Original article

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Prevalence of Burnout and depressive symptoms among Healthcare Workers in COVID-19 Pandemic in Belgrade

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The spread of the SARS-CoV-2 virus and the resulting COVID-19 pandemic have been associated with burnout syndrome (BS), depression and anxiety among healthcare workers (HCWs) (7). Material and methods: A cross-sectional study was conducted among the all employees of the "Barajevo" Health Center, using the following questionnaires: Maslach Burnout Invetory–Human Services Survey (MBI–HSS) for measuring three aspects of the burnout syndrome (EE, DP, and 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, and that number was 71. Results: 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 personnel, as well as among employees in the COVID and non-Covid zones. Based on the average

values of the scores of the PHQ9 questionnaire, it was determined that the employees who worked in the COVID 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 zone (4.00±3.70). Moderate to high level of emotional exhaustion was observed in more than 50% of respondents. Low level of depersonalization in 70,4% and majority of employees exhibited low levels of personal accomplishment 53,5%. Only 1 patient (1,4%) met all three criteria for high burnout, while 67 (94,4%) of them belong to moderate overall burnout category.

Key words: burnout syndrome, COVID-19, healthcare workers, symptoms of depression

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Prevalencija simptoma sagorevanja i depresije među zdravstvenim radnicima u pandemiji COVID-19 u Beogradu

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Širenje virusa SARS-CoV-2 i rezultirajuća pandemija COVID-19 povezana je sa sindromom sagorevanja (BS), depresijom i anksioznošću među zdravstvenim radnicima (ZR) (7). Materijal i Metod: sprovedena je studija preseka kod zaposlenih u Domu zdravlja"Barajevo", primenom sledećih upitnika: Maslach Burnout Invetory–Human Services Survey (MBI–HSS) za merenje tri aspekta sindroma sagorevanja na poslu (EE, DP i OP); Patient Health Quality 9 (PHQ-9) za samoprocenu depresivnih simptoma i opštim upitnikom prikupljeni su sociodemografski parametri ispitanika. U studiju su uvršteni samo kompletno popunjeni upitnici i taj broj je bio 71. Rezultati: Između učestalosti simptoma depresije na osnovu skora upitnika PHQ9 kod medicinskog i nemedicinskog osoblja kao i kod zaposlenih u COVID i ne COVID zoni nisu utvrđene statistički značajne razlike. Na osnovu prosečnih vrednosti skorova PHQ9 upitnika utvrđeno da kod zaposlenih koji su radili u COVID zoni postoji značajno veća ($p<0,05$) prosečna vrednost skora PHQ9 (6,84±5,73) u odnosu na prosečnu vrednost skora PHQ9 zaposlenih u ne COVID zoni (4,00±3,70). Umeren

do visok nivo emocionalne iscrpljenosti primećen je kod više od 50% ispitanika. Nizak nivo depersonalizacije kod 70,4%, a većina zaposlenih je ispoljila nizak nivo ličnog postignuća 53,5%. Samo 1 ispitanik (1,4%) je ispunio sva tri kriterijuma za visok nivo sagorevanja, dok njih 67 (94,4%) pripada umerenoj kategoriji opšteg sagorevanja.

Ključnereči: Sindrom sagorevanja, COVID-19, zdravstveni radnici, simptomi depresije

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Introduction

In recent years, the effect of work on the physical and mental health of professionals has been an important subject (1). 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 conditions where failing to fulfill that demand entails significant consequences (2). Although initial studies concern about the satisfaction of health professionals were done by Donabedian in 1966, and later by Freebon and Greenlick in 1973, it was not until 1974 that psychoanalyst Herbert Freudenberger talks 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 (2). Among the first authors and researchers of this concept is Cristina Maslach, the author of the Maslach Burnout Invetory (MBI), which represents the gold standard for the evaluation of burnout syndrome. According to Maslach, emotional excitement at work and the way of confrontation has 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) (3). Burnout has been associated with impaired job performance and poor health, 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, not only for physicians and their families, but also for patients and healthcare organizations (4). 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 (5). 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 (3). According to Vieira, in health professionals it occurs at a rate between 30% and 47% (1).

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

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Material and Methods

We conducted a cross-sectional study in the period from June to September 2022, a population of respondents was 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, date 09.06.2022. The data for this study were obtained by voluntary filling of anonymous questionnaires by the respondents. The representative sample size was 89 out of which 71 participants filled out all questionnaires (16).

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

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

Maslach Burnout Inventory Human Services Survey (MBI-HSS) contains 22 questions with 3 subscales that measure level of EE, DP and PA. Respondents circling 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 borders 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

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The PHQ-9 contains 9 questions to which respondents answer by circling one of the provided answers. The answer to each question out of 9 questions on a four-point Likert scale is scored 0-3 (not at all= 0, a few days= 1, more than half a day=2, almost every day= 3), the points are also added depending on the height score, the severity of depressive episode is assessed (0-4 no depressive symptoms, 5-9 subclinical form of depression, 10-14 mild depressive episode, 15-19 moderately severe and $\geq$ 20 indicates 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 graphs are presented as mean ± standard deviation. Spearman's correlation coefficient (ρ) is used for measurement of the strength and direction of association between two ranked variables.

Results

A total of 71 respondents (male 13 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 (technicians, nurses, physiotherapists) (57.35%), in union marriage/extramarital (80.60%), working in shifts and partial satisfied with working conditions (64,79%), 6-8 hours of sleep (80,28%), length of vacation 31-40 days (70%) and working in COVID 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 have 61,97% employees, less than 3/5 are house owners and 60 (84,50%) have children. Less than ¾ of respondents were vaccinated against COVID-19 and 43 (60,56%) of them were infected with this disease.

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Table 2. Sociodemographic characteristics of employees

Parametar		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, specialist)	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	50	71,43[A]
	Non-COVID	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;

Legend: Same letter A, B– statistically significant difference at the significance level p<0,01;

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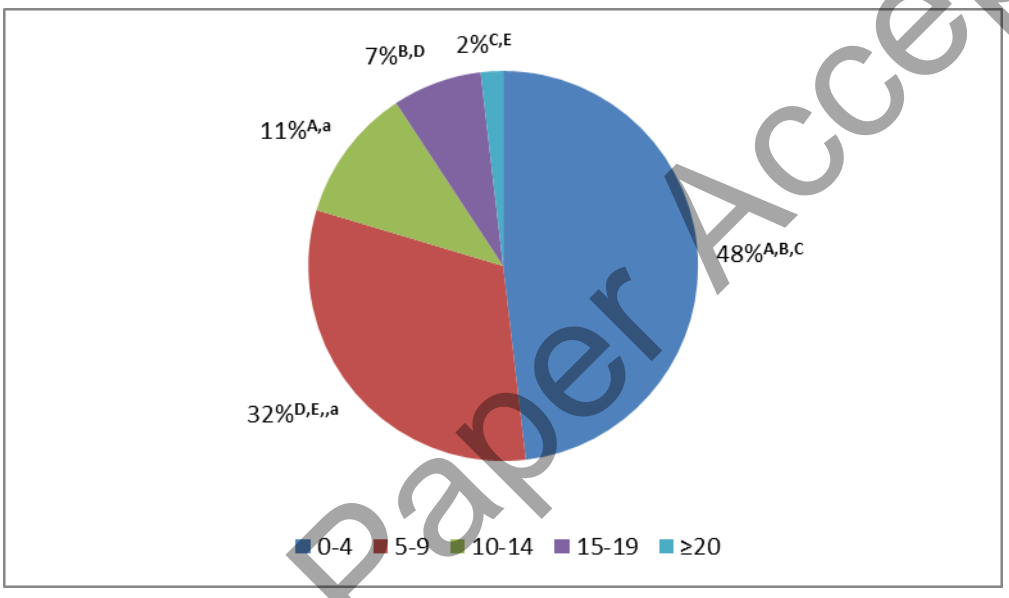
After analyzing the answers received (Graph 1) it was determined that there were 26 medical staff respondents without depressive symptoms (48%), which is significantly more (p<0,01) than the group of medical staff who had mild depressive episodes (11%), 6 respondents, moderately severe depressive episode (7%) 4 respondents and severe depressive episode (2%) 1 respondent. Also, 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.

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



Legend: Same letterA,B,C,D,E – p< 0,01; a – p< 0,05;

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 (Graph 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.

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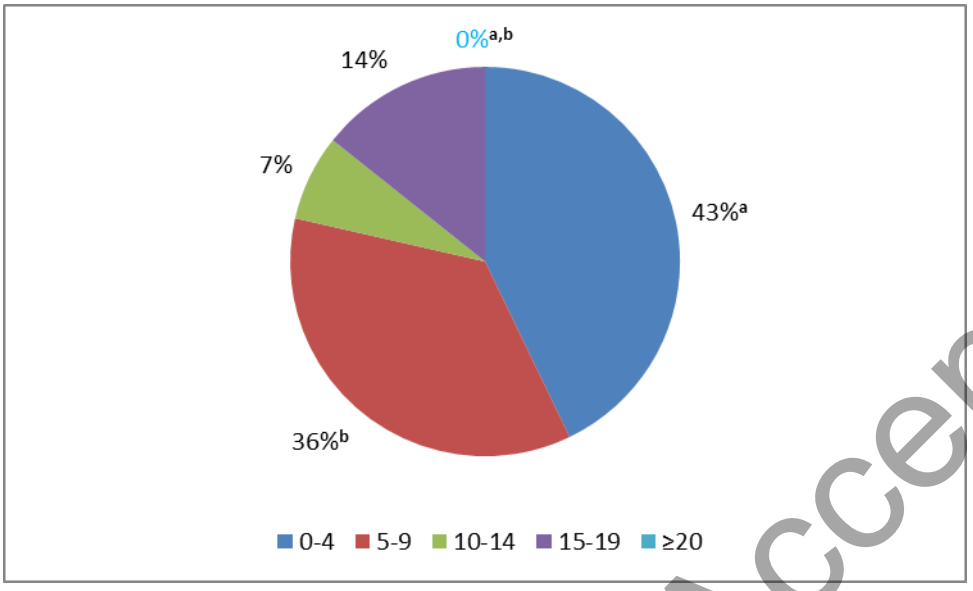
Graph 2. Frequency of depressive symptoms among non-medical staff according to the score in the PHQ9 questionnaire



Legend: Same lettera,b – p< 0,05;

Analyzing the responses of working staff in COVID 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). Also, 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) (Graph 3). The average value of thePHQ9 questionnaire score for staff in the COVID zone was 6,84±5,73.

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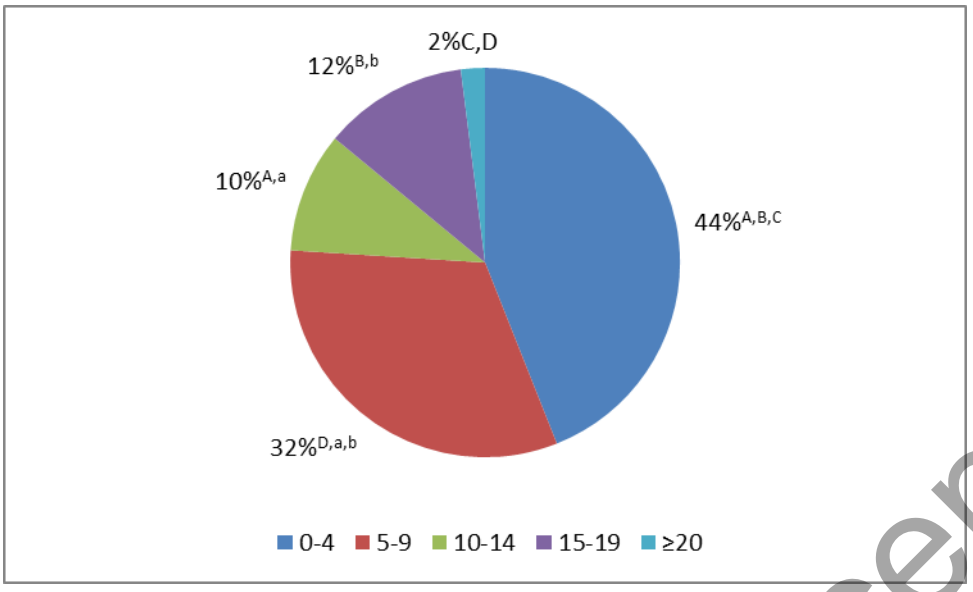
Graph 3. Frequency of symptoms of depression among employees working in the COVID zone according to PHQ9 questionnaire score



Legend: Same letterA,B,C,D – p< 0,01; a,b – p< 0,05;

There were 60% (12) of employees in the non-COVID 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%). Also, there were significantly more (p<0,05) employees in the non-COVID zone with a score 5-9 (30%; 6) compared to respondents with a score of 15-19 and ≥20 (Graph 4). The average PHQ9 questionnaire score for employees in the non-COVID zone was 4,00±3,70. No statistically significant differences were found between the frequency of depressive symptoms among employees in the COVID and non-COVID zone. 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 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) for employees who worked in non-COVID zone.

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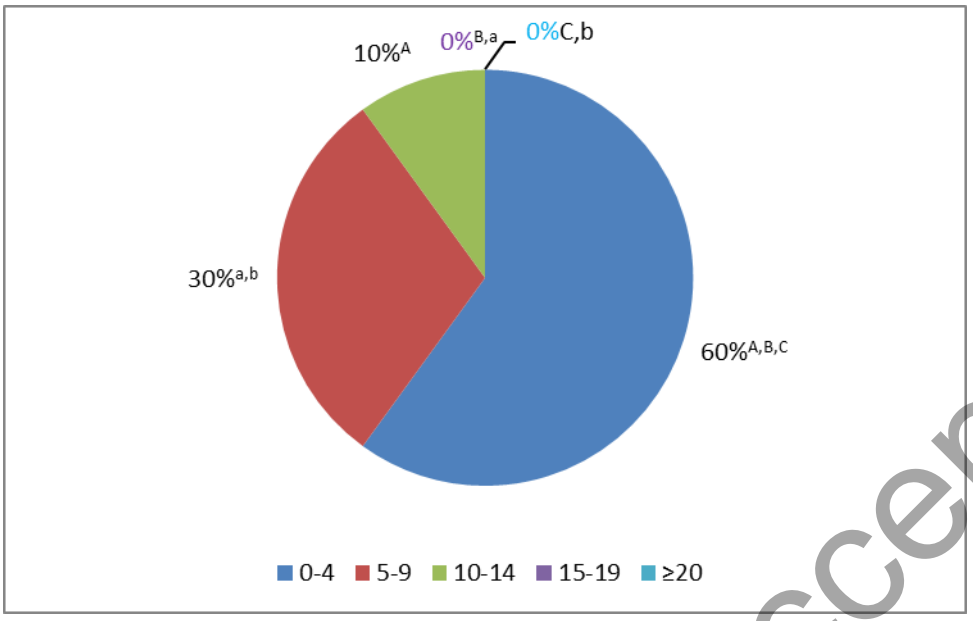
Graph 4. Frequency of symptoms of depressive among employees working in a non-COVID zone according to the score of the PHQ9 questionnaire



Legend: Same letterA,B – p< 0,01; a,b – p< 0,05;

After analyzing the answers received of our respondents about presence and level values of Burnout syndrome, we 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.

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

Domain	**Mean±SD**	**Low, n (%)**	**Moderate, n (%)**	**High, n (%)**
Emotional Exaustion	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.

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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 belong to moderate overall burnout category.

Discussion

Burnout syndrome has recently been included in the International Classification of Disease; 11th Issue (ICD-11) as an occupational phenomenon (6). In general, burnout syndrome (BS) and depression are considered diseases of modern society (4). Many studies have been done related to mental health of HCWs both during (5, 7, 9, 10, 13-15) and before (8, 11, 12) the COVID-19 pandemic. Some of them like 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 in our study where these values are: EE – 29,6%, DP – 7,0% and PA – 19,7% (13). Others like a cross-sectional study conducted in primary HCWs in Iran showed that 36% of participants had major depressive disorder, while in our study we found that only 2% of medical staff had severe depressive episode, and 7% of them moderately severe depressive episode (14). Survey with focus on the levels of BS in HCWs in Italy during the COVID-19 pandemic using BMI-HSS questionnaire as a research instrument revealed high levels of EE in 41% and high levels of DP in 27% of respondents (17). With the aim to understand the impact of COVID-19 on the HCWs around the world, a study was done which included 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 purpose to assess levels of BS using questionnaire Copenhagen Burnout Inventory (CBI), also show high levels of burnout for 3 dimensions (65,9% - personal burnout, 68,7% - work-related, 54,7% patient-related) (19). This study in Portugal beside levels of burnout also evaluated levels of depression at HCWs by using DASS-21. Normal levels of depression reported 67,3% of respondents, while severe levels depression was found at 6,5% HCWs, three times higher values compared to our study where severe depressive episodes were reported by 2% of respondents (19). And finally, at 286 healthcare workers from all regions of Serbia in October 2021 a cross-sectional online anonymous survey was conducted to assess levels of BS and depressive symptom. 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).

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Conclusion

In are study significantly more participants were: women, older than 40 years, medical staff and working in COVID 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 COVID and non-COVID zone. But the average value of the PHQ9 score employees in COVID zone is a significantly higher compared to average value of the PHQ9 score employees in non-COVID zone.

Levels of burnout at participants of the study shows 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 in our study 94,4% experienced 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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