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FOR THOSE WHO FIGHT, FALL AND RAISE AGAIN - IMPACT OF COVID-19 PANDEMIC ON MENTAL HEALTH OF HEALTH CARE PROVIDERS

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Dedicated to all the collages who fought and lost the battle

SUMMARY

Background: *During the COVID-19 pandemic health care providers found themselves under increased demands in the work environment and in their professional and personal lives which created both physical and mental health challenges. Thus, we aim to provide an integrative review that identifies and summarizes the research published regarding mental health functioning in health care providers, in Serbia, since the beginning of the pandemic.*

Subjects and methods: *A search of the published literature was conducted using Medline and SCIndex databases, applying key words "COVID-19" and "Serbia". The search was limited to papers published since the beginning of the COVID-19 pandemic until January 2022. Two reviewers independently screened the retrieved papers. The study used pre-defined inclusion and exclusion criteria.*

Results: *We identified eight papers on the subject of mental health functioning in health care providers. The studies were all original research papers with predominantly cross-sectional study design, using online assessments. Sample size varied in number of participants and profile of medical providers (physicians, nurses and medical technicians, community pharmacists). Dominantly, focus of interests of researchers were exploration of levels of anxiety, depression, sleep disturbances, burnout, as well as behavioural changes and environmental influences.*

Conclusions: *The studies related to mental health of medical professionals show the importance of recognizing the psychological challenges posed by health crises caused by COVID-19. They raise awareness of recognizing differences and difficulties between wide range of medical sectors, and appeal for necessity for accessible and professional psychological support. Further studies should address the detailed exploration of the mental health of this specific population, as well as propose strategies needed to balance the challenges posed by the pandemic.*

Key words: *COVID-19 - mental health - health care providers – doctors – nurses*

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INTRODUCTION

Since March 11th, 2020, when World Health Organization (WHO) declared COVID -19 global pandemic (WHO 2020), pandemic rapidly become apparent as a multifaceted problem both in the "strict" medical sense (clinical presentation and course of the disease) as well in the psychological - emotional, behavioural and social sense. In Serbia, according to the official data of the Institute of Public Health of Serbia "Dr Milan Jovanović Batut" and Ministry of Health of Republic of Serbia (MHRS 2022), the total number of registered cases was over 1.5 million people, with the mortality rate of 0.84%, at the end of January 2022. In order to slow down and prevent the spread of the virus, strict public health/preventive measures such as physical distance, quarantine, isolation have been introduced in Serbia, as well as worldwide. Public transport and public places stopped operating, while schools and business activities were carried out remotely-from home (Ignjatović Ristić et al. 2020, Jović et al. 2020, Pedrosa et al. 2020, Wang et al. 2020).

Studies have shown that this global health crises and specific measures which included social isolation and quarantine had an effect on both physical and mental health (Brooks et al. 2020, Hwang et al. 2020, Jakovljevic et al. 2020, Sinanovic et al. 2020). Moreover, the measures had impact on mental functioning in general population, and even more so on specific population groups (Pedrosa et al. 2020, Peng et al. 2020, Shoib et al. 2021, Tian et al. 2020).

In this context, a predominantly exposed and vulnerable group of medical professionals caught a particular attention. Current studies raise awareness in several domains concerning the functioning of medical providers and the challenges they face during the pandemic - from altered work environment – issues regarding personal protective equipment, workload, prolonged working hours, working in shifts, necessity to be constantly updated and follow guidelines, being relocated from the usual place of work into different settings, lack of psychosocial support; to the their physical and mental health functioning – issues which

include worry of being infected and infecting indirectly the loved ones, emotional overload, anger, fear, stigmatization, psychological distress, stress related symptoms, sleep disturbances, broad spectrum of anxiety and affective symptoms as well as various physical health consequence (Almaghrabi et al. 2020, Aymerich et al. 2022, Billings et al. 2021, Chen et al. 2020, Chew et al. 2020, El-Hage et al. 2020, Houghton et al. 2021, Liu et al. 2020, Pedrosa et al. 2020, Rosenbaum 2020, Salazar de Pablo et al. 2020, Zhang et al. 2020).

Furthermore, some sociodemographic and clinical variables (gender, age, living areas, being a frontline worker, being physician or nurse, having a somatic disease), have been recognised as important to take into consideration in context of psychological functioning and exposure to different tasks posed by COVID-19 pandemic (El-Hage et al. 2020, Huang et al. 2020, Lai et al. 2020, Liang et al. 2020, Pedrosa et al. 2020, Tsamakis et al. 2020, Yılmaz et al. 2021, Zhang et al. 2020).

Several comprehensive meta-analyses, reviews and country-specific reports were conducted worldwide regarding mental health functioning in health care providers (Aymerich et al. 2022, Billings et al. 2021, Frenkel et al. 2022, De Kock et al. 2022, Lee et al. 2022, Mascayano et al. 2022, Pedrosa et al. 2020, Salazar de Pablo et al. 2020). However, similar papers analysing extensively the matter in Balkan region and particularly Serbia, so far, are scarce. To that end we aim to provide an integrative review that identifies and summarizes the research published on the topic, in the country, since the beginning of COVID-19 pandemic.

SUBJECTS AND METHODS

A search of the published literature was conducted using Medline and SCIndex databases. The study used pre-defined inclusion and exclusion criteria. Inclusion criteria were keywords “COVID-19” and “Serbia”. The search was limited to papers published since the beginning of the COVID-19 pandemic (WHO, 2020) until January 23, 2022. Two reviewers independently screened the retrieved papers to identify those taking into account, in the abstract, mental health functioning in health care providers in Serbia, during COVID-19 outbreak. A predefined data extraction form including the information on study population (including only active health care workers e.g. excluding academic staff, medical students, etc.), size, research period and main findings was used to extract data from the included papers. The master and doctoral thesis regarding the subject of mental health functioning in health care providers in Serbia during COVID-19 outbreak were not taken in consideration. Other exclusion criteria included book chapters, conference abstracts, editorials, commentaries and case reports. Both reviewers agreed and then approved the papers meeting the predefined selection criteria (Figure 1).

RESULTS

According to our search through the aforementioned databases, during COVID-19 pandemic era (period of almost two year), we identified eight papers on the subject of mental health functioning in health care providers. The results of the review of literature are shown in Table 1. The identified studies were all original research papers with predominantly cross-sectional study design. Sample size varied in number of participants and profile of medical providers (physicians, nurses and medical technicians, community pharmacists). Dominantly, focus of interests of researchers were exploration of levels of anxiety, depression (or other affective alternations), sleep disturbances, burnout (using different scales), as well as behavioural changes and environmental (work environment, media) influences.

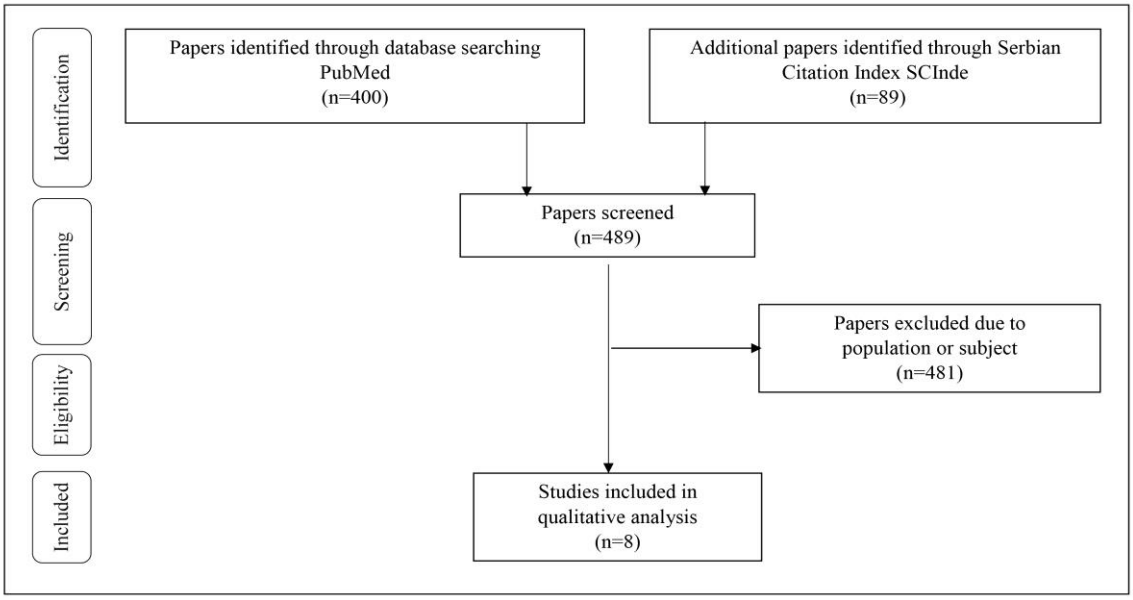

Figure 1. The number of studies identified, screened, included and excluded at each stage of paper selection

Table 1. The Review of the Literature: Mental health functioning and Health care providers

Author	Study design	Study sample (N*) Participants' profile	Study instruments	Main findings
Antonijević et al. 2020	Cross sectional/ web-based	N=1678 Health care providers= 684 (Frontline = 177 and Second line = 507 health care providers)	Perceived Stress Scale (PSS); Beck Depression Inventory IA (BDI-IA); Generalized Anxiety Disorder Scale (GAD-7)	Frontline health care workers had higher scores on PSS scale, GAD-7 and BDI-IA scales and were twice as prone to experiencing more severe anxiety symptoms compared to second line health care workers.
Stojanov et al. 2021	Cross-sectional/ web-based	N=201 Health care providers = 201 (Frontline = 118 and Second line = 83 health care providers)	Generalized Anxiety Disorder Scale (GAD-7); Zung Self-Rating Depression Scale; 36-item Health Survey of the Medical Outcomes Study Short Form (SF36); Pittsburgh Sleep Quality Index (PSQI)	Frontline health care workers were more afraid of self-infection or spreading it to loved ones; they regarded their mental health as more impaired compared to second line group. Poor QoS and HRQoL correlated with high health anxiety and severe depressive symptoms. Higher GAD-7 scores and lower scores on mental health subscale on SF36 questionnaire were independent predictors of the higher PSQI score.
Jakovljević et al. 2021	Prospective, cross-sectional observa-tional study	N=128 Health care providers = 128 (Physicians =61; Nurses =27; Pharmacists = 40)	The Maslach Burnout Survey for Medical Personnel	All health care workers had a heightened degree of emotional exhaustion and sense of personal achievement. Pharmacist had elevated level of depersonalisation index
Novak et al. 2021	Cross sectional/ web-based International study (Croatia and Serbia)	N=574 Health care providers = 574 (Pharmacists)	Study specific 65 items questionnaire assessing participants' sociodemographic characteristics, psychological functioning, workplaces characteristics	Participants' overall satisfaction was low, with a negative impact on mood and productivity.
Jovičić Bata et al. 2021	Cross sectional/ web-based	N=392 Health care providers = 392 (Pharmacists)	Study specific questionnaire assessing general characteristics, workload, workflow, interaction with clients, work conditions, personal attitudes	The increased stress levels were related to working in bigger pharmacy companies, less agreeable client behaviour and worrying about personal of family members' health
Joshi et al. 2022	Prospective survey/ web-based International study (34 countries including Serbia)	N=125 Health care providers = 125 (Cardiac imaging specialists)	Study specific questionnaire created based on EACVI Scientific Initiatives Committee criteria	Respondents mostly showed alternations in emotional sphere and reported on the presence of sleep disturbances, increased alcohol consumption and increased burnout. The majority faced lack of any formal mental health support at work. Protective mental health factors were also noted.
Safiye et al. 2021	Cross sectional/ web-based	N=521 Health care providers = 521 (Physicians = 245; Medical technicians = 276)	Brief Resilience Scale; Work Burnout Scale; Short Subjective Well-being Scale	Resilience is the moderator of the negative correlation between burnout and subjective well-being. The negative effect of burnout on subjective well-being among medical workers decreases with greater resilience.
Marković et al. 2020	Cross sectional/ web-based	N=110 Health care providers = 33 (Physicians = 21; Medical technicians = 12)	Study specific questionnaire assessing the perceived disturbance by the outbreak related information and the trust of participants in healthcare system and preventive measures; Beck Anxiety Inventory; Zung Self-Rating Depression Scale	Healthcare workers perceive the COVID-19 outbreak information in media as upsetting. Anxiety levels were higher than in group of army professionals.

*N= Total sample

DISCUSSION

According to review of studies on mental health functioning of health care providers during COVID-19 pandemic, in Serbia, a small number of studies investigated specifically frontline health care providers (frontline physicians and frontline nurses).

One of the first studies on the topic, was performed by Antonijevic et al. (2020) in early stages of COVID-19 outbreak (during fifth and sixth week), and showed that frontline health care workers had heightened scores of stress, anxiety and depression compared to second line health care workers. The results further showed that the front- liners were twice as prone to experiencing more severe anxiety and to worry about infecting the loved ones. In addition to this, higher anxiety levels were observed in medical professionals in general (joint frontline and second line health care workers) when compared to other professions.

Interesting research that also explored broad spectrum of anxiety and affective symptoms and their repercussions on sleep quality and health related quality of life, was conducted by Stojanov et al. (2020). The study compared the health care workers who worked directly with COVID-19 patients (with mild to moderate COVID-19 symptoms) with health professionals who worked in the other medical departments. They also confirmed that those who treated COVID-19 patients directly were more afraid of self-infection or spreading infection to loved ones and they regarded their mental health as more impaired than other group of health workers. Furthermore, more than 60% of respondents that their mental status got worse in comparison with pre-pandemic period and that pandemic had negative effect on their mental health. Thus, the study identified independent predictors of worse score on scale for assessment of sleep quality (increased scores on GAD-7 scale and lower scores on mental health subscale on SF36), as well as predictors of lower SF-36 scores (higher scores on GAD-7 and worse self-perceived mental status). These results are in a line with the current data that observed that frontline health care professionals are exposed to demanding circumstances (long shifts, workload, changeable information, insufficient personal protection equipment etc.) and concerned for their own health and health of their families, during COVID-19 outbreak (Bilings et al. 2021). Also, recent systematic review and meta-analysis that explored the effect of pandemic on mental health of health care workers showed high percentage of anxiety related symptoms (42% anxiety features; 40% acute stress; 37% burnout; post-traumatic symptoms 32%) and affective related symptoms (depression symptoms 33%) in health care workers, as well as sleep disturbances (insomnia 42%) (Aymerich et al. 2022). Some evidence support differences in mental health vulnerability among medical staff, with nurses having greater possibility to be affected than physicians (El Hage et al. 2020, Lai et al. 2020), or have tendency to use different coping strategies (more avoiding coping style and positive reappraisal) than physicians (Salopek-Žiha et al. 2020). Group of German authors (Frenkel et al. 2022) that observed medical professionals in three different medical sectors assessed the "latent factors" associated to COVID-19 specific work stress. They further explored the impact of these latent stressors on psychological stress. Results suggest that "interference of workload with private life" is main predictor of psychological stress especially in outpatient sector which pointed out the necessity for sector specific crisis measures. Research into the differences between medical specialties are also necessary and significant. Thus, research conducted by Jokić-Begić et al. (2020), found differences between psychiatrists and doctors from other specialties in sense that second mentioned had higher COVID anxiety scores, but psychiatrists were at elevated risk to substance abuse.

Interesting research of Jakovljevic et al. (2021) enrolled not only physicians and nurses, but also pharmacists, who worked during peaks of the COVID-19 pandemic, in Serbia. The study used Maslach Burnout Inventory-Human Services Survey for Medical Personnel to measure burnout syndrome using three subscales: emotional exhaustion; depersonalization and personal accomplishment. Result suggests that all three groups of health care workers had a heightened degree of emotional exhaustion and sense of personal achievement. However, pharmacist had solely elevated level of depersonalisation index. Females (74%) with about 12 (±10) years of experience were dominant participants' in this study that noticed that gender and years of experience influenced emotional exhaustion, while depersonalisation was influenced only by the occupation. Another study that also included pharmacists (Novak et al. 2021) and enrolled respondents from both Serbia and Croatia provided interesting insights. In addition to exploring the role of community pharmacists during the pandemic from various aspects, researchers explored a psychological aspect of pandemic on this population. The study found that besides fear of infecting important others, they were more fatigued due to changed circumstances during the pandemic, and that shifts have unfavourably affected their psychological state, mood and productivity. Study performed by Jovičić-Bata (2021) which included 392 community pharmacist, also explored alterations in work environment and effects on job related stress during the state of emergency caused by COVID-19 pandemic. Among other results, this study showed that community pharmacists perceived their stress levels as increased if they worked in bigger pharmacy companies or if the client behaviour was more disagreeable or if they were worried about their or health of their loved ones.

In all the aforementioned studies, females made up the majority of participants', dominantly in their forties. Therefore, it is also essential to take into account the

need of the employed women to balance their professional duties and private life (Parapid et al. 2020). Thus, some evidence support that the young women are more vulnerable to psychological consequences when compared to their male counterparts (El Hage et al. 2020, Lai et al. 2020).

Another study from Serbia, performed by Safiye et al. (2021) sheds light on importance of resilience. Study enrolled 521 medical professional (doctors and medical technicians) and suggested that resilience is significant factor in moderation of negative correlation between burnout and subjective well-being and appeared to inclusion of the resilience in training programs. This is in a line with a study that shows that higher resilience was a protective factor in favour to decrease the risk of stress among academic medical workers (Ignjatovic Ristić et al. 2020). In this manner, it is worthy to mention recent research which included a significant number of participants from 21 countries from the general population (Matos et al. 2022), that high point the protective role of compassion in supporting the resilience (self-compassion and compassion from others). These variables were related to lower psychological distress and higher social safeness. Hence, it is very important to take into consideration and to follow up wide spectrum of ”key workers” and variations among them, as well as “non-key workers” and specificity of occupational stress (Bu et al. 2022).

One more international study including Serbian population, about impact of pandemic on mental health among cardiac imaging specialists who are approximately 18 months in COVID-19 system (Joshi et al. 2022), included 34 countries**.** Main results indicate that respondents mostly show alternations in emotional sphere (54% feeling anxious, 34% melancholic, 27% fearful, 23% lonely). Furthermore, they reported on the presence of sleep disturbances (57%), 26% increased alcohol consumption, 6% had suicidal thoughts during pandemic, and even more than a half experienced burnout which become worse during the pandemic**.** Besides factors that contributed to burnout (such as large amount of administrative tasks, gender and age discrimination, fear of transmitting infection to self/ others, working conditions, issues in relation with personal protective equipment), researchers noticed also the factors important for mental health and wellbeing (in positive sense) such as spending time with friends/ family, listening music, exercising, vacation etc. Regardless of these results, lack of any formal mental health support at work reported even 57% of participants. In addition to the obviously necessary psychosocial support to the medical staff in different sectors, the influence of the media and public trust on mental health among health care professionals proved to be important. According to Marković et al. (2020**),** healthcare workers perceive the COVID-19 outbreak information in media as upsetting. Also, the lack of public trust was associated with increased symptoms of depression. The influence of media in context of behavioural and emotional impact during COVID-19 outbreak is well documented in numerous other publications on various subjects and population groups (Milošević Đorđević et al. 2021, Radanović et al. 2021, Sadiković et al. 2020, Šiđanin et al. 2021), and could have dual function – stressful and supportive (Biling et al. 2021).

It should also be borne in mind, that previous experiences in health crises and sufficient knowledge about COVID-19 pandemic could be significant part of preventive measures (Lee et al. 2022, Terzić Supic et al. 2021). Also, sufficient, timely appropriate, easy accessible and widespread sectorial psychosocial support could be recognized as important strategies to decrease extensive psychological burden among health care professionals for those in potential future health crisis.

Although these studies are predominantly cross sectional, online based, included different sample sizes, and used different scales to measure certain psychological entities, they represent a significant contribution to the regional literature in many aspects. Firstly, they were conducted in relation of good epidemiological practice and proposed preventive measures. Additionally, they provide a value insight into mental functioning among different sectors of the medical professionals, and consider the factors that contribute to resilience and better coping strategies.

CONCLUSION

The studies related to mental health of medical professional show the importance of recognizing the psychological challenges posed by health crises caused by COVID-19, in Serbia. They raise awareness of recognizing differences and difficulties between wide range of medical sectors, and appeal for necessity for accessible and professional psychological support. They point out to the need to develop strategies and preventive measures that will contribute to decrease/ or ameliorate psychological burden. It would be important for further research to focus on longitudinal, follow-up studies among different medical providers assessing psychological consequences that COVID-19 pandemic brings us.

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Contribution of individual authors:

Bojana Dunjic-Kostic: study design and data collection.

Maja Pantovic-Stefanovic: data collection and writing some part of the paper.

Tijana Cvetić: checking first draft and language.

Miroslava Jašović-Gasic: approval of the final version with some correction.

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