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Original Article

Fear, Anxiety and Depression among Bosnia and Herzegovina Citizens during the Third Wave of COVID-19

Armin Šljivo[1*], Alma Džubur Kulenović[2]

Abstract

Objective: During the COVID-19 pandemic, fear, anxiety, and depression have become global concerns among the wider public. This study aimed to examine the occurrence of fear, anxiety and depressive symptoms associated with COVID-19, to assess influencing factors that lead to the development of these mental health conditions and to examine any changes in the mental health patterns of the society since the initial study a year ago in Sarajevo, Bosnia and Herzegovina.

Method: An anonymous online survey based on Fear of COVID-19 Scale (FCV-19S), General Anxiety Disorder-7 (GAD-7) and Patients Health Questionnaires (PHQs) was conducted in the general population of Sarajevo in Bosnia and Herzegovina.

Results: From 1096 subjects, 81.3% were females, 33.8% had a high school degree, 56.4% were married, 53.4% were engaged in intellectual labor, 42.3% experienced fear, 72.9% had anxiety symptoms and 70.3% had depressive symptoms during the COVID-19 pandemic and their mean age was 35.84 ± 10.86. Half (50.1%) of the subjects were COVID-19 positive and 63.8% had COVID-19 symptoms when responding to the questionnaire. Experiencing COVID-19 related fear (OR = 1.972) and having moderate to severe depressive symptoms (OR = 9.514) were associated with the development of mild to severe anxiety symptoms during the COVID-19 pandemic, which were in turn associated with the development of moderate to severe depressive symptoms (OR = 10.203) and COVID-19 related fear (OR = 2.140), respectively, thus creating a potential circulus vicious. COVID-19 positive subjects (OR = 1.454) were also more likely to develop mild to severe anxiety symptoms during the COVID-19 pandemic.

Conclusion: In conclusion, the prevalence of fear, anxiety symptoms and depressive symptoms rose dramatically since the beginning of the COVID-19 pandemic in Bosnia and Herzegovina. They were interconnected and were significantly associated with age, gender, marital status and COVID-19 status. Therefore, an urgent mental health intervention is needed for the prevention of mental health problems.

Key words: *Anxiety; COVID-19; Depressive Symptoms; Fear; Pandemics*

1. Emergency Medicine Department of Canton Sarajevo, Kolodvorska 14, 71 000, Sarajevo, Bosnia and Herzegovina.
2. Department of Psychiatry, Clinical Center of University of Sarajevo, University of Sarajevo, Bolnička 25, 71 000 Sarajevo, Bosnia and Hercegovina.

***Corresponding Author:**
Address: Danijela Ozme 12, 71 000 Sarajevo, Bosnia and Herzegovina, Postal Code: 71000.
Tel: 387 62 256 507, Fax: 387 33 655 939, Email: sljivo95@windowslive.com

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Coronavirus disease 2019 (COVID-19) caused by severe acute respiratory coronavirus 2 (SARS-CoV-2) (1) which was first discovered in Wuhan City, has caused a global pandemic as of March 2020 (2). The vast majority of COVID-19 patients have no symptoms or develop mild forms characterized by fever, myalgia, dry cough, fatigue, shortness of breath, abdominal pain, diarrhea, anosmia and dysgeusia (3), while only a small proportion progress to severe or critical forms characterized by acute respiratory disease syndrome (ARDS), shock, metabolic acidosis, coagulation dysfunction, acute kidney or cardiac injury, multiorgan failure or even death (4, 5). COVID-19 transmission occurs primarily via respiratory droplets in direct contact among close family members, friends, first helpers and those who closely contact with the infected person (6). Apart from somatic manifestations, the pandemic caused widespread anxiety, alertness and distress, all of which are classified as natural psychological responses to the randomly changing condition (7) and are expected to intensify significantly due to the pandemic and the amount of information available on social media. As a result, expanding anxiety and distress regarding COVID-19 could have more long-lasting consequences than the virus itself (8). In earlier epidemics, the psychological impacts of lockdown and quarantine ranged from immediate symptoms such as dread, confusion, anxiety, depression, and loneliness to extreme repercussions such as suicide (9, 10, 11). Also, isolated cases of anxiousness have been reported to develop obsessive-compulsive symptoms (12). This long-lasting stress and a variety of mental health problems could be the reasons for irresponsible behaviors that become intensified as the pandemic continues (13).

A year after the appearance of the first COVID-19 case in Bosnia and Herzegovina and after the initial success in COVID-19 disease containment, the country has entered its second semi-lockdown with epidemiological measures such as curfew from 8pm to 5am; limited population movement; mandated proper wearing of face masks; social distancing in public places; and closing of non-essential services, restaurants, cafes, malls etc. in order to prevent the constant rise in the infected population, death toll and the collapse of the healthcare system during the third wave of the outbreak (14, 15).

At the same time when various health agencies and governments are trying to decrease the further spread of COVID-19 and implement mass vaccination programs, general COVID-19 related fear, depression and anxiety which affect the everyday life, mental health and wellbeing of individuals and increase suicidal ideation are on the rise among individuals throughout the global community (16). Fear in situations of mass threat, such as the COVID-19 pandemic which has already been reported among the population of Bosnia and Herzegovina (17), is associated with the disease transmission rate, morbidity and mortality. It is further fueled with rigorous epidemiological measures such as quarantine and social isolation, financial instability, constant concerns about close ones and community wellbeing, lack of or slow mass population vaccination programs and constant media reportages of COVID-19 death tolls. These lead to psychological distress alongside with development of anxiety, depression, substance abuse and suicidal ideation in individuals who then postpone adequate medical treatment and thus increase the transmission and death toll of the disease (16, 18). Mental health disturbances can cause unhealthy behaviors as coping mechanisms (19, 20). Individuals affected by these new conditions then postpone adequate medical treatment and thus increase the transmission and death toll of the disease (16, 18).

Since the first study on fear and depression in the general population of Bosnia and Herzegovina, overall COVID-19 morbidity and mortality have risen dramatically in the country over the course of three COVID-19 waves. In addition, pandemic lifestyle changes and epidemiological measures that prevent further COVID-19 transmission, have further affected the already impaired general population's mental health. (17) This study was needed to review how COVID-19 pandemic time span and its continuous epidemiological changes influence fear, anxiety symptoms and depressive symptoms among the general population. Our hypothesis is that the COVID-19 outbreak has had and continues to have a major influence on the general public's mental health.

The study's objective was to examine fear, anxiety symptoms, and depressive symptoms among the general population in Sarajevo, Bosnia and Herzegovina, to identify a possible interconnection among these conditions, to assess influencing factors that lead to their development and to asses any changes in mental health patterns of the society since the initial study a year ago.

Materials and Methods

Subjects

This cross-sectional research was carried out between March 20th and 26th 2021 among the general population of Sarajevo, the capital city of Bosnia and Herzegovina as a follow up study regarding COVID-19 pandemic related fear, anxiety and depression (10). The minimum sample size calculated for our population was 384 subjects (z = 384, 271-692 95% CI, E = 5%). Study subjects were chosen via convenience sampling from Sarajevo, including each of the four municipalities (Old Town, Center, New Sarajevo and New City) of the city. The study was validated before its distribution by the Psychiatry Department of the Clinical Center of University of Sarajevo. Exclusion criteria were: (i) not being a resident of the capital of Bosnia and Herzegovina, (ii) being a minor (younger than 18 years) and (iii) not fully filling the questionnaire. Subjects were informed about their voluntary and anonymous participation and provided online informed consent. The

study was approved by the Bioethical Committee of University of Sarajevo. The questionnaire was available for 6 days and it yielded 1106 responses.

Questionnaire structure and data collection

An anonymous online questionnaire, based on the Fear of COVID-19 Scale (FCV-19S) (18) and the General Anxiety Disorder-7 (GAD-7) (21) and Patients Health Questionnaires (PHQ-2 and PHQ-9) (22), was translated to Bosnian/Croatian/Serbian language, validated before the distribution, tailored in Google Survey Administration App and distributed to subjects via various online social media platforms (Facebook, WhatsApp, e-mail). The questionnaire was divided into four sections: 1. demographic characteristics (gender, age, education level, marital status, current occupation, place of residence and COVID-19 related history), 2. COVID-19 fear measurement (FCV-19S), 3. COVID-19 related anxiety symptoms (GAD-7) and 4. COVID-19 related depressive symptoms (PHQ-2 and PHQ-9).

Fear of COVID-19 was measured using Ahorsu's FCV-19S (18), in which participants expressed their level of agreement on a 5-point Likert-type scale with the total score ranging from 7 to 35. A greater score indicated greater COVID-19 related fear. Cronbach's alpha coefficient for FCV-19S was $\alpha = 0.907$ ($n = 7$), indicating the excellent internal consistency of the scale.

Anxiety symptoms were assessed using the Spitzer and colleagues GAD-7 (21) questionnaire, in which individuals indicated their level of agreement with statements on the questionnaire, and the total score ranged from 0 to 21 points. Scores 5-9 points indicated mild anxiety, scores 10-14 points indicated moderate anxiety and scores > 15 indicated severe anxiety. To check the internal consistency of GAD-9, Cronbach alpha coefficient was calculated ($\alpha = 0.916$ ($n = 7$)), indicating an excellent internal consistency.

Depressive symptoms were measured using Kroenke's Patient Health Questionnaires (PHQ-2 and PHQ-9) (22). Subjects who answered positive on at least one of the two PHQ-2 questions were administered the PHQ-9 to evaluate the severity of depressive symptoms. PHQ-9 scores ranged between 0 and 27 points, with scores < 5 indicating lack of depressive symptoms, score 5-9 indicating mild depressive symptoms, scores 10-14 indicating moderate depressive symptoms, scores 15-19 indicating moderately severe depressive symptoms and scores > 20 indicating severe depressive symptoms. Cronbach alpha coefficient for PHQ-9 was $\alpha = 0.724$ ($n = 9$), indicating acceptable consistency.

Statistical analysis

The "Statistical Package for the Social Sciences (SPSS) ver. 20.0" was used to analyze the data obtained in the study (23). To summarize the data, descriptive statistics were used, with categorical variables provided in the form of percentages and frequencies and numerical variables presented in the form of mean ± standard deviation if normally distributed, or in the form of median (25th; 75th quartile) if not. The Chi square test ($\chi 2$) was performed to examine the relationship between categorical variables. The Mann Whitney U test was done to see if there was any correlation between the variables. Besides, binary logistic regression in both univariable and multivariable models determined independent predictors for developing fear, anxiety symptoms and depressive symptoms during the third wave of the COVID-19 outbreak. Our study tried to examine any effect that the potential confounding variable has on the dependent variables by the use of statistical control, which allowed us to separate the impact of the independent variable in the logistic regression models. The study utilized several controlling factors to prevent research bias, such as defining risk and outcomes of the study in the beginning to prevent a flawed study design, a standardized and anonymous questionnaire to prevent interviewer bias and a plan designed to deal with missing data to avoid transfer and recall bias. Our convenience sampling method, as well as the study type, interfered with the selection and recall bias which could interfere with the study results. These are explained in the Limitations section of the Discussion.

Results

In total, 1106 subjects participated in the study. The final sample consisted of 1096 subjects after excluding 10 based on the exclusion criteria.

Demographic information

Our study sample consisted mostly of females (891, 81.3%). 371 participants (33.8%) held a high school degree, 618 (56.4%) were married, 585 (53.4%) were engaged in intellectual labor and 894 (81.5%) lived in the urban environment. The mean age of our sample was 35.84 ± 10.86 and it ranged from 18 to 87 years. The majority of subjects (943, 86.0%) had not changed their occupation since the beginning of the COVID-19 pandemic. 549 (50.1%) subjects were COVID-19 positive and 699 (63.8%) subjects had COVID-19 symptoms such as fever, sore throat, dry cough, myalgia, fatigue, loss of smell and taste, diarrhea and abdominal pain when filling out the questionnaire. All other background characteristics are displayed in Table 1.

COVID-19 related fear

COVID-19 related fear was reported among 464 (42.3%) subjects who were mostly females 394 (84.9%). Among them, 176 (37.9%) had a high school degree, 313 (67.4%) were married, 243 (52.4%) were engaged in intellectual labor and 393 (84.7%) lived in an urban environment. The association of gender, education level, occupation, marital status, living environment and COVID-19 related information are displayed in Table 1. The binary logistic regression model identified independent predictors for development of COVID-19 related fear, which are displayed in Table 2.

When age and the FCV-19S score were compared between subjects who experienced COVID-19 related

fear and subjects who did not, a statistical significance was found (median 38.0 vs. 33.0, U = 117859.5, P < 0.001; median 26.0 vs 17.0, U = 29523.5, P < 0.001). Subjects who experienced COVID-19 related fear were significantly older and scored higher on FCV-19S compared to subjects who did not experience it.

COVID-19 related anxiety

Out of 1096 subjects, 799 (72.9%) subjects tested positive for mild to severe anxiety symptoms and 297 (27.1%) subjects tested negative. Of the subjects with mild to severe anxiety symptoms, 663 (82.9%) were female, 278 (34.8%) held a high school degree, 476 (59.6%) were married, 442 (55.3%) were engaged in intellectual labor and 659 (82.5%) were living in an urban environment. All other demographic characteristics and the COVID-19 related information that are associated with mild to severe anxiety symptoms are displayed in Table 1. Independent predictors associated with the development of COVID-19-related mild to severe anxiety symptoms are displayed in Table 2. There was no statistical age difference in the occurrence of anxiety symptoms (P > 0.05). The severity of anxiety symptoms associated with various demographic and COVID-19-related information, as compared between subjects with and subjects without these symptoms, are displayed in Table 3.

COVID-19 related depression

From the whole sample, 770 (70.3%) tested positive for depressive symptoms, with 331 (43.0%) subjects being on an observant list or having mild depressive symptoms and 439 (57.0%) subjects having moderate to severe depressive symptoms. Subjects who experienced moderate to severe depressive symptoms were mainly female (347 or 79.0%). Of them, 155 (35.3%) held a high school degree, 239 (54.4%) were married, 228 (51.9%) were engaged in mental labor and 369 (84.1%) were living in an urban environment (Table 1). Independent predictors associated with developing moderate to severe depressive symptoms are displayed in Table 2. There was no statistical age difference in the occurrence of depressive symptoms (P > 0.05). The association of the severity of depressive symptoms with various demographic and COVID-19 related information, as compared between subjects with and subjects without depressive symptoms, are displayed in Table 3.

Table 1. Gender, Education Level, Marital Status, Current Occupation, Place of Residence and COVID-19 Related Information of Subjects with and without Fear, with and without Anxiety and with and without Depressive Symptoms

Variables	Subjects without fear N = 632	Subjects with fear N = 464	P value	Subjects without anxiety N = 297	Subjects with anxiety N = 799	P value	Subject without depressive symptoms N = 326	Subjects with depressive symptoms N = 770	P value
Gender									
Female	497 (78.6%)	394 (84.9%)	0.008	228 (76.7%)	663 (82.9%)	0.019	253 (77.6%)	638 (82.8%)	0.041
Male	135 (21.4%)	70 (15.1%)		69 (23.3%)	136 (17.1%)		73 (22.4%)	132 (17.2%)	
Education level									
High school degree	195 (30.8%)	176 (37.9%)	0.068	93 (31.3%)	278 (34.8%)	0.561	101 (30.9%)	270 (35.0%)	0.047
Bachelor degree	211 (33.3%)	148 (31.9%)		101 (34.0%)	258 (32.3%)		102 (31.2%)	257 (33.3%)	
Master's degree	207 (32.7%)	131 (28.2%)		93 (31.3%)	245 (30.6%)		109 (33.4%)	229 (29.7%)	
PhD	19 (3.2%)	9 (2.0%)		10 (3.4%)	18 (2.3%)		14 (4.5%)	14 (2.0%)	
Marital status									
Single	142 (22.5%)	79 (17.0%)	< 0.001	64 (21.5%)	157 (19.6%)	0.001	57 (17.5%)	164 (21.3%)	0.107
In a relationship	150 (23.7%)	58 (12.5%)		72 (24.2%)	136 (17.0%)		59 (18.1%)	149 (19.3%)	
Married	305 (48.2%)	313 (67.4%)		142 (47.8%)	476 (59.6%)		189 (57.9%)	429 (55.7%)	
Divorced	35 (5.6%)	14 (3.1%)		19 (6.5%)	30 (3.8%)		21 (6.5%)	28 (3.7%)	
Occupation									
Student	130 (20.6%)	45 (9.7%)	< 0.001	53 (17.8%)	122 (15.3%)	0.145	50 (15.3%)	125 (16.2%)	0.978
Intellectual labor	342 (54.1%)	243 (52.4%)		143 (48.1%)	442 (55.3%)		176 (53.9%)	409 (53.1%)	
Physical labor	56 (8.8%)	42 (9.0%)		33 (11.1%)	65 (8.1%)		30 (9.2%)	68 (8.8%)	
Unemployed	104 (16.5%)	134 (28.9%)		68 (23.0%)	170 (21.3%)		70 (21.6%)	168 (21.9%)	
Place of residence									
Urban environment	501 (79.3%)	393 (84.7%)	0.022	235 (79.1%)	659 (82.5%)	0.203	256 (78.5%)	638 (82.8%)	0.091
Rural environment	131 (20.7%)	71 (15.3%)		62 (20.9%)	140 (17.5%)		70 (21.5%)	132 (17.2%)	
COVID-19									
Being positive	298 (47.1%)	251 (54.1%)	n/a	123 (41.4%)	426 (53.3%)	n/a	151 (46.3%)	398 (51.7%)	n/a
Having symptoms	391 (61.8%)	308 (66.4%)		165 (55.5%)	534 (66.8%)		187 (57.4%)	512 (66.5%)	
Tested for COVID-19	383 (60.6%)	306 (65.9%)		170 (57.2%)	519 (64.9%)		185 (56.7%)	504 (65.4%)	

Table 2. Independent Predictors Determined by Binary Logistic Regression Models Associated with the Development of Fear, Anxiety Symptoms and Depressive Symptoms Associated with COVID-19

Independent predictors	OR	95% CI	P value
Independent predictors for developing fear associated with COVID-19			
Older age	1.020	1.007-1.033	0.003
Married (yes vs no)	1.759	1.319-2.346	< 0.001
Having moderate to severe depressive symptoms	1.344	0.981-1.840	0.065
Having mild to severe anxiety symptoms	2.140	1.533-2.988	< 0.001
The model was not statistically significant X2 = 8.768, p = 0.362; it explained 10.3% (Nagelkerke R2) and correctly classified 62.0% of cases.			
Independent predictors for developing mild to severe anxiety symptoms associated with COVID-19			
Sex (female vs male)	1.923	1.083-3.415	0.026
Marital status (married vs other)	1.574	1.136-2.181	0.006
Having moderate to severe depressive symptoms	9.514	6.931-13.060	< 0.001
Having fear associated with COVID-19	1.972	1.413-2.751	< 0.001
Being COVID-19 positive	1.454	1.059-1.996	0.020
The model was not statistically significant X^2 = 9.687, p = 0.207; it explained 32.7% (Nagelkerke R2) and correctly classified 80.4% of cases.			
Independent predictors for developing moderate to severe depressive symptoms associated with COVID-19			
Marital status (married vs other)	0.659	0.486-0.896	0.008
Having mild to severe anxiety symptoms	10.203	7.471-13.932	< 0.001
The model was not statistically significant X^2 = 2.235, p = 0.327; it explained 28.1% (Nagelkerke R2) and correctly classified 78.6% of cases.			

Table 3. Severity of Anxiety Symptoms and Depressive Symptoms Associated with Gender, Education Level, Marital Status, Current Occupation, Living Environment and COVID-19 Related Information in Comparison with Subjects without Anxiety Symptoms and without Depressive Symptoms

Variables	Subjects without anxiety N = 297	Subjects with mild to severe anxiety symptoms N = 799			Subject without depressive symptoms N = 326	Subjects with mild to severe depressive symptoms N = 770			
		Mild anxiety symptoms N = 269	Moderate severe anxiety symptoms N = 236	Severe anxiety symptoms N = 294		Subjects with mild depressive symptoms N = 331	Subjects with moderate depressive symptoms N = 192	Subjects with moderate severe depressive symptoms N = 131	Subjects with severe depressive symptoms N = 116
Gender									
Female	228(76.7%)	222 (82.5%)	197 (83.5%)	244 (83.0%)	253 (77.6%)	281 (84.9%)	163 (84.9%)	107 (81.7%)	87 (75.0%)
Male	69 (23.3%)	47 (17.5%)	39 (16.5%)	50 (17.0%)	73 (22.4%)	50 (15.1%)	29 (15.1%)	24 (18.3%)	29 (25.0%)
Education level									
High school degree	93 (31.3%)	81 (30.1%)	80 (33.9%)	117 (39.8%)	101 (30.9%)	109 (32.9%)	65 (33.8%)	50 (38.2%)	46 (39.6%)
Bachelor degree	101(34.0%)	97 (36.1%)	74 (31.4%)	87 (29.6%)	102 (31.2%)	109 (32.9%)	66 (34.3%)	40 (30.5%)	42 (36.2%)
Master's degree	93 (31.3%)	85 (31.6%)	76 (32.2%)	84 (28.6%)	109 (33.4%)	109 (32.9%)	57 (29.7%)	36 (27.5%)	27 (23.3%)
PhD	10 (3.4%)	6 (2.2%)	6 (2.5%)	6 (2.0%)	14 (4.5%)	4 (1.3%)	4 (2.2%)	5 (3.8%)	1 (0.8%)
Marital status									
Single	64 (21.5%)	58 (21.6%)	45 (19.0%)	54 (18.4%)	57 (17.5%)	70 (21.1%)	41 (21.3%)	24 (18.3%)	29 (25.0%)
In a relationship	72 (24.2%)	48 (17.8%)	42 (17.8%)	46 (15.6%)	59 (18.1%)	60 (18.1%)	35 (18.2%)	32 (24.4%)	22 (18.9%)
Married	142 (47.8%)	153 (56.9%)	143 (60.6%)	180 (61.2%)	189 (57.9%)	190 (57.4%)	112 (58.3%)	70 (53.4%)	57 (49.1%)
Divorced	19 (6.5%)	10 (3.7%)	6 (2.6%)	14 (4.8%)	21 (6.5%)	11 (3.4%)	4 (2.2%)	5 (3.9%)	8 (7.0%)
Occupation									
Student	53 (17.8%)	46 (17.1%)	36 (15.3%)	40 (13.6%)	50 (15.3%)	41 (12.4%)	41 (21.3%)	25 (19.0%)	18 (15.5%)
Intellectual labor	143 (48.1%)	156 (57.8%)	126 (53.4%)	160 (54.4%)	176 (53.9%)	181 (54.7%)	103 (53.6%)	65 (49.6%)	60 (51.7%)
Physical labor	33 (11.1%)	18 (6.7%)	22 (9.3%)	25 (8.5%)	30 (9.2%)	25 (7.5%)	16 (8.3%)	16 (12.2%)	11 (9.4%)
Unemployed	68 (23.0%)	49 (18.4%)	52 (22.0%)	69 (23.5%)	70 (21.6%)	84 (25.4%)	32 (16.8%)	25 (19.2%)	27 (23.4%)
Place of residence									
Urban environment	235 (79.1%)	207 (76.9%)	207 (87.7%)	245 (83.3%)	256 (78.5%)	269 (81.2%)	171 (89.1%)	99 (75.6%)	99 (85.3%)
Rural environment	62 (20.9%)	62 (23.1%)	29 (12.3%)	49 (16.7%)	70 (21.5%)	62 (18.8%)	21 (10.9%)	32 (24.4%)	17 (14.7%)
COVID-19 status									
Being positive	104 (35.0%)	138 (51.3%)	128 (54.2%)	160 (54.4%)	151 (46.3%)	164 (49.5%)	101 (52.6%)	72 (54.9%)	61 (52.6%)
Having symptoms	135 (45.4%)	173 (64.3%)	151 (64.0%)	210 (71.4%)	187 (57.4%)	213 (64.3%)	130 (67.6%)	88 (67.1%)	81 (69.8%)
Tested for COVID-19	143 (48.1%)	164 (61.0%)	159 (67.4%)	196 (66.7%)	185 (56.7%)	210 (63.4%)	133 (69.3%)	90 (68.7%)	71 (61.2%)

Discussion

This was a follow up study conducted a year ago among the population of Bosnia and Herzegovina regarding fear and depressive symptoms (17). Subjects with COVID-19 related fear were likely to be older, married, have moderate to severe depressive symptoms, have mild to severe anxiety symptoms and score higher on FCV-19S. More than two thirds of the subjects tested positive for anxiety (72.9%) and depressive symptoms (70.2%). Subjects with anxiety symptoms were more likely to be females, married, COVID-19 positive and to have depressive symptoms and COVID-19 related fear. Being married decreased the likelihood of having depressive symptoms, while having anxiety symptoms increased it. The majority of subjects (64.2%) reported that their current mental health and wellbeing is influenced by and associated with the COVID-19 pandemic.

Compared to the first study (17) conducted a year ago in Bosnia and Herzegovina, both samples had similar characteristics. Although this study's sample had more married and more COVID-19 positive individuals, it was much more anxious, depressed and afraid of COVID-19. Fear, which is directly associated with higher FCV-19S (18) scores, was significantly higher among older individuals. This is explained by high COVID-19 lethality among this population (24); by cohort effect because they or their close ones were involved in the 1992-1995 Bosnia and Herzegovina war; and by constant media coverage of the COVID-19 incidence, its death toll and the possible collapse of the healthcare system (25). The same factors could explain the rise of fear in general due to the progressive overload of health institutions with the infected people during the third wave of the outbreak. Fear, which protects people by decreasing exposure to infected individuals and by making them respect the epidemiological measures such as maintaining the social distance, proper wearing of face masks and washing hands, is also one of the reasons for stigmatization of infected people and leads individuals to neglect having COVID-19 symptoms, postpone adequate treatment that is recommended in early stages of the disease and further spread the COVID-19 (18, 26).

An alarming matter among our population is the prevalence of anxiety (72.9%) and depressive symptoms (70.2%) that presents a huge escalation compared to the initial study and further worsens the individuals' overall mental health and increases substance abuse and suicidal ideation. The reason for such behavior could be explained by the increase in the COVID-19 incidence and mortality among the population of Bosnia and Herzegovina during the third wave of the outbreak (27), rigorous epidemiological measures which prevent normal healthy social interactions, change of the working environment, financial instability, fear of being infected and the possible loss of a relative or close one due to the infection (28). The other matter is that many people in such circumstances are prone to increased substance abuse and sleep disorders which create a loop that further triggers or exacerbates existing mental health conditions (9). In line with our results, several similar studies point out the same predictors for the development of anxiety and depressive symptoms (29, 30). We would like to emphasize a strong correlation between anxiety and depressive symptoms which has already been proven (31). The occurrence of these two entities is not age-related, which was shown in our previous study that explained the expansion and severity of the problem among our population.

Our study found that being married decreased the occurrence of depressive symptoms by almost a half, while it increased the occurrence of fear and anxiety symptoms. Even though the quality of marriage has a huge impact on the overall mental health of the individuals, which means that it can have a two-sided effect (32), studies show that married individuals better cope with mental health issues during the pandemic (33). Married individuals have social interactions and less loneliness, which have been found to be predictors for the development of depressive symptoms. The same factors, however, increase infection possibility, which could explain the possible rise in fear and anxiety symptoms among our population.

Limitation

Our study had several limitations. Firstly, our study sample lacked information regarding previous psychiatric and somatic profiles of the individuals that could influence and precipitate the development of fear and anxiety and depressive symptoms. The current study cannot diagnose anxiety and depression among the population, but it can only screen for anxiety and depressive symptoms which could lead to the development of these mental health conditions. A thorough psychiatric interview is needed to establish an individual's diagnosis. Secondly, the type of the study prevents us to infer causalities and could pose a recall bias, as some information provided by subjects could be socially acceptable due to the stigmatization of the infected people at current times. Thirdly, because of the sampling method, our study may have failed to reach vulnerable groups such as those who do not have access to the internet service and lack internet literacy. Lastly, our study sample consisted mostly of females that could be because more females live in the examined municipalities, because females are more computer literate compared to males according to the national data and because of the effect of the 1992-1995 wars on the population ratio. Future studies should include more males to prevent the potential gender bias.

Conclusion

In summary, fear, anxiety and depressive symptoms were significantly prevalent among the general population of Bosnia and Herzegovina during the third wave of the COVID-19 outbreak and were associated with age, gender,

marital status and COVID-19 related symptoms. The current prevalence of mental health problems is alarming and requires immediate intervention of health agencies and service commissioners to prevent a mental health catastrophe caused by the COVID-19 pandemic.

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Conflict of Interest
None.

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