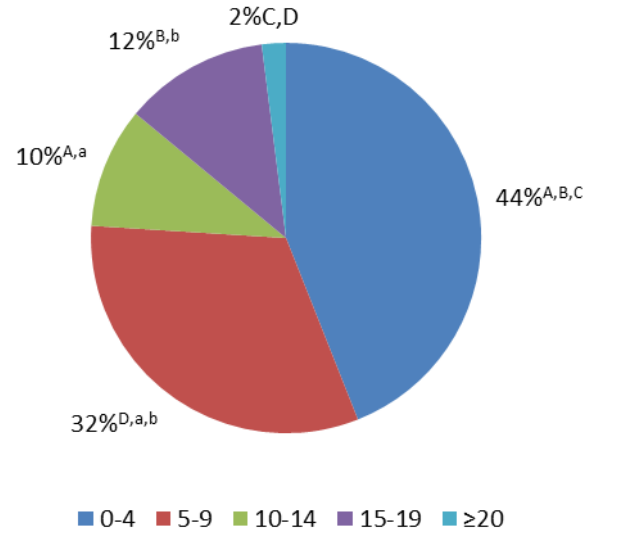

Figure 3. Frequency of symptoms of depression among employees working in the COVID-19 zone according to PHQ9 questionnaire score

A, B, C, D–$p < 0.01$; a, b–$p < 0.05$

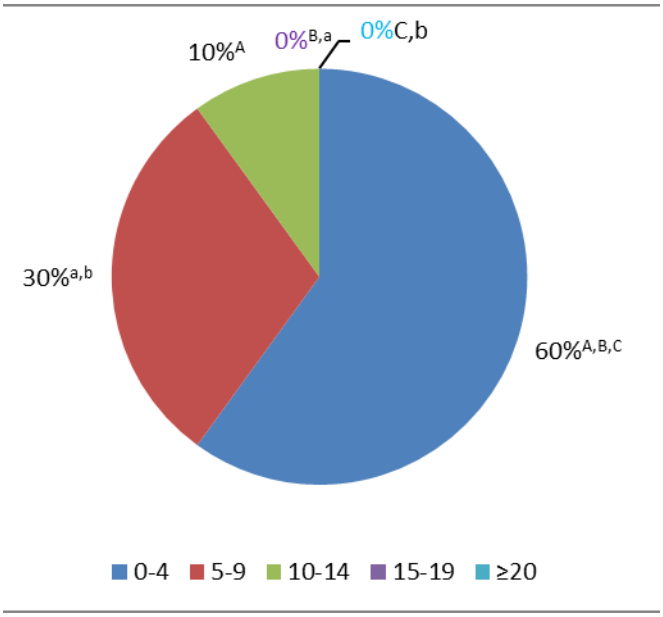

Figure 4. Frequency of symptoms of depression among employees working in the non-COVID-19 zone according to the score of the PHQ9 questionnaire

A, B–p < 0.01; a, b–p < 0.05

Discussion

Burnout syndrome has recently been included in the International Classification of Diseases, 11th Issue (ICD-11) as an occupational phenomenon (8). In general, burnout syndrome (BS) and depression are considered diseases of modern society (5). Many studies have been done related to the mental health of HCWs both during (1, 6, 9–13) and before (14–16) the COVID-19 pandemic. Some of them, such as a multicenter longitudinal descriptive study conducted among Catalonia physicians in October 2020, showed a percentage of high burnout for all domains (EE 77.5%; DP 70.0%; PA 67.5%), unlike the values obtained in the present study where these values were as follows: EE—29.6%, DP—7.0% and PA—19.7% (11). Others, like a cross-sectional study conducted in primary HCWs in Iran, showed that 36% of participants had major depressive disorder, while the present study found that only 2% of medical staff had severe depressive episodes, and 7% of them moderately severe depressive episodes (12). A survey with a focus on the levels of BS in HCWs in Italy during the COVID-19 pandemic using the MBI–HSS questionnaire as a research instrument revealed high levels of EE in 41% and high levels of DP in 27% of respondents (17). To understand the impact of COVID-19 on HCWs around the world, a study was conducted among 2707 participants from 60 countries, and results showed that 51% of HCWs reported burnout (18). A cross-sectional study done among primary care physicians working in Portugal with the purpose of assessing levels of BS using questionnaire Copenhagen Burnout Inventory (CBI), also showed high levels of burnout in 3 dimensions (65.9%—personal burnout, 68.7%—work-related, 54.7%—patient-related) (19). Besides levels of burnout, the study conducted in Portugal also evaluated levels of depression in HCWs by using DASS-21. Normal levels of depression were reported by 67.3% of respondents, while severe levels of depression were found in 65% of HCWs, three times higher values compared to our study where severe depressive episodes were reported by 2% of respondents (19). Finally, in October 2021, a cross-sectional online anonymous survey was conducted among 286 HCWs from all regions of Serbia to assess levels of BS and depressive symptoms. High or moderate levels of emotional exhaustion (91.9%) and compassion fatigue (60.8%) were reported and lower levels (23.8%) of self-efficiency (20).

Conclusion

The study included significantly more participants of female gender, women older than 40 years, medical staff and those working in the COVID-19 zone. No significant differences were found between the frequency of depressive symptoms based on the score of the PHQ9 questionnaire among medical and non-medical staff, as well as among employees in the COVID-19 and non-COVID-19 zones. However, the average value of the PHQ9 score of employees in the COVID-19 zone was significantly higher compared to the average value of the PHQ9 score employees in the non-COVID-19 zone.

Levels of burnout in participants of the study showed moderate to high emotional exhaustion (› 50%), low depersonalization

(70.4%) and low personal accomplishment (53.5%). According to values of overall burnout, we can conclude that most participants (94.4%) in our study experienced a moderate level of burnout. More detailed studies are needed to examine the factors that influence the level of burnout syndrome (BS) in primary healthcare workers (HCWs) so that measures can be implemented to reduce the level of BS in primary HCWs.

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PREVALENCIJA SIMPTOMA SAGOREVANJA I DEPRESIJE MEĐU ZDRAVSTVENIM RADNICIMA U TOKU PANDEMIJE COVID-19 U BEOGRADU

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Širenje virusa SARS-CoV-2 i posledična pandemija COVID-19 povezani su sa sindromom sagorevanja (engl. *burnout syndrome* – BS), depresijom i anksioznošću među zdravstvenim radnicima (ZR). Sprovedena je studija preseka kod zaposlenih u Domu zdravlja „Barajevo" primenom upitnika *Maslach Burnout Invetory–Human Services Survey* (MBI–HSS), koji služi za merenje tri aspekta sindroma sagorevanja na poslu (emotivna iscrpljenost (engl. *emotional exhaustion* – EE), depersonalizacija (engl. *depersonalization* – DP) i lična postignuća (engl. *personal accomplishment* – PA)), upitnika *Patient Health Quality* 9 (PHQ-9), koji služi za samoprocenu depresivnih simptoma, i opšteg upitnika, pomoću kojeg su prikupljeni sociodemografski podaci ispitanika. U studiju je uključen samo 71 kompletno popunjen upitnik. Kada je reč o učestalosti simptoma depresije, na osnovu skora upitnika PHQ-9 kod medicinskog i nemedicinskog osoblja, kao i kod zaposlenih u kovid i nekovid zoni, nisu utvrđene statistički značajne razlike. Na osnovu prosečnih vrednosti skorova PHQ-9 upitnika utvrđeno je da kod zaposlenih koji su radili u kovid zoni postoji značajno veća ($p < 0,05$) prosečna vrednost skora PHQ-9 upitnika (6,84 ± 5,73) nego kod zaposlenih u nekovid zoni (4,00 ± 3,70). Umeren do visok nivo emocionalne iscrpljenosti primećen je kod više od 50% ispitanika. Nizak nivo depersonalizacije zabeležen je kod 70,4% ispitanika. Većina zaposlenih (53,5%) ispoljila je nizak nivo ličnog postignuća. Samo je jedan ispitanik (1,4%) ispunio sva tri kriterijuma za kategoriju visokog nivoa sagorevanja, a 67 ispitanika (94,4%) svrstano je u umerenu kategoriju opšteg sagorevanja.

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***Ključne reči**: sindrom sagorevanja, COVID-19, zdravstveni radnici, simptomi depresije*