# Public trust and media influence on anxiety and depression levels among skilled workers during the COVID-19 outbreak in Serbia

## Uticaj poverenja javnosti i medija na nivoe anksioznosti i depresije među stručnim radnicima tokom COVID-19 epidemije u Srbiji

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**Abstract**

**Background/Aim**. Along with the great impact of 2019 coronavirus disease (COVID-19) on physical health, social functioning, and economy, this public health emergency has significant impact on mental health of people as well. The aim of this study was to assess the impact of outbreak-related information and public trust in the health system and preventive measures during the COVID-19 outbreak in Serbia in 2020 on levels of anxiety and depression in education, army and healthcare professionals. **Methods.** An anonymous questionnaire was disseminated to skilled professionals working in fields of education, army, and healthcare. The questionnaire included the Beck Anxiety Inventory, Zung Self-Rating Depression Scale, as well as the section assessing the perceived disturbance by the outbreak-related information and the trust of participants in healthcare system and preventive measures proposed by the crisis team. **Results.** Out of 110 subjects enrolled in this study (mean age $35.25 \pm 9.23$ years), 59.1% were women. Among healthcare workers, the frequency of perceiving outbreak-related information available in public media as disturbing, as well as the average level of anxiety, were higher compared to the group of army professionals ($p < 0.05$). Women also perceived outbreak-related information available in public media as disturbing in a higher percentage compared to men ($p < 0.01$), and had higher levels of anxiety ($p = 0.01$) and depression ($p < 0.05$). The lack of public trust was associated with higher levels of depression, and the perception of outbreak-related information as disturbing with higher levels of both anxiety and depression. **Conclusion.** Significant perception of outbreak-related information as disturbing among healthcare workers, as well as the lack of trust in healthcare system and preventive measures proposed by the crisis team are important factors influencing the mental state. This finding has the guiding purpose for competent institutions to make efforts to increase public trust, as one of the important preventive measures, in order to preserve and improve the mental well-being of the population in outbreak conditions.

**Key words:**
anxiety; communications media; covid-19; depression; medicine, preventive; mental health; surveys and questionnaires.

**Apstrakt**

**Uvod/Cilj.** Pored velikog uticaja bolesti izazvane koronavirusom krajem 2019. godine (COVID-19) na fizičko zdravlje, socijalno funkcionisanje i ekonomiju, ovaj javnozdravstveni problem ima značajan uticaj i na mentalno zdravlje ljudi. Cilj rada bio je da se proceni uticaj informacija povezanih sa epidemiološkom situacijom i poverenja u zdravstveni sistem i preventivne mere tokom COVID-19 epidemije u Srbiji u 2020. godini na nivoe anksioznosti i depresije kod radnika obrazovne, vojne i zdravstvene struke. **Metode.** U studiji je korišćen anonimni upitnik koji je prosleđen stručnim radnicima iz obrazovnog, vojnog i

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sistema zdravstvene zaštite. U upitniku su korišćeni Bekova skala anksioznosti, Cungova skala samoprocene depresivnosti, kao i deo koji su kreirali autori i koji je ispitivao doživljaj uznemirenosti ispitanika informacijama koje se odnose na stanje epidemije i poverenje ispitanika u zdravstveni sistem i mere prevencije propisane od strane kriznog štaba. **Rezultati.** Od ukupno 110 ispitanika, uključenih u ovu studiju, prosečne starosti 35,25 ± 9,23 godina, 59,1% su činile žene. Kod zdravstvenih radnika su učestalost doživljavanja informacija u vezi sa stanjem epidemije, dostupnih putem medija, okarakterisanih kao uznemirujuće, kao i prosečan nivo anksioznosti, bili viši u odnosu na zaposlene u vojsci ($p < 0,05$). Žene su takođe doživljavale kao uznemirujuće javno dostupne informacije u vezi sa stanjem epidemije u višem procentu u poređenju sa muškarcima ($p < 0,01$), a imale su i prosečno više nivoe anksioznosti ($p = 0,01$) i depresije ($p < 0,05$). Nedostatak poverenja javnosti je bio povezan sa višim nivoima depresije, a doživljavanje informacija u vezi sa stanjem epidemije kao uznemirujućih, sa nivoima i anksioznosti i depresije. **Zaključak.** Izraženo doživljavanje informacija u vezi sa stanjem epidemije kao uznemirujućih među zdravstvenim radnicima, kao i značajno odsustvo poverenja u zdravstveni sistem i u preventivne mere predložene od strane kriznog štaba, predstavljaju značajne činioce sa uticajem na mentalno stanje. Ovakav nalaz ima zadatak da dodatno usmeri odgovorne institucije ka naporima da povećaju poverenje javnosti, kao jednu od važnijih preventivnih mera, u cilju očuvanja i unapređenja mentalnog blagostanja stanovništva u uslovima epidemije.

**Ključne reči:**
anksioznost; mediji, komunikacijski; covid-19; depresija; medicina, preventivna; mentalno zdravlje; ankete i upitnici.

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### Introduction

Within weeks of its initial outbreak in China, 2019 coronavirus disease (COVID-19) has been declared as public health emergency of international concern [1–5].

Following the first officially confirmed case of COVID-19 in Serbia on March 6, 2020, the response efforts by the Serbian Government have been swift, and seven days later the COVID-19 crisis response team has been formed [6]. The crisis team began making recommendations based on the scientific knowledge of the situation to limit social contacts, encourage wise use of medical supplies including masks and other personal protective equipment, and to assure the public about the reliability of the food and consumable goods supplies.

Furthermore, only nine days after the first confirmed case in Serbia, in an unprecedented move to retard the spread of the virus, an emergency state has been declared in the whole country. It included many restrictions, along with several travel restrictions and lockdowns over the whole territory of Serbia. Four days after the state of emergency had been declared, the Ministry of Construction, Transport and Infrastructure of the Serbian Government ordered that all commercial international flights from and to the Belgrade Nikola Tesla Airport to be suspended on the same day [7].

The longest lockdown was imposed over the citizens older than 65 years of age during the whole day for almost two months. Another most constant type of lockdown was imposed during the every night over all citizens, with an exception of those with nonreplaceable working duties. Also, several constant lockdowns were imposed, some of them lasting for even four days, and mostly during the weekends and public or religious holidays. Beside citizens older than 65 years of age, many other people stayed at home and socially isolated themselves in order to prevent being infected. There have also been accounts of shortages of masks, gloves, antiseptics, other health equipment, and some basic foodstuff.

Based on our understanding, the vast majority of the research related to this pandemic focuses included identification the epidemiology and clinical characteristics of infected patients [8, 9], the genomic characterization of the virus [10], and challenges for global health governance [11].

However, the ongoing COVID-19 epidemic is inducing fear, and a timely understanding of mental health status is of paramount importance [12]. Previous research has revealed a wide range of impacts on psychosocial wellbeing of people during many previous outbreaks of infections in the world. Fear of falling sick or dying, feelings of helplessness, and stigma are the most common effects people are likely to experience on an individual level during the outbreaks [13]. With the closure of schools and business, negative emotions experienced by individuals are additionally compounded [14].

The COVID-19 pandemic also caused panic and mental health problems for the public [15, 16], like it was experienced previously with the Middle-East respiratory syndrome (MERS) coronavirus [17, 18].

Additionally, myths and misinformation about this epidemic, travel bans and executive orders to quarantine travelers affected the psychological health of the majority of the mankind even more and this has severe influence on people's health and quality of life [15, 19, 20].

Although several recent research articles examined the influence of COVID-19 outbreak on mental health in general population [21, 22], there are no published papers describing the impact of individual aspects of this emergency situation on some determinants of mental state – anxiety and depression, especially among members of professions specific by their significant importance for security and proper functioning of countries.

Therefore, the aim of this study was to evaluate the influence of information related to the epidemiological situation and public trust in healthcare system and preventive measures proposed by the epidemic crisis team during the COVID-19 outbreak in Serbia in 2020 on anxiety and

depression as determinants of mental state in skilled education, healthcare and army professionals.

This study was a cross-sectional online survey designed to assess the prevalence and the degree of anxiety and depression, the absence of public trust in proposed preventive measures, as well as to indirectly establish the connection between the presence of controllable and uncontrollable factors, since several previous studies focused their goals on this specific topic [23–26].

This study was the first survey describing the psychological impact of COVID-19 outbreak on mental state, conducted in the population of skilled workers in Serbia during the COVID-19 outbreak.

## Methods

### Setting and participants

We adopted a cross-sectional survey design to assess experiencing disturbance by the epidemic-related factors, public's trust in health system and levels of anxiety and depression during the epidemic of COVID-19 by using an anonymous online questionnaire. A snowball sampling strategy [27], focused on recruiting skilled workers in healthcare, military and education systems, was utilized. The online survey was at first disseminated to the healthcare workers, university professors and military workers in Serbia known to the authors and they were encouraged to recruit other subjects from their environment and to forward the survey to them. Healthcare workers specialized or working in the field of mental healthcare were excluded from the study.

### Procedure

As the Serbian Government recommended the public to minimize face-to-face interaction and isolate themselves at home, potential respondents were electronically invited by the authors or the existing study respondents. They completed the questionnaire in Serbian language through an online survey platform ("Google Docs", Google LLC, Mountain View, California, United States). Data collection took place in several cities in Serbia during seven days (July 13–19, 2020).

Prior to accessing the survey, participants read an informed consent statement describing that participation was voluntary and anonymous. An information sheet stating the goal and the procedure of the study was also presented to participants at the beginning of the survey. After that, the participants entered the survey and answered the questions. Besides the participation was based on voluntary, no incentive reward was given. Anonymity was emphasized and no identifiable information was collected.

### Survey development

The structured questionnaire consisted of questions that covered five areas: 1) demographic data; 2) the Beck Anxiety Inventory (BAI) [28]; 3) the Zung [29] Self-Rating Depression Scale (SDS); 4) information related to the experience of disturbance caused by the epidemic-related information available in public media or its absence; 5) information related to the participant's trust in the Serbian healthcare system and preventive measures proposed by the crisis team.

Demographic data including gender, age and occupation were collected. A question anout occupation was constructed as multiple choice question. Participants had to choose one of four answers: education worker, emplyed in military service, doctor of medicine, and nurse/medical technician.

Age was included to determine differences in perceived disturbances caused by the epidemic-related information, public trust in the healthcare system and the preventive measures proposed by the crisis team, as well as in BAI and SDS scores. Specific reason for including age in the analysis was based on the data of some reports which essentially called out different age groups for ignoring public health recommendations [30, 31].

### Assessment of anxiety and depression

Anxiety was assessed using the BAI [28]. Participants rated each of the 21 items on a 4-point Likert scale [32] from 0 (not at all) to 3 (most of the time). Total BAI score ranges from 0–63. Scores up to the value of 21 were classified as low anxiety, scores of 22–35 as moderate anxiety, and scores of 36 and above as potentially concerning levels of anxiety.

Depression was assessed using the Zung's [29] SDS. Participants rated each of the 20 items on a 4-point Likert scale from 1 (rarely) to 4 (most of the time) or *vice versa*, depending on the positivity and negativity of the questions. Total SDS score ranges from 20–80. Scores within the range of 20–49 were classified as normal state, scores of 50–59 as mild depression, scores of 60–69 as moderate depression, and scores of 70 and above as severe depression.

### Questions concerning disturbing epidemic-related experience and public trust

The part of the questionnaire evaluating perceived disturbance in relation to the epidemic-related information, as well as the trust in the healthcare system of Serbia and the preventive measures proposed by the Serbian crisis team, was consisted of the following six dichotomous questions created by the authors – During the outbreak, have you experienced disturbance by:

1) Media reports regarding the outbreak?

2) The information from other sources you have learned by your own initiative?

3) The lack of the information regarding the COVID-19 outbreak and the disease itself?

4) The possibility of virus transmission from other people despite personal preventive measures you applied?

5) During the outbreak, have you expressed trust in the healthcare system?

6) The preventive measures proposed by the crisis team?

*Data analysis*

Methods of descriptive statistics were used in analysis of sociodemographic characteristics of respondents, anxiety and depression scores, questions regarding the disturbance caused by the epidemic-related factors, and public trust questions. The scores of BAI and SDS were expressed as mean and standard deviation (SD).

The $\chi^2$ test was used to determine the difference between categorical variables, while *t*-test and analysis of variance were used to determine differences in BAI and SDS scores among groups based on gender, age, occupation, the presence of disturbing factors related to the epidemic, and the presence/absence of public trust.

All tests were two-tailed, with a significance level of *p* < 0.05. Statistical analysis was performed using the software platform SPSS Statistics version 26.0 (IBM SPSS Statistics, New York, United States).

**Results**

Sociodemographic characteristics of examined subjects are shown in Table 1.

**Table 1**

**Sociodemographic characteristics of respondents, perceived disturbance, public trust,
and levels of anxiety and depression**

| Variables | All respondents (n = 110) | Occupation | | | | |
| | | Education (n = 36) | Army (n = 41) | Healthcare | | |
| | | | | all (n = 33) | medical doctors (n = 21) | nurses/technicians (n = 12) |
|---|---|---|---|---|---|---|
| Gender | | | | | | |
| male | 45 (40.9) | 11 (30.6) | 29 (70.7) | 5 (15.2) | 4 (19.0) | 1 (8.3) |
| female | 65 (59.1) | 25 (69.4) | 12 (29.3) | 28 (84.8) | 17 (81.0) | 11 (91.7) |
| Age (years) | | | | | | |
| 21–30 | 42 (38.2) | 9 (25.0) | 18 (43.9) | 15 (45.5) | 8 (38.1) | 7 (58.4) |
| 31–40 | 40 (36.3) | 13 (36.1) | 14 (34.2) | 13 (39.3) | 10 (47.6) | 3 (25.0) |
| 41–50 | 20 (18.2) | 9 (25.0) | 8 (19.5) | 3 (9.1) | 2 (9.5) | 1 (8.3) |
| 51–60 | 7 (6.4) | 4 (11.1) | 1 (2.4) | 2 (6.1) | 1 (4.8) | 1 (8.3) |
| 61–70 | 1 (0.9) | 1 (2.8) | 0 (0.0) | 0 (0.0) | 0 (0.0) | 0 (0.0) |
| Perceived disturbance caused by the epidemic–related factors | | | | | | |
| information in public media | 70 (63.6) | 25 (69.4) | 20 (48.8) | 25 (75.8) | 16 (76.2) | 9 (75.0) |
| information available from other sources | 55 (50.0) | 19 (52.8) | 17 (41.5) | 19 (57.6) | 13 (61.9) | 6 (50.0) |
| absence of information | 57 (51.8) | 15 (41.7) | 22 (53.7) | 20 (60.6) | 12 (57.1) | 8 (66.7) |
| possibility of transmission despite personal preventive measures | 75 (68.2) | 24 (66.7) | 27 (65.9) | 24 (72.7) | 17 (81.0) | 7 (58.3) |
| Trust | | | | | | |
| in the healthcare system | 72 (65.5) | 24 (66.7) | 29 (70.7) | 19 (57.6) | 13 (61.9) | 6 (50.0) |
| in the preventive measures proposed by the crisis team | 62 (56.4) | 21 (58.3) | 22 (53.7) | 19 (57.6) | 13 (61.9) | 6 (50.0) |
| Anxiety level | | | | | | |
| low | 99 (90.0) | 34 (94.4) | 37 (90.2) | 28 (84.9) | 20 (95.2) | 8 (66.7) |
| moderate | 9 (8.2) | 1 (2.8) | 4 (9.8) | 4 (12.1) | 1 (4.8) | 3 (25.0) |
| potentially concerning | 2 (1.8) | 1 (2.8) | 0 (0.0) | 1 (3.0) | 0 (0.0) | 1 (8.3) |
| Depression level | | | | | | |
| normal | 97 (88.2) | 31 (86.1) | 38 (92.7) | 28 (84.9) | 17 (81.0) | 11 (91.7) |
| mild | 12 (10.9) | 5 (13.9) | 3 (7.3) | 4 (12.1) | 4 (19.0) | 0 (0.0) |
| moderate | 1 (0.9) | 0 (0.0) | 0 (0.0) | 1 (3.0) | 0 (0.0) | 1 (8.3) |

*Note*: **Results are given as number (percentage) of respondents.**
**BAI – Back Anxiety Inventory; SDS – Self-Rating Depresion Scale.**

A total of 110 respondents completed the survey, 59.1% of whom were women and 40.9% men. Participants were on average 35.25 years of age, ranging from 22 to 62. Most participants were up to 40 years of age (n = 82, 74.6%) and the most represented category was 21–30 years-old (n = 42, 38.2%). For all participants, it took up to five minutes to complete the survey. Occupation groups were similar according to the number of subjects within each group. Distribution of the participants by occupation is presented on Figure 1.

Respondents' depression level, measured using the SDS [29], revealed a sample mean score of 39.29 (SD = 9.17), while their anxiety level, measured using the BAI [28], had a value of sample mean score of 10.08 (SD = 9.29). Analyzing the depression scale scores, 97 (88.2%) of the respondents were considered to have a normal score (score: 20–49), 12 (10.9%) had mild depression (score: 50–59), and one participant (0.9%) had moderate depression (score: 60–69). There were no participants having score of severe depression. According to the results of the anxiety scale, 99 (90.0%) of the participants were considered to have a low-level anxiety (score: 0–21), nine (8.2%) were considered to suffer from moderate-level anxiety (score: 22–35), and two (1.8%) from potentially serious levels of anxiety (score of 36 or above).

The majority of respondents (70.0%) declared that they were disturbed by the information distributed on public media. Half of all participants felt disturbance by the information they learned on their own initiative. A slight majority (51.8%) of participants expressed their opinion that there was the lack of available information in public and felt disturbance accordingly. Additionally, 68.2% of the subjects were disturbed by the fact that they can be infected despite their protective measures and as a consequence of irresponsible behavior of other people.
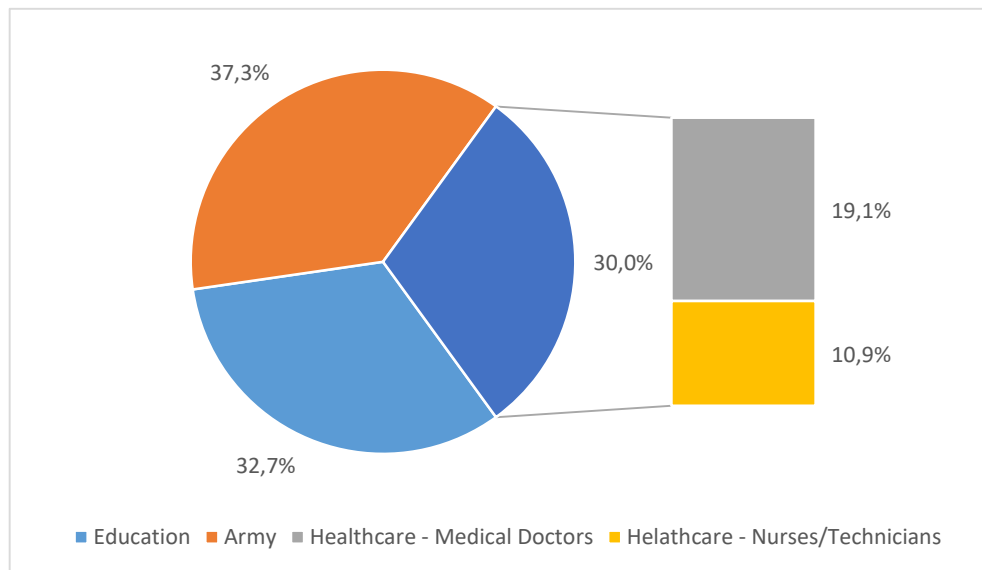
**Fig. 1 – Distribution of participants by occupation (n = 110).**

Regression analysis revealed the connection between the perceived disturbance and BAI/SDS scores. Respondents who experienced disturbance by the information available on public media had significantly higher BAI score (B = 0.40, 95% confidence interval (95% CI): 3.58 to 11.75), while those who did not have trust in health system had higher SDS score (B = -0.27, 95% CI: -9.49 to -0.74). Linear regression did not show any significant impact of age on perceived disturbance.

Considering specific occupations, the highest number of participants perceiving disturbance by the fact that they can be infected despite their protective measures was noticed among medical doctors (81.0%). On the other side, 75.0% of nurses and medical technicians were disturbed by the information stated in public media, followed by disturbance caused by the absence of reliable information (66.7%) (Table 1).

Additionally, significant difference in perceived disturbance by the information stated on public media was also observed among different occupation groups ($p < 0.05$) (Table 2) Participants from the education and healthcare systems as occupation reported disturbances caused by the information stated on public media in larger extent (69.4% and 75.8%, respectively) than army employees (48.8%) (Table 1).

**Table 2**

**The influence of demographic characteristics on perceived disturbances caused by the epidemic-related factors, public trust and anxiety/depression levels**

| Variables | Gender | | Age group | | Occupation | |
|---|---|---|---|---|---|---|
| | $\chi^2$ | $p$ | $\chi^2$ | $p$-value | $\chi^2$ | $p$ |
| Perceived disturbances caused by the epidemic–related factors | | | | | | |
|   information in public media | 7.157 | 0.007** | 2.098 | 0.718 | 6.530 | 0.038* |
|   information available from other sources | 3.046 | 0.081 | 6.852 | 0.144 | 2.064 | 0.356 |
|   absence of information | 2.809 | 0.094 | 4.284 | 0.369 | 2.562 | 0.278 |
|   possibility of transmission despite preventive measures | 0.018 | 0.895 | 2.099 | 0.718 | 0.455 | 0.797 |
| Trust | | | | | | |
|   in the healthcare system | 0.397 | 0.529 | 4.523 | 0.340 | 1.434 | 0.488 |
|   in the preventive measures proposed by the crisis team | 0.284 | 0.594 | 3.644 | 0.456 | 0.198 | 0.906 |
| Anxiety level | 1.692 | 0.429 | 2.951 | 0.937 | 3.406 | 0.492 |
| Depression level | 1.051 | 0.591 | 2.885 | 0.941 | 3.309 | 0.508 |

***p < 0.05; **p < 0.01**

Perceived disturbance by the information stated on public media was also present in significantly larger percent (73.8%) among women comparing to male participants ($p < 0.01$). Out of all skilled workers as participants, 72 (65.5%) expressed trust in the healthcare system of Serbia, and 62 (56.4%) in the preventive measures proposed by the expert crisis team. Among healthcare workers specifically, exactly half of the participating nurses and technicians declared to have the trust in both aspects equally. Linear regression did not show any significant impact of age on public trust.

The significant difference with regard to the mean BAI score was observed among different occupation groups ($p < 0.05$), between army and healthcare workers (Table 3). Within the group of healthcare workers, statistically significant difference was detected between medical doctors and nurses/technicians only in the BAI score (F = 4.843; $p = 0.035$).

**Table 3**

**Group comparisons of BAI and SDS scores according to demographic characteristics, perceived disturbance and public trust**

| Variables | n (%) | BAI score | | | SDS score | | |
|---|---|---|---|---|---|---|---|
| | | mean (SD) | t test/ F test | p | mean (SD) | t test/ F test | p |
| Gender | | | | | | | |
| male | 45 (40.9) | 7.47 (7.928) | t = -2.516 | 0.013** | 36.91 (8.764) | t = -2.310 | 0.023* |
| female | 65 (59.1) | 11.89 (9.781) | | | 40.94 (9.144) | | |
| Age (years) | | | | | | | |
| 21–30 | 42 (38.2) | 10.55 (9.688) | | | 40.21 (9.291) | | |
| 31–40 | 40 (36.3) | 8.78 (8.034) | | | 38.58 (8.802) | | |
| 41–50 | 20 (18.2) | 11.50 (11.464) | F = 0.443 | 0.777 | 39.15 (10.464) | F = 0.202 | 0.937 |
| 51–60 | 7 (6.4) | 11.43 (8.059) | | | 38.71 (9.810) | | |
| 61–70 | 1 (0.9) | 5.00 | | | 36.00 | | |
| Occupation | | | | | | | |
| education | 36 (32.7) | 11.06 (9.168) | | | 40.19 (9.089) | | |
| army | 41 (37.3) | 6.95 (7.899) | F = 4.299 | 0.016* | 37.10 (9.044) | 1.977 | 0.144 |
| healthcare | 33 (30.0) | 12.91 (10.110) | | | 41.03 (9.139) | | |
| Perceived disturbance caused by the epidemic–related factors | 70 (63.6) | 12.51 (9.908) | t = -4.353 | 0.000** | 40.69 (8.878) | t = -2.145 | 0.034* |
| information in public media | 55 (50.0) | 11.98 (10.212) | t = -2.182 | 0.031* | 39.31 (9.135) | t = -0.021 | 0.984 |
| information available from other sources | 57 (51.8) | 10.63 (8.053) | t = -0.642 | 0.522 | 41.07 (8.610) | t = -2.145 | 0.034* |
| absence of information possibility of transmission despite preventive measures | 75 (68.2) | 10.57 (8.509) | t = -0.811 | 0.419 | 39.37 (9.382) | t = -0.137 | 0.891 |
| Trust | | | | | | | |
| in the healthcare system | 72 (65.5) | 9.13 (9.099) | t = 1.495 | 0.138 | 37.38 (8.565) | t = 3.137 | 0.002** |
| in the preventive measures proposed by the crisis team | 62 (56.4) | 9.02 (8.794) | t = 1.373 | 0.173 | 37.73 (8.769) | t = 2.065 | 0.041* |

BAI – Back Anxiety Inventory; SDS – Self-Rating Depresion Scale; SD – standard deviation.
*$p < 0.05$; **$p < 0.01$.

The mean BAI score was also significantly higher in female participants ($p = 0.01$), and subjects perceiving disturbance by the information stated in public media ($p < 0.01$) and the information available from other sources ($p < 0.05$).

SDS scores were significantly different between groups based on gender, perceiving disturbance by the epidemic-related information stated in public media and the absence of available epidemic-related information, and trust in healthcare system and in the preventive measures proposed by the crisis team. In general, females, participants perceiving disturbance by the epidemic-related information stated in public media and the absence of available epidemic-related information, as well as those with the lack of trust in the healthcare system and in the preventive measures proposed by the crisis team, had higher SDS score (Table 3).

Regression analysis did not show any significant impact of age on both BAI/SDS scores and levels of anxiety/depression. On the other side, it was shown that male gender was significantly associated with lower BAI (B = 0.24, 95% CI: 0.94 to 7.91) and SDS scores (B = 0.22, 95% CI: 0.57 to 7.48).

**Discussion**

Emergency state is not a foreign term for Serbia. This country faced similar situations many times during the last three decades, but none of them was related to the epidemic. However, this kind of adaptability is somewhat specific, due

to the fact that lockdown was not seen in Serbia since bombing in 1999 and considering the fact that, even back then, the lockdowns were imposed only when necessary, for a short periods of time, and were not obligatory. However, such an intensive outbreak, requiring an emergency state, has not been seen since the smallpox epidemic in 1972.

According to the Oxford Government Response Tracker, Serbia was among the countries with the highest calculated stringency level from mid-March to mid-May 2020 [33]. During that period of time, Serbia imposed all five main physical distancing policies: school closures, workplace closures, restrictions on mass gathering, public transport closure, and lockdown [34]. All these measures, combined with increasing number of tested citizens effectively lead to the slowing down of infection rate, and reducing mortality, and numbers proved continuously more positive environment, which was later confirmed by the numerous opinions of several countries in the world, showing that the preparedness level of Serbia was at the very high level [35, 36].

However, all these measures impacted greatly on mental health of overall Serbian population, as has been the case all over the world. Significant connection between several characteristics and anxiety/depression (BAI/SDS) scores observed in this study is strongly suggestive towards the influence of factors concerning healthcare system in Serbia and the information provided by the officials and on public media. Although the majority of participants were 40 years old or younger, a quarter of them were older than 40

years of age and represented a sample large enough to contribute to the overall initial conclusion regarding the impact of the Serbian healthcare system impression on the skilled workers in Serbia and their perceiving of epidemic-related information as disturbing. The fact that the majority of respondents perceived disturbance by the information distributed on public media, and that half of them reported epidemic-related information from other sources as disturbing certainly originates to large extent from the presence of sudden changes in overall epidemic state in Serbia. The beginning of the second wave of the epidemic state in Serbia at the end of June 2020 certainly introduced severe confusion among people, even among skilled workers. One of the study conducted by the regional marketing consulting and research company "Valicon" revealed that two thirds of participants from general population did not have trust in the information provided by the crisis team and the state officials [37]. More than a half of participants in the present study expressed trust in the preventive measures proposed by the expert crisis team, while almost two thirds of them expressed trust in the Serbian healthcare system. Specific finding was that half of all participating nurses and medical technicians in this study expressed trust in both aspects, and other half did not.

Population habits in Serbia are one of the most important factors for the finding that almost 70% of all participants in our study reported disturbance by the fact that they can be infected despite their protective measures and as a consequence of irresponsible behavior of other people. Additionally, perceived disturbance by the epidemic-related information available on public media was connected with the higher levels of anxiety, while the absence of trust in the healthcare system was related to the higher levels of depression. Although average anxiety and depression levels were not very high, the influence of the epidemic-related information available on public media and loss of trust in the healthcare system had significant influence on overall mental state of the population examined in this study. Loss of trust reported in this study could not be connected with the lockdown-period, due to the fact that it was conducted out of such a restraining circumstances, although some studies reported that people in the pandemic/lockdown group had higher trust in science, politicians, and police [38].

However, the finding that was not expected at the beginning of this study to appear was the perceived disturbance by the epidemic-related information available on public media which was reported by three quarters of nurses and medical technicians, as well as the disturbance caused by the absence of available information perceived by the two thirds of them.

Findings of this study suggest that female participants are prone to be significantly more disturbed by the information stated on public media than males, which certainly lead to the higher BAI scores in women. However, employees in the Serbian Army perceived significantly less disturbance by the information stated on public media and smaller BAI scores comparing to other skilled workers investigated in this study. This finding might be the result of the fact that army employees were in direct contact with (potentially) COVID-19 positive individuals in significantly smaller extent than healthcare workers, and certainly due to their protected position by the country.

It is well known that anxiety level has influence on many aspects of behavior. During the SARS coronavirus epidemic in 2003, Leung et al. [39] found that moderate levels of anxiety were associated with higher uptake of preventive measures by respondents. In contrast, findings published by Wang et al. [21] showed the opposite trend, specifically for COVID-19 outbreak in China. This specific aspect was not tested in this study, but it certainly could be very good point of investigation in some future studies.

Regarding depression level, our data suggest that factors associated with higher SDS score were female gender, perceiving disturbance by the epidemic-related information available in public media and the absence of available epidemic-related information, as well as the lack of trust in the healthcare system and in the preventive measures proposed by the crisis team. The finding of this study that females suffered from higher level of depression on average corresponds to previous extensive epidemiological studies suggesting that women are at higher risk of depression [40], and particularly with the findings suggesting a greater psychological impact of the outbreak, as well as higher levels of stress, anxiety, and depression in females [21].

Although this study was the first one connecting epidemic-related factors to the mental state, as well as the mental state itself and public trust in Serbia, it was not conducted on general population. This study did not include any impact-on-event scale in order to strengthen the connection between potential factors and current mental state. This survey did not measure stress levels among participants as well. All these limitations are very correctable, especially due to the fact that this study should represent the basis for future research, with even more participants of different age groups, in longer follow-up, and in successive periods of time, so that complete image of mental health timeline during the epidemic environment in Serbia could be created. Also, the same potential causes and their effects could be assessed using random, systematic, stratified, or some other types of sampling in order to eliminate all the biases following every single sampling technique.

Additionally, this study was conducted on three types of skilled workers, chosen due to the considerable change in their everyday work caused by the epidemic state. Psychosocial impact of disturbing factors related to epidemic, public trust in healthcare system and officially proposed preventive measures, as well as other factors which could be considered as controllable and uncontrollable can and should be also tested on skilled workers of many other professions, especially the ones with significant impact of proper functioning of the country during the emergency state like this.

One additional and very important topic is fear during the COVID-19 outbreak [41]. Fear of being infected and fear from dying are among the most commonly seen

types of fear which rose in intensity during the public health emergency like this one. One another specific type is fear of using cardiopulmonary resuscitation (CPR) as a response to cardiac arrest. Unfortunately, there are reported cases of fatal outcomes in people with cardiac arrest outside of hospital setting where bystanders did not initiate CPR due to the fear that they could be infected [42]. While it is understandable to be concerned by the novel coronavirus, laypeople should be encouraged to start at least continuous chest-compression-only CPR or to use automated external defibrillator [43, 44]. Therefore this kind of fear should certainly be investigated as well in some future research.

Also, the fact that this study was performed during the second wave of the outbreak in Serbia unfortunately leave in the shadow valuable information regarding the perceiving epidemic-related disturbing factors, public trust, and anxiety/depression levels during the first wave. Although this fact will remain permanent, it can be concluded with significant level of certainty that the results provided by this study are very significant, especially as the basis for future investigations.

**Conclusion**

Higher anxiety and depression levels in women, perceived disturbance by the epidemic-related information, especially among some healthcare workers, as well as the significant absence of trust in healthcare system and proposed preventive measures in public could be the most important conclusive findings of this study, and certainly the factor that should represent guideline for responsible institutions in Serbia and all over the world to increase efforts of individuals and especially governments in improving public trust up to the highest possible level, due to its high impact on perceiving any epidemic-related information on more positive way. Our findings can also be used to formulate additional and more effective psychological interventions in order to improve mental health and psychological resilience during the COVID-19 epidemic. Finally, findings in this study may also assist government agencies and healthcare professionals in safeguarding the psychological wellbeing of the community in the face of COVID-19 outbreak in Serbia, surrounding region, and many different parts of the world, especially in other middle-income countries.

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