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# The COVID-19 pandemic and mental health of healthcare workers in Serbia[1, 2, 3]

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The COVID-19 pandemic was a challenging experience for many professionals worldwide. Healthcare workers in particular had to invest a lot of efforts to cope with the stressors related to professional challenges, which can adversely affect their mental health and cause burnout syndrome. However, it is important to explore mental health outcomes of the pandemic among healthcare workers in the context of a specific country. This study examined the effects of increased professional and personal demands on the health workers' mental health after almost two years of dealing with the pandemic. A cross-sectional online anonymous survey was conducted during October 2021. The sample consisted of 286 healthcare workers (76.7% male) from all regions of Serbia. The questionnaire included socio-demographic data, professional and personal experiences during the pandemic, mental health difficulties, and burnout. The results indicate that more than half of the participants experienced a high or moderate level of depressive symptoms, anxiety and stress. Emotional exhaustion as a symptom of burnout was reported by almost all participants (91.9%), followed by moderate compassion fatigue (60.8%) and lower level of self-efficiency (23.8%). The most significant predictors of burnout and mental health difficulties referred to impaired working conditions and insufficient instructions from superiors, a high level of personal concern about the infection, and maladaptive coping strategies. The results point to the importance of providing psychosocial support to healthcare workers in order to

1 This study is a part of the project "Human and Society in Time of Crisis" funded by the Faculty of Philosophy, University of Belgrade.

2 The study was carried out at the initiative of the association for Sustainable Future- Koraci

3 The authors presented a part of this study results under the title "*Who cares about mental health of health workers during Covid-19 pandemic – new data from Serbia*", at the 28th scientific conference Empirical studies in psychology, 31 March – 3 April, 2022; Faculty of Philosophy, University of Belgrade, p. 36-37.

prevent further mental health impairments. Still, interventions should be focused on the external organizational factors instead of addressing solely individual vulnerability.

**Keywords:** healthcare workers, COVID-19, mental health, stress, burnout

## Introduction

The pandemic of SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2) has emerged as a global public health crisis, with more than 594 million confirmed cases worldwide and more than 6.45 million deaths between January 2020 and August 2022 (Our world in data, 2022). Infectious disease outbreaks of that scale are known to have psychological impact on the general population, at the same time putting particular professionals all around the world in extremely challenging circumstances. The WHO interim guidance from March 2020 (WHO, 2022) pointed that the COVID-19 pandemic represented an inevitable risk for healthcare workers. They invested enormous efforts to cope with an unknown virus, unpredictable health complications of their patients, and high death ratio among them. Still, there was also a threat to their personal health. Additionally, healthcare workers faced a greater risk of exposure to extreme workloads with limited medical resources, which differed greatly from what they were familiar with. Those who were on the front line of the response to the COVID-19 pandemic were likely to become 'secondary victims', not just because they were exposed to the virus and may have been infected and quarantined, but also because they worked in extremely demanding circumstances, under pressure to make quick medical and ethical decisions. Therefore, they were and still are at risk of suffering from different symptoms of anxiety, depression, and stress (Zhang et al, 2020; Kisely et al, 2020). Due to intensive and prolonged professional stressors, healthcare workers were prone to develop the burnout syndrome that includes emotional exhaustion, depersonalization and a lack of personal accomplishment (Mazi & Ferlin, 2004). Burnout is particularly common among the helping professions (Maslach et al., 1996; Jovanović et al., 2019). Hence, it is not surprising that it was particularly widespread among healthcare workers during the pandemic.

Many research findings have pointed out that professional stress causes emotional difficulties and mental health problems (Maunder, 2004; McAlonan et al., 2007; Wu et al., 2009; Su et al., 2007; Lin et al., 2007; Bah et al., 2020). Numerous studies conducted during the COVID-19 pandemic supported this finding as well (Xiang et al., 2020; Azoulay et al., 2020a; Azoulay et al., 2020b; Lai et al., 2019; Lay et al., 2020; Hu et al., 2020; Muller et al., 2020; Bennett et al., 2020; Agren, 2020). The study conducted among 780 hospital workers in France after the first wave of the pandemic confirmed the presence of significant mental health problems (d'Ussel et al., 2022). Participants reported symptoms of anxiety (41%), depression (21%), and PTSD (14%). Those who had a personal experience of the COVID-19 infection, who had an anxiety reaction at the beginning of pandemic or a previous experience of burnout or depression, had a greater risk for mental health disturbance, but job satisfaction appeared to be a protective

factor. The meta-analysis of 13 studies (33,062 participants) evaluating the mental health effect of the COVID-19 pandemic on healthcare workers showed that the prevalence rate of anxiety and depression symptoms was 22 to 23% (Pappa et al., 2022). Another systematic review on 44 studies with a total of 69,499 subjects revealed prevalence of depression in range of 13.5%-44.7%; anxiety 12.3%-35.6%; acute stress reaction 5.2%-32.9%; post-traumatic stress disorder 7.4%-37.4%; insomnia 33.8%-36.1%; and occupational burnout 3.1%-43.0%. Frontline healthcare workers, particularly those with low social support and less working experience, reported more mental health difficulties (Sanghera et al., 2020). For those reasons, there is an urgent need for studies in different countries that will inform effective regulations for work organization, reduce workload, as well as improve safety and support for health professionals (Erquicia et al., 2020).

## The situation in Serbia

Between the beginning of the pandemic and August 19 2022, Serbia recorded 2,236,301 cases of infection and 16,509 COVID-19-related deaths (www.covid19.rs). The health system response to pandemic cases was massive, offering high access to healthcare, including the ICU and specific medicines. However, the outcomes of treatments need to be evaluated yet. Also, the organization *United against COVID-19* (Ujedinjeni protiv kovida, 2022) reported total excess mortality in the same period of close to 57,000. The fluctuation of the number of hospitalized COVID-19 patients is presented in Figure 1[4].

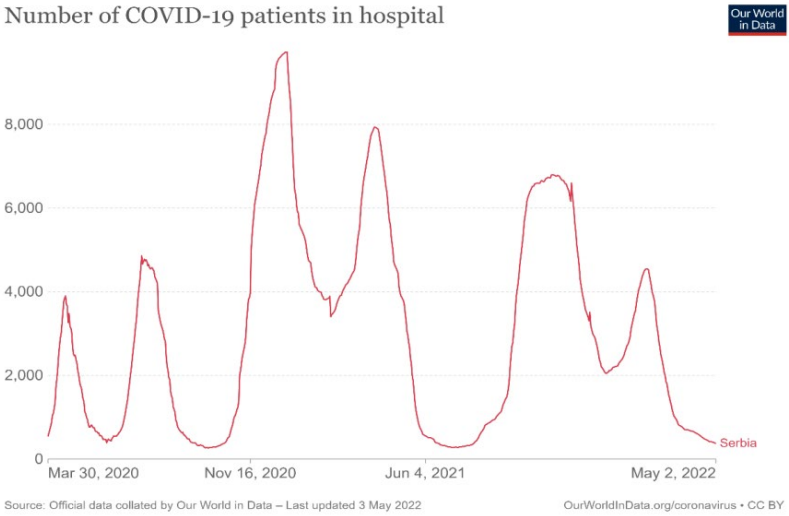


*Figure 1.* Fluctuation of the number of hospitalized COVID-19 patients

4 Hospital & ICU data were collected from official sources and collated by Our World in Data. The complete list of country-by-country sources is available on GitHub. https://ourworldindata.org/covid-hospitalizations

According to official statistical data, mortality excess was 13,991 in 2020 and 34,988 in 2021, which yields a total of 48,979 during those calendar years of the pandemic. The official government's announcements report that the total number of deaths caused by the COVID-19 pandemic in the years 2020 and 2021 was 16,074. Evidently, there is an excess of 32,905 death cases, which brings serious doubts regarding the official data on death cases. The trust in government was shown to be an important predictor of preventive and responsible health behaviour in a pandemic (Han et al., 2021). Unreliable pieces of information during the actual crisis contributed to an increase in uncertainty among citizens, but also heightened a sense of injustice in health workers, who felt that their efforts had not been recognized and appreciated.

The studies also revealed that the physicians engaged at the front line of defence against the COVID19 pandemic were younger clinicians with less work experience, who were reassigned to new positions from the public sector. Those who were reassigned and not properly prepared to accommodate to change had more problems in the new role (Dinic et al., 2021).

The publication *Rights of Health Workers During the COVID-19 Pandemic – Heroes or Neglected Victims* (Belgrade Centre for Human Rights, 2022) reported on frequent violation of labour rights of health workers, the fact that personal protective equipment was not available at all times, that there was no psychosocial support and the schedule of work shifts was not adhered to. Approximately 62% of health workers were transferred to the COVID-19 units only based on verbal instructions from supervisors, 81% did not know for how long and 26% received explicit verbal threats of job loss from supervisors if they refused it. A recent review article reported worsening of the mental health of health professionals involved in treatment of COVID-19 patients in Serbia (Latas et al., 2021). In accordance with the results of studies from other counties, healthcare workers displayed a higher level of stress, anxiety, insomnia and depression compared to their colleagues from other hospitals.

## Aims and objectives

The aim of the study is to examine the effects of the COVID-19 induced changes in working demands and health-related concerns on the mental health of healthcare workers in the specific context of Serbia after almost two years of dealing with the pandemic. Additionally, we want to specify the risk and protective factors associated with burnout and mental health difficulties in this specific group of professionals. The obtained findings could be informative for mental health policies and decision-making in some future global health crisis.

The specific objectives of the study are to explore:

- the presence of burnout syndrome, which includes emotional exhaustion, compassion fatigue, and self-efficiency;
- the experiences of mental health problems, such as symptoms of anxiety, depression, and stress;
- the presence of professional and personal stressors among the health workers and
- the way in which different professional and personal stressors and the use of different coping strategies predict the levels of burnout and mental health problems.

## Method

The cross-sectional study was conducted among health workers via an online anonymous survey during October 2021.

### *Sample*

The sample consisted of 286 participants working in the so-called COVID-19-units (76.7% male). The age range was from 20 to 74 years (*M*=42.9, *SD*=10.5). There were 78.5% of doctors and 21.5% of nurses and technicians from all regions of Serbia. The most represented region is Belgrade, which included 47.2% of participants; 29.7% of participants came from Vojvodina and an equal percentage of health workers (11.5%) from Western Serbia and Šumadija and Eastern and Southern Serbia. Their years of working experience ranged from a few months to 48 years (M=16.6, SD=11.0).

### *Data collection*

We applied the online survey to collect basic socio-demographic data, as well as to assess professional and personal experiences during the pandemic, mental health difficulties (anxiety, depression, and stress) and different aspects of burnout and coping strategies.

*Socio-demographic data* included age, gender, workplace region in Serbia, profession (medical doctor, specialist, nurse or technician) and years of working experience.

*Professional and personal experiences during the pandemic* were measured by a questionnaire created for the purposes of this study. *Professional experiences* reflect participants' satisfaction with different aspects of work: *reorganization* (institutional efficiency in providing healthcare in new context), *working conditions* (equipment, medication, security measures, work overload, availability of professional and psychological support, etc.), adaptation to fast

shift rotations within health institutions (quality of teamwork, distribution of workload, etc.) and satisfaction with the *instructions* given by the Ministry of Health and the National Institute of Public Health Batut. The items were assessed on a 5-point Likert scale (ranging from 1 – *completely unsatisfied* to 5 – *completely satisfied*). Cronbach's Alpha coefficients for subscales were: reorganization (.74), working conditions (.71), adaptation (.73) and instructions (.95).

*Personal experiences* included questions about whether healthcare workers or their family members or colleagues had been infected with the virus, their experience of hospitalization, fatal consequences of infection among their family or colleagues etc. Those items represented categorical variables (yes or no answers). The *health concern* (for personal health or for family members' health) and the level of *social support* (from family, friends and colleagues) were measured on a 5-point Likert scale (ranging from 1 – *not at all*, to 5 – *very much*). Cronbach's Alpha coefficients for health concern (.74) and social support (.71) were acceptable.

*DASS-21* (Lovibond & Lovibond, 1995) is a self-reporting questionnaire with 21 items based on a 4-point rating scale. It is designed to measure emotional distress in three subscales by seven items for each: depression (e.g. loss of self-esteem, depressed mood), anxiety (e.g. anticipation of negative events), and stress (e.g. persistent over arousal, low frustration tolerance). We applied the cultural adaptation of the scale for Serbia (Jovanović et al., 2014). Participants were asked to rate how each of the statements applied to them over the past week, in range from 0 to 3 (0 – *did not apply to me at all* to 3 – *applied to me very much, or most of the time)*. The higher the score, the more severe the emotional distress (Oei et al, 2013). The reliability of the DASS-21 was high: Cronbach's Alpha coefficient for total score (.95), for Depression (.88), Anxiety (.89) and Stress (.92).

*Maslach Burnout Inventory – Human Services Survey* (MBI–HSS) (Maslach, Jackson, & Leiter, 1996). The MBI consists of 22 items rated on a 7-point scale ranging from "*never in the past year*" (0) to "*every day*" (6). The items are classified into three subscales: Emotional Exhaustion (9 items), Depersonalization (Compaction fatigue)[5] (5 items), and Personal Accomplishment (Self-efficacy) (8 items). Emotional exhaustion is body's reaction to stress, characterized by a dysphonic mood due to the continuous 'wearing off' of effective individual resources to cope with professional stressors. Depersonalization is described as an insensitive and indifferent attitude towards the patients, who are treated as an object (in a de-personalized manner). Personal accomplishments refer to experience of

5 Since depersonalization also refers to the symptom of schizophrenia, we rather use the phrase *compassion fatigue* to point out a lack of empathy, which is, in our opinion, more adequate for this phenomenon.

professional self-efficacy. Negative personal assessment of competences and reduced performance and sense of personal inefficacy characterized burnout as well (Maslach et al., 2001). Cronbach's Alpha coefficient for total score was (.76), for Emotional Exhaustion (.91), for Depersonalization (.78), and Personal Accomplishment (.74). The authors recommend assessing each subscale separately (Richardsen & Martinussen, 2004).

*The Brief COPE scale* was designed to assess a broad range of coping responses that include active coping, planning, seeking social support, positive reinterpretation, acceptance, turning to religion, focusing on the venting emotion, denial, disengagement, use of alcohol-drug, etc. (Lyne & Rodger, 2000). The Brief COPE scale contains 28 items rated by the four-point Likert scale, ranging from "*I haven't been doing this at all*" (score 1) to "*I have been doing this a lot*" (score 4) (Meyer, 2001). In this study, we used a modified version of the scale, with 17 items. The higher score represents greater usage of a specific coping strategy. The reliability measured by Cronbach's Alpha coefficient was .70, due to the variety of different coping strategies.

The survey was conducted online, using the Google drive platform. The link for questionnaire was shared via social networks using the "snowball" method. It took the respondents approximately 20 minutes to provide answers to questions.

### *Data analysis*

Pearson's coefficient of correlation was used to examine the relations between the examined variables. We conducted the analysis of variance (ANOVA) to examine the differences between the groups based on specific experiences with the COVID-19 infection. Finally, hierarchical multiple regressions were conducted for the Burnout scales and DASS-21 as the dependent variables and specific professional and personal experiences during the COVID-19 pandemic and coping strategies as predictors. Statistical analyses were performed by the IBM SPSS Statistics 21.0.

## Results

### *Professional experiences*

The exploration of professional experiences among healthcare workers indicated dissatisfaction (the average score below 3 on a 5-point scale) with the majority of aspects of work (Table 1). They recognized the poor reorganization of the working process as one of the factors that aggravated professional work during the pandemic ($M$=2.4, $SD$=1.2). More than half of the participants expressed dissatisfaction with the general reorganization

of work conditions (55%). Working conditions, such as a limited amount of equipment or lack of employees, were also perceived as aggravating (*M*=1.7, *SD*=0.8). Dissatisfaction with working conditions was present among 81.5% of participants. For example, more than 75% of health workers pointed out that a lack of psychological support additionally burdened their professional functioning. Participants also expressed less satisfaction with adaptation (team work, management support, etc.) to the new situation (*M*=3.0, *SD*=1.4). The adaptation to new circumstances was recognized as unsatisfactory by 38.4% of health workers. Participants expressed general dissatisfaction with the instructions provided by government institutions (*M*=2.8, SD=1.2). Over 40% of health workers were dissatisfied with those instructions.

Table 1
*Descriptive statistics for the scale Professional experiences (N=286)*

| Professional experiences | Min | Max | | Frequency | Percentage | Mean | SD |
|---|---|---|---|---|---|---|---|
| | | | 1 | 72 | 25.2 | 2.44 | 1.17 |
| | | | 2 | 85 | 29.7 | | |
| Reorganization | 1 | 5 | 3 | 76 | 26.6 | | |
| | | | 4 | 36 | 12.6 | | |
| | | | 5 | 17 | 5.9 | | |
| | | | 1 | 130 | 45.5 | 1.70 | 0.77 |
| | | | 2 | 104 | 36.4 | | |
| Working conditions | 1 | 5 | 3 | 40 | 14.0 | | |
| | | | 4 | 11 | 3.8 | | |
| | | | 5 | 1 | 0.3 | | |
| | | | 1 | 61 | 21.3 | 2.98 | 1.39 |
| | | | 2 | 49 | 17.1 | | |
| Adaptation | 1 | 5 | 3 | 59 | 20.6 | | |
| | | | 4 | 70 | 24.5 | | |
| | | | 5 | 47 | 16.4 | | |
| | | | 1 | 43 | 15.0 | 2.81 | 1.17 |
| | | | 2 | 69 | 24.1 | | |
| Instructions | 1 | 5 | 3 | 89 | 31.1 | | |
| | | | 4 | 55 | 19.2 | | |
| | | | 5 | 30 | 10.5 | | |

Personal experiences with coronavirus

Personal experiences related to the COVID-19 pandemic included the infection of participants, their family members or their colleagues, experiences with hospitalization, as well as the death of family members or colleagues due to this virus. Almost all health workers reported that they had colleagues who had been infected (99.3%) or hospitalized (72%), while 43.4% said they had colleagues who had died as a consequence of the infection. Further, 67.8% of participants had an infected family member.

The results show that there was a moderate level of concern in health workers about getting infected or their family members or colleagues getting infected (*M*=3.74, *SD*=1.0; Table 2). Around 26% of health workers were very worried, 42% of them were mostly worried and around 22% moderately worried. At the same time, they experienced a higher level of social support from their family, friends and colleagues (*M*= 4.56, *SD*= 0.66).

Table 2
*Descriptive statistics for the scale Personal experiences*

| Personal experiences | Min | Max | Mean | SD | | *Frequency* | *Percentage* |
|---|---|---|---|---|---|---|---|
| | | | | | 1 | 0 | 0 |
| | | | | | 2 | 4 | 1.4 |
| Social support | 1 | 5 | 4.56 | 0.66 | 3 | 9 | 3.1 |
| | | | | | 4 | 65 | 22.7 |
| | | | | | 5 | 208 | 72.7 |
| | | | | | 1 | 7 | 2.4 |
| | | | | | 2 | 18 | 6.3 |
| Concern about infection | 1 | 5 | 3.74 | 1.00 | 3 | 63 | 22.0 |
| | | | | | 4 | 106 | 37.1 |
| | | | | | 5 | 92 | 32.2 |

Burnout syndrome

The most prominent problem was burnout. The majority of health workers (91.9%) reported high or moderate levels of emotional exhaustion. The mean score is high compared to the norms (Table 3). High or moderate levels of compassion fatigue were experienced by 60.8% of participants, with mean score in the range of moderate level. Finally, 23.8% felt lower levels of self-efficiency and mean score is moderate as well.

Table 3
*Descriptive statistics for the Burnout scale*

| *Burnout* | *Category* | *Percentage* | *Min.* | *Max.* | *M(SD)* | *Norms** |
|---|---|---|---|---|---|---|
| Emotional Exhaustion | High | 79.7 | 0 | 54 | 35.81 (11.73) | 27–54 high |
| | Moderate | 12.2 | | | | |
| | Mild | 8 | | | | |
| Depersonalization/ compassion fatigue | High | 28.3 | 0 | 26 | 8.98 (6.36) | 7–12 moderate |
| | Moderate | 32.2 | | | | |
| | Mild | 39.5 | | | | |
| Self-efficiency | High | 39.2 | 17 | 48 | 36.21 (6.47) | 32–38 moderate |
| | Moderate | 37.1 | | | | |
| | Mild | 23.8 | | | | |

*The category where Mean scores of the sample fit based on the norms.

## Mental health difficulties

The results on the DASS-21 showed that 46.8% participants had a high or moderate level of depressive symptoms (Table 4). High or moderate levels of anxiety were reported by as many as 60.6% of health workers, while a high or moderate level of stress was experienced by 62.2% of them. Average scores are in the range of the moderate level of anxiety, which is close to severe, moderate level of stress and slightly under the moderate level of depression.

Table 4
*Descriptive statistics for the presence of depression, anxiety and stress symptoms*

| *DASS-21* | *Category* | *Percentage* | *Min.* | *Max.* | *M(SD)* | *Norms** |
|---|---|---|---|---|---|---|
| Depression | High | 25.5 | 0 | 21 | 13.77 (10.27) | 14–20 moderate |
| | Moderate | 21.3 | | | | |
| | Mild | 53.1 | | | | |
| Anxiety | High | 40.6 | 0 | 21 | 13.44 (10.30) | 10–14 moderate |
| | Moderate | 19.9 | | | | |
| | Mild | 39.5 | | | | |
| Stress | High | 44.4 | 0 | 21 | 22.70 (11.36) | 19–25 moderate |
| | Moderate | 17.8 | | | | |
| | Mild | 37.8 | | | | |

*The category where Mean scores of the sample fit based on the norms.

## Coping strategies

We were interested in exploring which type of coping strategies was used among health workers in dealing with stress. Table 5 shows the prevalence of using a specific coping strategy. The percentage of answers 3 (from time to time) and 4 (often) on the COPE scale was presented together. Almost half of the participants sometimes felt that giving up was the only thing they could do (47.6%). Other maladaptive coping strategies, such as self-blame and using alcohol, were present in 20–25% cases. On the other hand, adaptive coping strategies were used more frequently. More than 90% of health workers tried to maintain a positive attitude and optimism or relied on support from family and friends, while over 80% used a proactive approach to do their best to solve the problems and cope with challenging situations. However, only half of them made a good organization strategy with their colleagues.

Table 5
*Frequency of using specific coping strategies*

| Coping strategies | Percent |
|---|---|
| I turn to work or other activities to take my mind off. | 74.5 |
| I had a feeling this was not going to happen to me. | 52.4 |
| I asked for support and understanding from colleagues. | 44.4 |
| I admit to myself that I can't deal with it and stopped trying. | 47.6 |
| I take additional action to try to solve the problem. | 85.7 |
| Alcohol or medicines helped me to get through difficult situations. | 19.9 |
| Together with my colleagues, I made a good organization of work and devised a strategy on what to do in these circumstances. | 57.0 |
| I openly expressed my dissatisfaction and feelings of fear, sadness, helplessness, or else. | 48.3 |
| I found meaning and comfort in faith. | 31.8 |
| I asked for help or advice from colleagues and superiors on what to do. | 38.5 |
| I accepted the situation as it was and found a way to live with it. | 76.9 |
| I criticized and blamed myself for some of the things that had happened. | 24.5 |
| I often made jokes about the situation. | 55.2 |
| We managed and improvised on the go, in a makeshift manner. | 85.7 |
| I tried to keep a positive attitude. | 93.0 |
| I received emotional support and understanding from friends and family. | 92.3 |
| I kept hoping that all this would pass one day. | 94.4 |

For further analyses, we selected the coping strategies that clearly represented adaptive or maladaptive ones and divided them into these two groups. The maladaptive strategies included items such as: *Alcohol or medicines helped me to get through difficult situations; I criticized and blamed myself for some of the things that had happened; I admit to myself that I can't deal with it and stopped trying*. The average score for maladaptive coping strategies on a 4-point scale was lower comparing to the adaptive ones ($M$=2.0, $SD$=0.6). Adaptive coping strategies included items such as: *I take additional action to try to solve the problem; Together with my colleagues, I made a good organization of work and devised a strategy on what to do in these circumstances; I received emotional support and understanding from friends and family; I tried to keep a positive attitude*. The average score for the adaptive coping strategies was moderate, but higher compared to the maladaptive ones (M=3.3, SD=0.5).

Relation of Burnout and DASS-21 with professional and personal experiences

All subscales of burnout and mental health difficulties moderately negatively correlate with satisfaction with different organizational aspects, working conditions, instructions from superiors, level of adaptation and efficiency of health institutions. Expectedly, the level of self-efficiency had positive, but lower correlations with professional experiences. Generally speaking, professional experiences are strongly related to different aspects of burnout syndrome, as well as with the level of stress. Particularly, working conditions had the highest correlation with all the aspects of burnout scales, but also with all measures of mental health difficulties (Table 6).

Table 6
*Correlations of Burnout and DASS-21 with professional and personal experiences*

| | *Reorganization* | *Working conditions* | *Adaptation* | *Instructions* | *Efficiency* | *Social support* | *Concern about infection* |
|---|---|---|---|---|---|---|---|
| Emotional exhaustion | -.34** | -.49** | -.26** | -.37** | -.33** | -.12* | .31** |
| Compassion fatigue | -.18** | -.33** | -.17** | -.25** | -.27** | -.17** | .15* |
| Self-efficiency | .23** | .27** | .19** | .27** | -29** | .17** | -.12* |
| Anxiety | -.09 | -.37** | .01 | -.17** | -.15** | -.17** | .39** |
| Depression | -.20** | -.44** | -.09 | -.19** | -.23** | .23** | .32** |
| Stress | -.25** | -.53** | -.16** | -.24** | -.27** | -.20** | .33** |

**p<.01 level (2-tailed). *p<.05 level (2-tailed).

All scales correlate in range from low to moderate with concern about personal or family member's infection. Correlations were higher with mental health difficulties than with burnout scales. It seems that professional experiences are more strongly correlated with burnout, while the tendency to worry about the COVID-19-related outcomes could impair mental health in challenging circumstances. On the other hand, social support from friends and family had a negative, but low correlation with burnout aspects (except self-efficacy), as well as with anxiety and stress levels, suggesting their protective, but not sufficient role for mental health protection in stressful situations at work.

We were also interested in exploring how personal experiences of infection, death or hospitalization of colleagues or family members, caused by the COVID-19, influenced burnout and mental health difficulties. Therefore, we applied one-factor analysis of variance to examine the differences at the DASS-21 and Burnout scales between groups of participants based on those specific pandemic consequences. Table 7 presents only significant results

of ANOVA. There is a significant difference in anxiety scores between the participants who were not infected by COVID-19 and the ones that were infected ($F(1,284) = 5.93$; $p = .016$, $\eta 2 = 0.02$), with the higher level of anxiety present among those who suffered from the infection.

Table 7
Differences between groups based on the experiences of infection, hospitalization and death of colleagues at DASS-21 and Burnout scales

| | F | p | η2 | | *N* | *M* | *SD* |
|---|---|---|---|---|---|---|---|
| Anxiety * Personal infection | 5.93 | .016 | .020 | Yes | 150 | 14.83 | 10.93 |
| | | | | No | 136 | 11.89 | 9.36 |
| Depression * Death of colleague | 4.87 | .028 | .017 | Yes | 124 | 15.30 | 10.59 |
| | | | | No | 162 | 12.60 | 9,89 |
| Depersonalization * Death of colleague | 4.84 | .029 | .017 | Yes | 124 | 9.92 | 7.02 |
| | | | | No | 162 | 8.26 | 5.73 |
| Emotional Exhaustion * Infected colleague | 8.25 | .004 | .028 | Without hospitalization | 78 | 32.56 | 13.11 |
| | | | | With hospitalization | 206 | 37.00 | 11.00 |

Significant differences were also found in depression ($F(1,284) = 4.87$; $p = .028$, $\eta 2 = 0.02$) and depersonalization/compassion fatigue ($F(1,284) = 4.84$, $p = .029$, $\eta 2 = 0.02$) scores between the group of workers who experienced the death of a colleague due to COVID-19 and the group of those who did not. Higher levels on depression and depersonalization were reported among health workers whose colleagues had died.

Finally, the results confirmed that there were significant differences in emotional exhaustion among the groups based on the experience of infection of colleagues (with an infection and with a complicated infection when hospitalization was needed), ($F(2,282) = 8.25$, $p = .004$, $\eta 2 = 0.03$). Since there were only two participants without the experience of their colleagues' infection, they were not taken into account. The group of subjects whose colleague was hospitalized due to the COVID-19 infection had significantly higher scores of emotional exhaustion compared to the group of those whose colleague had been infected, but not hospitalized.

## Relation of Burnout and DASS-21 with coping strategies

All scales (except Self-efficacy) had a moderate positive correlation with maladaptive coping strategies (using alcohol, self-blaming, withdrawal, etc.), while adaptive strategies (proactive actions, positive attitudes, optimism) had negative, but lower correlations with burnout and mental health difficulties. Self-efficiency had the highest correlations with adaptive strategies, while mental health difficulties were more connected with maladaptive coping. These correlations are shown in Table 8.

Table 8
*Correlation of Burnout and DASS-21 with coping strategies*

| | *Adaptive* | *Maladaptive* |
|---|---|---|
| Emotional exhaustion | -.15** | .39** |
| Compassion fatigue | -.21** | .29** |
| Self-efficiency | .40** | -.29** |
| Anxiety | -.21** | .46** |
| Depression | -.29** | .53** |
| Stress | -.27** | .57** |

**$p$<.01 level (2-tailed). *$p$<.05 level (2-tailed).

**Hierarchical regression models**

Hierarchical multiple regressions were conducted for the Emotional Exhaustion scale of Burnout scale and total score of DASS-21 as the dependent variables and specific experiences and coping strategies during COVID-19 as predictors. Socio-demographic variables, such as sex, age and education, were entered at first step, professional and personal experience variables at second, and adaptive and maladaptive strategies at third step of the regression. The authors of the Burnout scale recommend analysing the subscales separately, not as a total score. Hence, we opted to use only the Emotional Exhaustion variable for regression because our results confirmed that it was the most important indicator of burnout and had the highest correlation with different experiences. Specific personal experiences of direct consequences of COVID-19, such as infection or death of colleagues, are obviously very important for personal and professional wellbeing, but they were present in most cases, and therefore were not included as predictors due to their low variability. Regression statistics for Emotional Exhaustion are shown in Table 9.

Table 9
*Regression statistics for Emotional Exhaustion*

| Variable | B | *T* | *SE* | *R* | $R^2$ *adj* | $\Delta R^2$ | *p-value* |
|---|---|---|---|---|---|---|---|
| Step 1 | | | | .18 | .02 | .03 | .09 |
| Gender (1=F, 2=M) | .138* | 2.311 | 1.648 | | | | |
| Age | .240 | 1.537 | .174 | | | | |
| Working experience | -.171 | -1.123 | .162 | | | | |
| Region | .015 | .254 | .744 | | | | |
| Educational profile | .010 | .152 | .272 | | | | |

| Variable | B | *T* | *SE* | *R* | $R^2$ *adj* | $\Delta R^2$ | *p-value* |
|---|---|---|---|---|---|---|---|
| Step 2 | | | | .60 | .33 | .32 | .00 |
| Reorganization | -.037 | -.559 | .662 | | | | |
| Working conditions | -.337** | -5.706 | .903 | | | | |
| Instructions from superiors | -.224* | -3.975 | .564 | | | | |
| Adaptation | .005 | .077 | .506 | | | | |
| Efficacy | -.050 | -.823 | .998 | | | | |
| Concern about infection | .196** | 3.879 | .590 | | | | |
| Social support | -.048 | -.979 | .874 | | | | |
| Step 3 | | | | .62 | .35 | .02 | .01 |
| Adaptive coping | .039 | -674 | 1.327 | | | | |
| Maladaptive coping | .165** | 3.008 | .982 | | | | |

Note. $N = 286$; *$p < .05$, **$p < .01$

In the first step of hierarchical multiple regression, socio-demographic variables explained only 2% variance, ($R^2adj$=.02; $F(5,280)$= 1.89; $p$=.09); only gender had a significant, but small contribution to prediction (β=.138, $p$<.05). In the second step, when experience variables were included, the model explained 33% of the variance of emotional exhaustion ($R^2adj$=.33; $F(12,273)$= 12.61; p<.001). The most significant negative predictors were working conditions (β=.-337, p<.01), instruction for superiors, and concern about infection (β=.196, $p$<.01). In the third step of the regression model, coping strategies explained only 2% additional variance of emotional exhaustion ($\Delta R^2$=.02; $F(14,271)$= 11.75; $p$<.01), where only maladaptive strategies contributed significantly to the model (β=.165, $p$<.01). Together, all independent variables accounted for 38% variance of Emotional exhaustion.

Hierarchical multiple regression was conducted for the total score of the DASS scale as the dependent variable. The integration of three subscales seemed plausible since these three scales highly correlated, with the range from .70 to.79. The same predictors, socio-demographic variables, professional and individual experiences and coping strategies were included in three steps of regression. Regression statistics for the DASS scale are presented in Table 11.

Table 10
*Hierarchical regression for the DASS scale*

| Variable | B | *T* | SE | *R* | $R^2$ *adj* | $\Delta R^2$ | p-value |
|---|---|---|---|---|---|---|---|
| Step 1 | | | | .28 | .06 | .08 | .00 |
| Gender (1=F, 2=M) | .268** | 4.614 | 1.322 | | | | |
| Age | .073 | .480 | .140 | | | | |
| Working experience | -.082 | -.549 | .130 | | | | |
| Region | .024 | .406 | .597 | | | | |
| Educational profile | .070 | 1.150 | .218 | | | | |
| Step 2 | | | | .64 | .38 | .33 | .00 |
| Reorganization | .032 | .499 | .524 | | | | |
| Working conditions | -.395** | -6.959 | .715 | | | | |
| Instructions from superiors | -.133* | -2.456 | .447 | | | | |
| Adaptation | .113 | 1.957 | .401 | | | | |
| Efficacy | -.009 | -.155 | .790 | | | | |
| Concern about infection | .279** | 5.743 | .467 | | | | |
| Social support | -.176** | -3.698 | .692 | | | | |
| Step 3 | | | | .72 | .49 | .11 | .00 |
| Adaptive coping | -.098 | -1.922 | .965 | | | | |
| Maladaptive coping | .359** | 7.408 | .714 | | | | |

Note. N = 286; *$p$ <.05, **$p$ <.01

The results of hierarchical multiple regression showed that demographic variables contributed significantly to the regression model and explained 6% variance of the DASS score, ($R^2adj$=.06; $F$(5,280)= 4.58; $p$<.001), where gender was the only significant predictor (β=.266, $p$<.01) of mental health difficulties. Introducing different professional and personal experiences, predictors together explained 38% of the total DASS score ($R^2adj$=.38; F(12,273)= 12.61; $p$<.001). Variables that contributed significantly to the regression model were working conditions (β=-.395, $p$ <.001), concern about infection (β=.279, $p$ <.001), and instructions from superiors (β=-.133, $p$ <.001). Finally, when coping strategies were introduced in the third step of the regression model, they explained an additional 11% of DASS ($\Delta R^2$=.11; $F$(14,271)= 20.43; $p$<.001). Together, all independent variables accounted for 49% of the variance of mental health difficulties.

## Discussion

The study examined the effects of the COVID-19 induced changes in working demands and health-related concerns on the mental health of healthcare workers in COVID-19 units after two years of the pandemic in Serbia. Further, we wanted to specify some risk and protective factors associated with burnout and mental health difficulties.

The results confirmed the presence of a large number of stressful professional experiences among the health workers. They reported dissatisfaction with most aspects of work, such as reorganization and adaptation to a new, challenging situation, institutional efficiency and instructions given by government institutions. Health workers were especially dissatisfied with working conditions, such as limited equipment, lack of employees, work overload, safety risks, etc. Specific experiences with COVID-19 consequences showed that almost all health workers had colleagues who had been infected, among whom many had been hospitalized. Despite the official statements in media that there was no evidence about fatal outcomes among health workers caused by COVID-19, almost half of the participants reported that they had colleagues who had died as a consequence of the infection. The perceived discrepancy between public information in the media and personal experiences was an additional source of stress and disappointment.[6] In addition, most of them had to cope in some period with personal infection or/and infected family members. Concerns about personal health or health of family members or colleagues increased the level of stress, which has been confirmed by other studies as well. One of them, a cross-cultural study conducted in Italy, Serbia, and Romania on the sample of 1,100 participants, showed that the level of distress during the COVID-19 pandemic was higher for people who were prone to worry and those who had higher levels of fear of COVID-19 (Kosić & Džamonja, 2021a).

The results concerning burnout indicate that over 90% of participants reported high or moderate levels of emotional exhaustion, while over half of them experienced a high or moderate level of compassion fatigue, a high or moderate level of anxiety or stress; slightly less than half experienced the same level of depressive symptoms.

An exploration of coping strategies indicated that health workers relied more often on the adaptive strategies than on the maladaptive ones. Burnout and mental health difficulties had a moderate positive correlation with maladaptive coping strategies (using alcohol, self-blaming, withdrawal, etc.) and negative, but lower correlations with the adaptive strategies (proactive actions, positive attitudes, optimism). Self-efficiency had the highest correlations with the adaptive strategies. We can speculate that there is a mutual influence of those constructs. Use of the adaptive strategies improves the feeling of self-efficiency; additionally, self-efficient persons are more prone to using adaptive strategies.

The findings about the impact of COVID-19 on mental health indicate that a higher level of anxiety was present among those who experienced the

6 The initiative of the association for Sustainable Future – *Koraci* to conduct this survey was based on unofficial reports of colleagues from Medical Services, who warned about problems of burnout in COVID19-units in Serbia.

infection. Health workers whose colleagues had died had higher scores on Depression and Depersonalization scales. While the experience of loss leads to mourning or even depression, we can speculate that Depersonalization could be associated with the perception that high rate of death among them was not recognized in public. Probably reduced receiving empathy can also lead to questionable giving of empathy for others, which was reflected in compassion fatigue. Similarly, the level of Emotional Exhaustion was higher among the participants whose colleague was hospitalized due to the COVID-19 complications, compared to those whose colleagues were just infected but not hospitalized. In fact, there were almost none of them without the experience of the COVID-19 infection.

However, the majority of healthcare workers received a high level of social support from their family and friends, which has been confirmed as a strong protective factor in stressful circumstances (Džamonja et al., 2020; Džamonja et al., 2021; Kosic et al., 2021b). Social support from friends and family negatively correlated with the Burnout and DASS scales, suggesting their protective role, but low correlations also imply that relying only on social support just reduces the risk, but cannot prevent the effect of many other sources of stress. Still, the absence of support could be an additional risk factor for mental health.

We were also interested in exploring how professional and personal sources of stress, as well as the use of different coping strategies, predict the levels of burnout and mental health problems. The results showed that the most prominent predictors of those difficulties were impaired working conditions and insufficient instructions from superiors, as well as a high level of personal concern about infection and maladaptive coping strategies, while social support diminished mental health risk. Differences in the levels of the predictors' contribution to criteria variables indicate that burnout is better predicted by negative professional experiences, as well as by concerns about the infection and maladaptive coping strategies, but those two personal factors played a more important role in the prediction of mental health problems.

## Conclusions

The main results confirm the findings of other studies that health workers have been working under the extremely challenging conditions that had an impact on the high level of burnout and mental health difficulties. The most important risk factors for burnout were poor working conditions and insufficient instructions from superiors, which made an already challenging situation even harder. If it is accompanied with concerns about the infection and relying on maladaptive coping strategies, this increases the possibility for mental health problems.

There are some limitations of the present study. First of all, the sample was not representative. Nevertheless, the number of respondents was considerable, having in mind that the questionnaire was distributed to those healthcare workers assigned to the COVID/ICU Hospital Units in Serbia. A relatively small and selected sample limits the generalization of the results. In addition, a small, mixed sample of doctors with different levels of qualifications and nurses and technicians also prevents us from comparing the experiences of those groups. Certain open-ended questions at the end of the questionnaire make it possible to conclude that our participants were motivated to express their problems ("*Nobody has asked us what we think or how we feel. Finally, we have an opportunity to do so*"). There may also be chance that the most vulnerable health workers were not included, those who had no motivation to fill in the questionnaire or those who were even afraid that the study was not really anonymous (although they were informed about it and were not asked for any identification data), which reflects other pressures to which they were exposed.

* * *

All in all, healthcare workers made a maximum effort to do their best, mostly relying on their adaptive coping strategies, teamwork with colleagues and support from their family and friends. Based on the fact that professional factors have an important role in the prevention of burnout, plenty of consequences could have been avoided with appropriate instructions and improved working conditions. Healthcare managers acknowledge the challenges for mental health of medical staff and minimize the psychological risk based on the evidence of similar studies across the world (Greenberg et al., 2020a; Greenberg et al., 2020b). Other studies pointed that supportive managers contribute to better mental health of their staff (Sanghera et al, 2020).

The fact that healthcare workers experienced significant mental health difficulties also points out to the importance of providing psychosocial support to vulnerable staff in order to prevent further impairment of their mental health. The access to the rapid-response mobile teams of psychologists and psychiatrists should be provided. Since the problems were experienced by the majority of health workers, it is necessary to focus intervention on the systemic and organizational problems instead of addressing them solely to individual responsibility.

## References

Agren D. (2020) Understanding Mexican health worker COVID-19 deaths. *World report. Lancet*, *396*: 807. doi:10.1016/S0140–6736(20)31955–3

Azoulay, E., Cariou, A., Bruneel, F., Demoule, A., Kouatchet, A., Reuter, D., et al. (2020a). Symptoms of anxiety, depression, and peritraumatic dissociation in critical care clinicians managing patients with COVID-19. A cross-sectional study. *American Journal of Respiratory and Critical Care Medicine, 202*: 1388–1398. doi:10.1164/rccm.202006–2568OC

Azoulay, E., De Waele, J., Ferrer, R., Staudinger, T., Borkowska, M., Povoa, P., et al. (2020b). Symptoms of burnout in intensive care unit specialists facing the COVID-19 outbreak. *Annals of Intensive Care*, *10*: 110. doi:10.1186/s13613–020–00722–3

Bah, A.J., James, P.B., Bah, N., Sesay, A.B., Sevalie, S., Kanu, J.S. (2020). Prevalence of anxiety, depression and post-traumatic stress disorder among Ebola survivors in northern Sierra Leone: a cross-sectional study. *BMC Public Health*, *20*: 1391. 10.1186/s12889–020–09507–629

Belgrade Centre for Human Rights (2022). *Prava zdravstvenih radnika tokom pandemije COVID-19 – heroji ili zanemarene žrtve* [Rights of Health Workers During COVID-19 Pandemics – Heroes or Neglected Victims].

Bennett, P., Noble, S., Johnston, S., et al. (2020). COVID-19 confessions: A qualitative exploration of healthcare workers' experiences of working with COVID-19. *BMJ Open, 10***:** e043949. https://doi.org/10.1136/bmjopen-2020–043949

Dinić, M., Šantrić Milićević, M., Mandić-Rajčević, S., & Tripković, K. (2021). Health workforce management in the context of the COVID-19 pandemic: A survey of physicians in Serbia. *International Journal of Health Planning and Management, 36*(S1), 92–111. https://doi.org/10.1002/hpm.3141

d'Ussel, M., Fels, A., Durand, X., Lemogne, C., Chatellier, G., Castreau, N., Adam, F. (2022). Factors associated with psychological symptoms in hospital workers of a French hospital during the COVID-19 pandemic: Lessons from the first wave. *PlosOne*. https://doi.org/10.1371/journal.pone.0267032

Džamonja Ignjatović, T., Stanković, B., Klikovac, T (2020). Iskustva i kvalitet života starijih osoba tokom pandemije Kovida-19 i uvedenih restriktivnih mera u Srbiji, [Experiences and quality of life of the elderly during the Covid-19 pandemic and the restrictive measures introduced in Serbia]. *Psihološka istraživanja, XXIII* (2), 201–231. 10.5937/PSISTRA23–28990

Džamonja Ignjatović, T., Stanković, B., Vuletić, T., Ignjatović, N., Nikitović, T. (2021). Iskustva i kvalitet života na početku pandemije kovida-19 u Srbiji: kvalitativna studija [Experiences and quality of life at the beginning of the covid-19 pandemic in Serbia: a qualitative study]. In: Džamonja Ignjatović T., (Ed.) *Odgovor psihologije kao nauke i struke na izazove krize izazvane pandemijom kovida-19* [The response of psychology as a science and profession to the challenges of the crisis caused by the COVID-19 pandemic] (p. 11–28). Filozofski Fakultet, Univerzitet u Beogradu.

Erquicia, J., Valls, L., Barja, A., Gil, S., Miquel, J., Leal-Blanquet, J., et al. (2020). Emotional impact of the Covid-19 pandemic on healthcare workers in one of the

most important infection outbreaks in Europe. *Medicina Clínica (English Edition), 155,* 434–440. 10.1016/j.medcle.2020.07.010

Greenberg, N., Brooks, S.K., Wessely, S., Tracy, D.K. (2020a). How might the NHS protect the mental health of health-care workers after the COVID-19 crisis? *Lancet Psychiatry*, *7*, 733–734.

Greenberg, N., Docherty. M., Gnanapragasam, S., Wessely, S. (2020b). Managing mental health challenges faced by healthcare workers during COVID-19 pandemic. *British Medical Journal*, *368*: m1211.

Han, Q., Zheng, B., Cristea, M., Agostini, M., Belanger, J.J., Gutzkow, B., Kreienkamp, J., Leander P. N. (2021). Trust in government regarding COVID-19 and its associations with preventive health behavior and prosocial behavior during the pandemic: a cross-sectional and longitudinal study; PsyCorona Collaboration#. *Psychological Medicine*, 1–11. 10.1017/S0033291721001306.

Hu, D., Kong, Y., Li, W., Han, Q., Zhang, X., Zhu L.X., et al. (2020). Frontline nurses' burnout, anxiety, depression, and fear statuses and their associated factors during the COVID-19 outbreak in Wuhan, China: A large-scale cross-sectional study. *eClinical Medicine*, *24*: 100424. 10.1016/j.eclinm.2020.100424

Jovanović, V., Gavrilov-Jerković, V., Žuljević, D., Brdarić, D. (2014). Psihometrijska evaluacija Skale depresivnosti, anksioznosti i stresa–21 (DASS–21) na uzorku studenata u Srbiji [Psychometric evaluation of the Depression, Anxiety and Stress Scale-21 (DASS-21) on a sample of students in Serbia]. *Psihologija*, *47*(1), 93–112. 10.2298/PSI1401093J

Jovanović, V., Karić, J., Mihajlović, G., Džamonja-Ignjatović, T. & Hinić, D. (2019). Work-related burnout syndrome in special education teachers working with children with developmental disorders – possible correlations with some sociodemographic aspects and assertiveness. *European Journal of Special Needs Education, 34*(5), 692–701. 10.1080/08856257.2019.1572092

Kisely, S., Warren, N., McMahon, L., Dalais, C., Henry, I., Siskind, D. (2020). Occurrence, prevention, and management of the psychological effects of emerging virus outbreaks on healthcare workers: rapid review and meta-analysis. *British Medical Journal*, *369*: m1642. 10.1136/bmj.m1642

Kosic, A., Džamonja Ignjatović, T. (2021a). Main Concerns in Times of COVID-19 in Three Groups of People: Italians, Romanian Immigrants in Italy and Romanians in Romania, In: Gabrielli, F. & Irtelli, F. (Eds.), *Anxiety, Uncertainty and Resilience During the Pandemic Period – Anthropological, Psychological and Sociological Perspective* (p. 2–20). IntechOpen. http://dx.doi.org/10.5772/intechopen.97858

Kosic, A., Džamonja Ignjatović, T. & Petrović, N. (2021b). A Cross-Cultural Study of Distress during COVID-19 Pandemic: Some Protective and Risk Factors. *International Journal of Environmental Research and Public Health, 18*(14), 7261. https://doi.org/10.3390/xxxxx

Lai, J., Ma, S., Wang, Y., Cai, Z., Hu, J., Wei, N., et al. (2019). Factors Associated with Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. *JAMA Network Open*, *3*: e203976. 10.1001/jamanetworkopen.2020.3976

Latas, M., Pantović-Stefanović, M., & Đukić, B. (2021). KOVID-19 – aktuelno stanje mentalnog zdravlja sa osvrtom na zdravstvene radnike [COVID-19 – the current state of mental health with a focus on healthcare workers]. *Srpski medicinski časopis Lekarske komore, 2*(4), 386–391. https://doi.org/10.5937/smclk2–35256

Lin, C-Y., Peng, Y-C., Wu, Y-H., Chang, J., Chan, C-H., Yang, D-Y. (2007). The psychological effect 511 of severe acute respiratory syndrome on emergency department staff. *Emergency Medicine Journal, 24*: 12–17. 10.1136/emj.2006.035089

Lyne, K. & Roger, D. (2000). A psychometric re-assessment of the COPE questionnaire. *Personality and Individual Differences*, *29*(2), 321–335.

Maslach, C., Jackson, S. E., & Leiter, M. P. (1996). *MBI: Maslach burnout inventory: Manual*. Consulting Psychologists Press.

Maslach, C., Schaufeli, W. B. & Leiter, M. P. (2001). Job Burnout. *Annual Review of Psychology, 52*, 397–422. 10.1146/annurev.psych.52.1.397.

Maunder R. (2004). The experience of the 2003 SARS outbreak as a traumatic stress among frontline healthcare workers in Toronto: lessons learned. *Philosophical Transactions of the Royal Society B: Biological Sciences, 359*: 1117–1125. 10.1098/rstb.2004.1483

Mazi, B., & D. Ferlin (2004, September 30 – October 2). *Syndrome of Burning at Work: Our Professional Problem* [Paper presentation]. IV Kongres Hrvatskog društva obiteljskih doktora, HDOD-HLZ, Rovinj, Croatia. http://www.hdod.net/rad_drustva/RAD%20-%20Burnout%20syndrom%20-%202004.pdf

McAlonan, G.M., Lee, A.M., Cheung, V., Cheung, C., Tsang, K.W.T., Sham, P.C., et al. (2007). Immediate and sustained psychological impact of an emerging infectious disease outbreak on health care workers. *Canadian Journal of Psychiatry, 52*(4), 241–247. 10.1177/070674370705200406

Meyer, B. (2001). Coping with Severe Mental Illness: Relations of the Brief COPE with Symptoms, Functioning, and Well-Being. *Journal of Psychopathology and Behavioral Assessment, 23*, 265–277.

Muller, A.E., Hafstad, E.V., Himmels, J.P.W., Smedslund, G., Flottorp, S., Stensland, SØ., et al. (2020). The mental health impact of the covid-19 pandemic on healthcare workers, and interventions to help them: A rapid systematic review. *Psychiatry Research*, *293*:113441. 10.1016/j.psychres.2020.113441

Oei, T.P., Sawang, S., Goh, Y.W., Mukhtar, F. (2013). Using the Depression Anxiety Stress Scale 21 (DASS-21) across cultures. *International Journal of Psychology*, *48*(6), 1018–29.

Pappa, S., Ntella, V., Giannakas, T., Giannakoulis, V.G., Papoutsi, E., Katsaounou, P. (2020). Prevalence of depression, anxiety, and insomnia among healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis. *Brain, Behavior, and Immunity, 88,* 901–907. 10.1016/j.bbi.2020.05.026

Richardsen, A. M., & Martinussen, M. (2004). The Maslach Burnout Inventory: Factorial validity and consistency across occupational groups in Norway. *Journal of Occupational and Organizational Psychology, 77*(3), 377–384. https://doi.org/10.1348/0963179041752691

Sanghera, J., Pattani, N., Hashmi, Y., Varley, K.F., Cheruvu, M.S., Bradley, A., Burke, J.R. (2020). The impact of SARS-CoV-2 on the mental health of healthca-

re workers in a hospital setting. A Systematic Review. *Journal of Occupational Health*, *62*(1): e12175. 10.1002/1348–9585.12175. PMID: 33131192; PMCID: PMC7603426.

Su, T.P., Lien, T.C., Yang, C.Y., Su, Y.L., Wang, J.H., Tsai, S.L, et al. (2007). Prevalence of psychiatric morbidity and psychological adaptation of the nurses in a structured SARS caring unit during outbreak: a prospective and periodic assessment study in Taiwan. *Journal of Psychiatric Research*, *41*, 119–130. 10.1016/j.jpsychires.2005.12.006

Xiang, Y.T., Jin Y., Wang, Y., Zhang, Q., Zhang, L., Cheung, T. (2020). Tribute to health workers in China: A group of respectable population during the outbreak of the COVID-19. *International Journal of Biological Sciences*, *16,* 1739–1740. 10.7150/ijbs.45135

World Health Organization (2020). *Risk Assessment and Management of Exposure of Health Care Workers in the Context of COVID-19: Interim Guidance*, 19 March 2020. https://apps.who.int/iris/handle/10665/331496.

Wu, P., Fang Y., Guan Z., Fan B., Kong J., Yao Z., et al. (2009). The psychological impact of the SARS epidemic on hospital employees in China: exposure, risk perception, and altruistic acceptance of risk. *Canadian Journal of Psychiatry*, *54*(5), 302–311. 10.1177/070674370905400504

Zhang, H., Shi, Y., Jing, P., Zhan, P., Fang, Y., Wang, F. (2020). Posttraumatic stress disorder symptoms in healthcare workers after the peak of the COVID-19 outbreak: A survey of a large tertiary care hospital in Wuhan. *Psychiatry Research*, *294*:113541. 10.1016/j.psychres.2020.113541

*Websites:*

https://ourworldindata.org/explorers/coronavirus-data-explorer; visited August 17, 2022

https://www.covid19.rs; visited August 19, 2022

https://ujedinjeni-protiv-kovida.net/2022/01/16/predsednik-58-odsto/ visited May 22, 2022

https://publikacije.stat.gov.rs/G2021/Pdf/G202114018.pdf visited May 18, 2022

https://www.who.int/news-room/commentaries/detail/behavioural-and-social-sciences-are-critical-for-pandemic-prevention-preparedness-and-response; visited August 19, 2022

https://ourworldindata.org/covid-hospitalizations; visited August 20, 2022

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# Pandemija Kovid-19 i mentalno zdravlje zdravstvenih radnika u Srbiji

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Pandemija COVID-19 dovela je mnoge profesionalce širom sveta u veoma izazovne okolnosti. Zdravstveni radnici su posebno uložili ogromne napore da se izbore sa brojnim izazovima. Brojna istraživanja pokazuju da ovi stresorii utiču na probleme mentalnog zdravlja i dovode do sindroma sagorevanja. Od važnosti je istražiti različite posledice po mentalno zdravlje zdravstvenih radnika u kontekstu odgovora određene zemlje na pandemiju. Ova studija je ispitala uticaj povećanih zahteva na mentalno zdravlje zdravstvenih radnika nakon skoro dve godine bavljenja pandemije. Sprovedena je onlajn anonimna studija tokom oktobru 2021. Uzorak je činilo 286 zdravstvenih radnika (76.7% muškaraca) iz svih regiona Srbije. Upitnik je obuhvatio socio-demografske podatke, profesionalna i lična iskustva tokom pandemije, poteškoće sa mentalnim zdravljem i sagorevanje. Rezultati su pokazali da je skoro polovina učesnika imala povišen nivo depresivnosti i preko 60% njih viši nivo anksioznosti i stresa. Emocionalnu iscrpljenost, kao simptom sagorevanja, doživeli su skoro svi učesnici (91,9%), praćenu umerenim zamorom saosećanja i nižom samoefikasnošću. Najznačajniji prediktori sagorevanja i teškoća mentalnog zdravlja bili su otežani uslovi rada i nedovoljna uputstva nadređenih, visok nivo lične zabrinutosti od zaražavanja i neprilagođene strategije prevladavanja. Rezultati ukazuju na važnost pružanja psihosocijalne podrške za sprečavanje daljeg narušavanja mentalnog zdravlja, ali i da je neophodno intervencije usmeriti na spoljašnje organizacione faktore, umesto fokusiranja isključivo na individualnu vulnerabilnost.

**Ključne reči:** zdravstvenii radnici, Kovid-19, mentalno zdravlje, stres, sindrom sagorevanja