Study of mental health of medical staff in a specialized hospital for COVID-19 in Novi Sad

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Abstract
Background and Objectives: The highly infectious novel coronavirus disease (COVID-19) emerged in Wuhan, China in late 2019 and soon became a global pandemic. COVID-19 is escalating medical staff psychological. In Novi Sad Clinical Centre of Vojvodina (CCV) for the past 2 years there has been a continuous struggle against the COVID-19 crisis. Both senior specialist doctors and newly hired young doctors, some without work experience, were hired immediately after completing their studies. Aim: To investigate the mental health of clinical first-line medical staff in COVID-19 epidemic.
Methods: This is a cross-sectional study involving CCV staff who worked in the first line of patient treatment during the COVID-19 pandemic. They were given a self-administered questionnaire which included information on demographic and socio-economic characteristics and the validated DASS-21 and IES-R scale instrument. A total of 200 medical workers were involved.
Results: Twenty-eight (14%) participants screened positive for depression, 49 (24,5%) for anxiety, 66 (33%) for stress, and 22 (11%) for clinical concern of PTSD. The most endangered are young nurses and doctors with less than 6 months of previous work experience.
Conclusion: In conclusion, our results suggest frontline medical staff involved in treatment of COVID-19 patients should be closely monitored as a high-risk group for depression and anxiety, and given proper training before deployment.

Keywords: COVID-19, Mental Health, Medical Staff, Depression, Stress

Introduction

The highly infectious novel coronavirus disease (COVID-19) emerged in Wuhan, China in late 2019 and soon became a global pandemic. COVID-19 pandemic is escalating medical staff psychological stress and creating an increasingly heavy professional burden. Fear of transmitting the virus to family, community perception of frontline workers as potential disease carriers, extreme workloads and moral dilemmas add additional stressors [1-4]. There are evidence that COVID-19 may induce mental stress including anxiety, insomnia, depression, and post-traumatic stress disorder (PTSD) [5], both in general population as well as in frontline medical staff, all of which lasts for even a long time [6].
In Novi Sad in Serbia -Clinical Centre of Vojvodina (CCV) for the past 2 years there has been a continuous struggle against the COVID-19 crisis. Both senior specialist doctors and newly hired young doctors, some without work experience, were hired immediately after completing their studies. Nevertheless, there has been no investigation on the incidence of mental health negative outcomes in healthcare workers since the outbreak of COVID-19 in Serbia. Thus, in this study, we launched an online survey on mental health of medical workers fighting COVID-19 in Novi Sad Clinical Centre and later in the newly assembeled specialized hospital for COVID-19 in Novi Sad, aiming to investigate the mental health of clinical first-line medical staff in COVID-19 epidemic.

Material and Methods

The study was a cross-sectional, hospital-based, onilne-based sampling through the specially designed, self-administered questionnaire conducted from August 15th to 31st, 2021. Physicians, nurses and other professionals (including radiology technicians, pharmacists, clinical laboratory technicians, disease prevention and control department staff, ambulance drivers, and administrative staff) at the frontlines to fight the COVID-19 crisis in Clinical Centre of Vojvodina had participated in the survey via the commercial social network software. In this study involving CCV staff who worked in the first line of patient treatment during the COVID-19 pandemic a self-administered questionnaire was used which included information on demographic and socio-economic characteristics and the validated Depression, Anxiety, and Stress Scales (DASS-21) and the Impact of Events Scale–Revised (IES-R) instrument [7, 8]. A total of 200 medical workers were involved. The respondents were screened according to the inclusion and exclusion criteria. The inclusion criteria were as follows: 1. Staff without mental conditions before fighting COVID-19, 2. Staff without severe diseases of the heart, liver, kidney, or blood system, 3. Staff who had been involved for at least one month in COVID-19 specialized clinics and specialized COVID hospital in Novi Sad. The exclusion criteria was: 1. Disagreed to grant authorization to use their information or filled an invalid questionnaire. This study was approved by the Ethics Committee of Clinical Centre of Vojvodina. All participants were asked to sign online informed consent that allowed the investigators to use their information; if not, their answers were identified as adhering to the exclusion criteria.

All statistical analyses were conducted using the SPSS Statistical Software version 25 (IBM Corp). The significance level was set as P value < 0.05. All tests were two-tailed. Since the original scores of the measurement tools were not normally distributed, they were presented as medians with interquartile ranges (IQRs). The ranked data for anxiety, depression, and PTSD were presented as numbers and percentages. The severity of each symptom between two or more groups was compared using the nonparametric Mann–Whitney U test and Kruskal–Wallis test. Subsequently, the binary and multivariable logistic regression analysis was conducted to determine potential risk factors for anxiety, depressio, and PTSD symptoms, and the associations between risk factors and results were presented as odds ratios (ORs) and 95% CIs after adjustment for confounders, including sex, age, marital status, educational level, occupation.

Results

There were 200 participants that comleted the questionnaire. The demographics of the respondents are listed in Table 1.

The primary outcome was the prevalence of depression, stress, anxiety, and posttraumatic stress disorder (PTSD) among all health care workers (Table 2).

Twenty-eight (14%) participants screened positive for depression, 49 (24,5%) for anxiety, 66 (33%) for stress, and 22 (11%) for clinical concern of PTSD. After adjustment for age, sex, position, marital status, survey completion date, and presence of comorbid conditions, the prevalence of anxiety was higher among younger, much less experienced staff, who are predominantly female nurses and younger both male and female doctors with less than 6 months of previous work experience. While the older both male and female staff, regardless of position were experinecing more stress levels and were under the higher PTSD load.

Table 1: The demographics of the respondents.

No. (%)			
Characteristic	**Total**	**D/M**	**U/H**
Overall	200 (100)	87 (43,5)	113 (56,5)
Sex			
Male	97 (48,5)	41 (42)	56 (58)
Female	103 (51,5)	46 (44,5)	57 (55,5)
Age, years			
< 25	107 (53,5)	27 (25,2)	80 (74,8)
25–45	78 (39)	50 (64)	28 (36)
> 46	15 (7,5)	10 (66,6)	5 (33,4)
Marital status			
M/C	131 (65,5)	62 (48)	69 (52)
S/D/W	69 (34,5)	45 (65)	24 (35)
Occupation			
Physician	87 (43,5)	87 (100)	0 (0)
Nurse	100 (50)	10 (10)	90 (90)
Other staff	13 (6,5)	13 (100)	0 (0)

M/C: married/cohabitating; S/D/W: single/Divorced/widowed; D/M: Doctor/master; U/H: undergraduate (college)/ High school ((including special/technical secondary school)

Table 2: Prevalence of Depression, Anxiety, Stress, and PTSD and Mean DASS-21 and IES-R Scores in Health Care Personnel (n = 200)

Prevalence n	**(%)**
Depression	28 (14%)
Anxiety	49 (24,5%)
Stress	66 (33%)
PTSD	22 (11%)
Mean (SD) DASS-21 and IES-R scores	
DASS Depression	3,24 (6,4)
DASS Anxiety	5,6 (6,9)
DASS Stress	9,5 (9,0)
Total IES-R score	9,4 (10,3)
IES-R Intrusion	0,5 (0,45)
IES-R Avoidance	0,55 (0,4)
IES-R Hyperarousal	0,47 (0,45)

DASS-21- Depression, Anxiety and Stress Scale, IES-R – Impact of Event Scale-Revised; PTSD- posttraumatic stress disorder. The DASS-21 is a 21 item scale which provides independent measurement of depression, anxiety and stress. Cutoff scale >9, >7, >14 indicates a positive screen for depression, anxiety and stress respectively. The IES-R is a 22 item self report scale to measure the disstres caused by traumatic events. It has 3 subscales (intusion, avoidance, hyperarousal). A total IES-R cutoff is 24 and is used to classify PTSD.

Disscusion

Overall mean DASS-21 and IES-R scores among health care workers were higher than those in the published literature from previous disease outbreaks, such as severe acute respiratory syndrome (SARS) [9, 10].

However, in the case of COVID-19 the rapid spread of the viral outbreak, inadequate early-stage testing/screening, and lack of targeted anti-viral treatments toward COVID-19 all constituted a pressing challenge for the FMS in numerous countries, exerting great psychological pressure on them [11]. Our study has showen the psychological impact of this

pandemics in health care workers in Novi Sad.

Overall, 14%, 24.5%, 33% and 11% of staff reported significant depression, anxiety, level of strees and clinical concern of PTSD respectively. These findings support that depression and anxiety are pervasive among hospital staff. Published studies from the epicenter of the pandemic have reported much higher rates of those mental health problems [12]. On the other hand, a similar study examining the psychological effects of COVID-19 reported comparable rates of anxiety among healthcare workers caring for patients in New York City at the peak of COVID-19 [13]. Also in France, a similar study has shown almost equal prevalence of the studied mental health conditions in helth care workers in Covid 19 specialized centre [14]. The difference in prevalence of depression, anxiety, stress and PTSD symptoms can be explained by the severity of the crisis in each country. For example, Italian health care workers during the Covid 19 peak seem to have the highest prevalence of severe burnout symptoms, and depression, anxiety and stress which can be explained by the severity of the crisis that tended to be the greatest in Italy during spring of 2020 in Europe region [15]. Taking into account the strength of the Covid-19 epidemic in Serbia, the number of infected and preventive epidemiological measures, and the cultural and ethnic characteristics of our society and the training and equipment of medical staff fighting this pandemic, the frequency of mental health consequences of our medical staff can be classified among the middle and lower in relation to the global level. However, their presence must not be neglected.

The results of this study indicate that more severe mental health symptoms are prevalent in certain hospital staff members. Being a female, younger, much less experienced staff, who are predominantly female nurses and younger both male and female doctors with less than 6 months of previous work experience are associated with higher level of affective symptoms.

Thoes findings are in congruence with previous studies that single out the same traits (being

a woman, having a lower job position and having less work experience) as risk factors for poor mental health outcomes [12, 14, 16, 17]. We found that nurses tend to be more impacted than doctors or other medical stuff. This is also congruent with results presented in other countries [14, 17, 18].

Furthermore, our study highlighted that older medical staff, both male and female, regardless of position were experinecing more stress levels and were under the higher PTSD load. This findings are at odds with some findings from similar studies from around the world. Namely, a study by French authors from 2020 points out that older and more experienced medical staff are far more resistant to the psychological consequences of working with Covid 19 infected patients [14]. More experienced health professionals have shown higher levels of stress and later symptoms of PTSD, which may be partly due to reduced capacity to deal with unexpected stress due to overload, although they seem more resistant due to their experience, but it seems that this is not true, at least in our sample.

These findings could be explained by the fact that most senior health care workers have been involved in the fight against the Covid-19 pandemic since its inception, as there was a significant shortage of younger staff and adequate medical infrastructure and older and more experienced health workers have long been exposed to types of stress and challenges posed by working conditions in a specialized Covid hospital. However, with the timely intervention of the Republic of Serbia, several new highly equipped modern hospitals specialized in the care of 19 patients were built in record time. These hospitals are also equipped with young medical workers who have significantly helped in providing quality health care to patients and thus helped their older colleagues. However, they are the ones who are the most vulnerable and who have the hardest time withstanding the stress brought by too long shifts, challenges in working with the sick, fear for their own health and the health of their loved ones.

Conclusion

In this study, we found that depression and anxiety were pervasive among frontline medical staff involved in treatment of COVID-19 patients in a specialized hospital for COVID-19 in Novi Sad. Our results identified specific groups of hospital staff experiencing severe mental health symptoms. Also a considerable proportion of staff reported stress as a result of COVID-19. Furthermore, elevated stress levels are associated with clinically significant depression, anxiety and PTSD symptoms. If left untreated, psychological distress can have long-term negative consequences that adversely lead to burnout and poor patient care. Therefore, it is imperative that hospital systems develop and implement screening resources to evaluate for stress, depression, and anxiety among staff. Early detection and assistance may potentially reduce the distress associated with Covid-19 and promote psychological well-being [19].

Ethical considerations

The Ethical Board of Clinical Centre of Vojvodina has given the approval for conducting this study. The study followed the guidelines in the “Human and animal rights”. Informed consent was obtained from every participant in this study.

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Conflict of Interest

None.

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