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THE INFLUENCE OF COVID-19 PANDEMIC ON THE FREQUENCY OF SUICIDES IN CROATIA

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SUMMARY

Background: *Suicides are among the leading causes of death in the world and pose a major public health problem. It is not yet entirely clear to what extent the 2019 coronavirus pandemic (COVID-19) affects suicide rates, but is likely to result in an increase in risk factors for suicidal behaviors. The research objective was to compare the suicide rate in 2019 with the suicide rate in 2020 in the Republic of Croatia.*

Subjects and methods: *A cross-sectional study was conducted for the period from January 2019 to December 2020. The necessary data on persons who committed suicide in the Republic of Croatia in that period were collected in cooperation with the Osijek-Baranja County Police Department. The number of suicides in that period was statistically processed according to demographic characteristics, suicide motives, days of the week and months by years.*

Results: *There was no significant difference in the total number of suicides comparing 2019 and 2020. Observed by months, significantly more suicides were committed during February 2020 compared to February 2019 (χ^2-test, p=0.04). According to marital status, in 2019 compared to 2020, significantly more suicides were recorded among married persons (χ^2-test, p<0.001) and among those who were unemployed (χ^2-test, p<0.001). Persons with the status of veterans committed suicide significantly more often in 2019, compared to 2020 (χ^2-test, p<0.001) During 2019, compared to 2020, significantly more suicides were committed by persons working in service and trade occupations (χ^2-test, p=0.001).*

Conclusion: *At the beginning of the pandemic in Croatia, in February 2020, there was a significant increase in suicides compared to 2019, which may indicate that the spread of the pandemic since the end of 2019, with uncertainty and cataclysmic atmosphere, had a negative effect on mental health.*

Key words: *COVID-19 – pandemic - Republic of Croatia - suicide*

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INTRODUCTION

Suicide is death caused by self-inflicted harmful behavior with the intention of a lethal outcome. Even though self-inflicted violence is a cause of mortality and morbidity around the world, there is uncertainty regarding terminology in different countries. Uncertainty is caused by potential difficulties in determining whether there is a lethal intention in an act and what falls under the definition of suicidal behavior. Public discussions, precise research and effective treatment of suicidal behavior require accepted definitions (Turecki & Brent 2016). A suicidal idea is a contemplation or desire for ending one's own life and it can be passive or active. An attempted suicide is an act with the intention of ending one's own life. Committed suicide is a deadly action with the intention of ending one's own life, which is often determined by a doctor, coroner or proxy (Cha et al. 2018). Suicide is a serious global public health problem and it is among the leading causes of death in the world. In 2019 suicide was the fourth leading cause of death in people aged 15 to 29 (WHO 2016, Kõlves et al. 2022). After the sudden and unexpected spreading of a global pandemic in 2020, many mental health researchers have launched alarms about a possible suicide rates rise, due to the inevitable consequences of the ongoing social and health emergency (di Napoli 2021). Suicide is not only present in highly developed countries, it is a global phenomenon present in all regions of the world with more than 77% of global suicides in 2019 being committed in poorly or moderately developed countries. Although suicide attempts are more common in adolescents and young adults, older men and women have a higher suicide rate in nearly all countries (Conejero et al. 2018).

The suicide rate in Croatia in 2012 was 18.1 per 100.000 people (Dumenčić et al. 2019). Worldwide, men commit 2–3 times more suicides than women, although suicide attempts are more frequent among women. In a study conducted in India, the most common suicide method among men and women was hanging (36.9%), the second most common being poisoning (34.7%). Men used to hang and poisoning

relatively more frequently, while women preferred drowning and self-incineration as suicide methods (Tsirigotis et al. 2011). In the beginning of the 21st century, on a global level, the highest mortality by unnatural causes was a consequence of depression in almost 30% of cases, disorders related to substance abuse, schizophrenia and personality disorders (Bachmann 2018). It has been reported that up to 40% of patients diagnosed with schizophrenia will have at least one suicide attempt in the course of their illness (Marčinko et al. 2008). Research shows that previous suicide attempts are a significant risk factor and that most commited suicides happen immediately after an attempted suicide (Stenbacka & Jokinen 2015). Besides personal medical history of psychiatric conditions and previous suicide attempts, the same occurrence in the family history is also a risk factor (Agerbo et al. 2002). Systematic review of 80 studies indicated that having a history of PTSD is associated with significant morbidity and mortality, including increased risk for suicidal ideation, attempts, and completed suicides in war veterans (Pompili et al. 2013). Particularly relevant for Croatian war veterans is the fact that symptoms of PTSD and higher risk for suicide may persist for many years after their deployment (Price et al. 2004, Lončar et al. 2014). Jakšić et al. (2015) conducted a study in which the aim was to investigate whether personality dimensions are associated with various aspects of suicidality among Croatian war veterans suffering from PTSD. Temperament dimension Harm Avoidance and character dimension Self-Directedness were found to be most consistently associated with several expressions of suicidal tendencies: frequency of suicidal ideation over the past 12 months, self-reported likelihood of suicidal behavior in the future, as well as the overall suicidal risk. Additionally, age and education level were also related to the overall risk of suicide, indicating that war veterans who are older and less educated are more likely to engage in suicidal ideation, possibly suicidal behavior as well (Jakšić et al. 2015). The frequency of attempted suicides and committed suicides is not increased only in persons with psychiatric conditions, but also with physical health issues. The number of suicides doubles in persons diagnosed with cancer (Bachmann 2018).

Furthermore, inner turmoil, natural disasters, violence, abuse, loss and the feeling of isolation are strongly related to suicidal behavior. Suicide rates are also high in vulnerable groups who experience discrimination (WHO 2016). Pandemics and epidemics of viral diseases are related to psychosocial and emotional factors. Epidemiological measures of physical distancing and quarantine, implemented to suppress the spread of disease, are related to increased loneliness, anxiety, stress and depression in the general population. Additionally, pandemics and epidemics of viral disease result in economic crises, causing a rise in unemployment, increased alcohol consumption, an increase in domestic violence, access to lethal instruments, constant exposure to information about the pandemic in the media, which is related to numerous health issues, including suicidal behavior (Leaune et al. 2020, Ambrosetti et al. 2021). The Coronavirus disease 2019 (COVID-19) pandemic determined a relevant impact on mental health, due to the infection itself and its socio-economic consequences (Menculini et al. 2021). Recent scientific researches so far indicate that the COVID-19 pandemic can have severe psychosocial effects related to anxiety, depression, sleep disorders and other mental disorders (Sher 2020a,b). The etiology of COVID-19-related psychoses is not yet known clear and can be multifactorial, including psychosocial and organic factors (Borovina et al. 2021). Sleep disorders are related to anxiety, depression and suicidal behavior, but also constitute an independent risk factor for suicidal behavior (Sher 2020b, Que 2020). Uncertainty about the future and the length of the pandemic is omnipresent. Effects on mental health were observed in the general population, individuals with a history of psychiatric illness, individuals who live in an area of high COVID-19 prevalence and individuals whose friend or family member died of the consequences of infection (Sher 2020a). Health professionals in pandemics bear an increased risk of infection and have to deal with death, which may cause them to develop posttraumatic reactions, anxiety and depression even several years after the crisis has ended. Children and adolescents may be under increased stress and worried about their future. Older people frequently live alone, are socially isolated and have physical health difficulties, all of which are risk factors for attempted and committed suicides (Zalsman et al. 2020).

The objectives of this research were: to compare the frequency of suicides during 2019 with the frequency of suicides during 2020 in Croatia, analyze the correlation of demographic characteristics and the frequency of suicides in said period, compare the frequency of suicides during the 2020 lockdown and the frequency of suicides during the same months in 2019.

SUBJECTS AND METHODS

Cross-sectional study was conducted for the time period from January 2019 to December 2020. The participants were persons who have committed suicide in said time period in the Republic of Croatia. For research purposes, in collaboration with the Osijek-Baranja County Police Department, the following data on the participants was collected: gender, marital status, date of birth, occupation/professional qualifications, employment status, veteran status, date of suicide, method of suicide, location and motive of suicide. Data on suicides committed during 2019 and 2020 were distributed and statistically analyzed with regard to the listed demographic characteristics, suicide methods

and dates of suicide (days of the week, months and years). All the data on the participants was processed respecting identity protection as well as moral and ethical principles.

Statistical methods

Categorical data is presented in absolute and relative frequencies. The differences in categorical variables were tested using the χ^2 test. Normalcy of distribution in numeric variables was tested using the Shapiro-Wilk test. Numerical data was described using median and interquartile range. The differences in age in people who have committed suicide were tested using the Mann-Whitney U test (with a 95 % range of reliability). All p values were two-tailed. The significance of differences determined by statistical testing was set at $p<0.05$. The Statistica for Windows 2010 (version 10.0, StatSoft Inc., Tulsa, OK) statistical software package was used on data analysis (Detels et al. 2015).

Table 1. Distribution of suicides in relation to months and years in Croatia

Months	Number (%) of suicides in Croatia			p*
	2019	2020	Total	
January	48 (8.6)	43 (7.7)	91 (8.2)	0.59
February	26 (4.7)	43 (7.7)	69 (6.2)	*0.04*
March	42 (7.6)	43 (7.7)	85 (7.6)	>0.99
April	43 (7.7)	34 (6.1)	77 (6.9)	0.29
May	53 (9.5)	47 (8.4)	100 (9.0)	0.53
June	54 (9.7)	60 (10.8)	114 (10.2)	0.62
July	50 (9.0)	52 (9.0)	102 (9.0)	0.92
August	58 (10.0)	49 (9.0)	107 (10)	0.36
September	61 (11.0)	58 (10.0)	119 (11)	0.77
October	42 (7.6)	37 (6.6)	79 (7.1)	0.56
November	39 (7.0)	54 (9.7)	93 (8.4)	0.13
December	39 (7.0)	38 (6.8)	77 (6.9)	0.91
Total	555 (49.9)	558 (50.1)	1.113 (100)	

*χ^2 test

Table 2. Distribution of suicides in Croatia according to basic information about persons who commited suicide

	Number (%) of suicides in Croatia			p*
	2019	2020	Total	
Gender				0.73
Male	436 (78.6)	443 (79.4)	879 (79)	
Female	119 (21.4)	115 (20.6)	234 (21)	
Education				
No education	57 (10.3)	54 (9.7)	111 (10)	0.57
Lower-skilled	151 (27.2)	139 (24.9)	290 (26.1)	0.38
High school level	274 (49.4)	279 (50)	553 (49.7)	0.73
Higher level education	9 (1.6)	19 (3.4)	28 (2.5)	0.06
High level education	34 (6.1)	31 (5.6)	65 (5.8)	0.69
No qualification	4 (0.7)	3 (0.5)	7 (0.6)	0.70
Qualified, highly-qualified	13 (2)	18 (3)	31 (3)	0.37
Unknown	13 (2)	15 (3)	28 (3)	0.71
Marital status				*<0.001*
Married	266 (47.9)	214 (38.4)	480 (43.1)	
Unmarried	258 (46.5)	240 (43)	498 (44.7)	
Unknown	31 (5.6)	104 (18.6)	135 (12.1)	
Employment status				*<0.001*
Employed	110 (19.8)	90 (16.1)	200 (18)	
Unemployed	414 (74.6)	365 (65.4)	779 (70)	
Unknown	31 (5.6)	103 (18.5)	134 (12)	
Veteran status				*<0.001*
Yes	70 (12.6)	57 (10.2)	127 (11.4)	
No	375 (67.6)	288 (51.6)	663 (59.6)	
Unknown	110 (19.8)	213 (38.2)	323 (29)	

*χ^2 test

RESULTS

In 2019 and 2020, there were 1.113 commited suicides in Republic of Croatia, with significantly greater number of commited suicides, 43 (7.7%), during February 2020 compared to February 2019 (χ^2 test, p=0.04) (Table 1).

Regarding days of the week the highest number of suicides during 2019 and 2020 was committed on Tuesdays, 190 (17.1%), and Mondays, 177 (15.9%), with no significant difference between the observed years. The lowest number of suicides was recorded on Saturdays, 139 (12.5%). During 2019 and 2020, 879 (79%) were committed by men and 234 (21%) by women. According to level of education, the highest number of persons who committed suicide are high school level, 553 (49.7%). No significant variation was observed with regard to gender and level of education during the observed years. According to marital status, during 2019 compared to 2020, significantly more suicides were committed by persons who were married (χ^2 test, p<0.001) and persons who were unemployed (χ^2 test, p<0.001). Persons with veteran status committed suicide more frequently during 2019 than during 2020 (χ^2 test, p<0.001) (Table 2).

Most suicides are committed indoors. According to occupation 237 (21.3%) are retired, 186 (16.7%) of unknown occupation and more frequently during 2020 compared to 2019 (χ^2 test, p=0.007). During 2019 persons in service and trade industries committed suicide more frequently compared to 2020 (χ^2 test, p=0.001) (Table 3).

Violent methods are the most common methods of suicide. A previous attempted suicide was recorded in 131 (11.8%) persons, with significantly more persons in 2020 compared to 2019 (χ^2 test, p<0.001) (Table 4).

The largest number of persons, 307 (27.6 %), had a mental disorder or behavioral disorder (ICD-10 diagnosis F00-99). The motive was undetermined in 516 (46%) persons, while for 74 (6.6%) persons the motive was elderly hopelessness. Of the total of 148 (13.3%) persons whose motive was physical illness, significantly more of them committed suicide during 2020, 90 (16.1%), compared to 2019 (χ^2 test, p=0.005) (Table 5).

DISCUSSION

Many researches have recorded an increase in suicide rates during previous pandemics and epidemics, for example in the USA during the Spanish flu in 1918 and 1919 and in Hong Kong during the SARS epidemic

Table 3. Distribution of number of suicides according to suicide location and occupation

	Number (%) of suicides in Croatia			p*
	2019	2020	Total	
Suicide location				
Indoors	360 (64.9)	357 (64)	717 (64.4)	0.76
Outdoors	195 (35.1)	201 (36)	396 (35.6)	
Occupation				
Student or child	36 (6.5)	46 (8.2)	82 (7.4)	0.26
Service and trade industries	98 (17.7)	60 (10.8)	158 (14.2)	*0.001*
Technicians and associates	56 (10.1)	54 (9.7)	110 (9.9)	0.82
Scientists, engineers and experts	35 (6.3)	36 (6.5)	71 (6.4)	0.92
Administrative officials	5 (0.9)	6 (1.1)	11 (1)	0.77
Farmers, foresters, fishermen, hunters	26 (4.7)	23 (4.1)	49 (4.4)	0.65
Trades and small manufacturing	80 (14)	85 (15)	165 (15)	0.70
Facility and engine operators, manufacturers, assemblers	16 (3)	18 (3)	34 (3)	0.74
Elementary occupations	3 (1)	5 (1)	8 (1)	0.48
Retired	122 (22)	115 (20.6)	237 (21.3)	0.58
Military occupations	2 (0.4)	0	2 (0.2)	0.16
Unknown	76 (13.7)	110 (19.7)	186 (16.7)	*0.007*

*χ^2 test

Table 4. Distribution of the number of suicides according to method and previous attempts

	Number (%) of suicides in Croatia			p*
	2019	2020	Total	
Suicide method				
Violent	538 (96.9)	536 (96.1)	1074 (96.5)	0.43
Non-violent	17 (3.1)	22 (3.9)	39 (3.5)	
Previous suicide attempts				
Yes	54 (9.7)	77 (13.8)	131 (11.8)	*<0.001*
No	392 (70.6)	480 (86)	872 (78.3)	
Unknown	109 (19.6)	1 (0.2)	110 (9.9)	

*χ^2 test

Table 5. Motives of suicide in Croatia in relation to observed years

Motive of suicide	Number (%) of suicides in Croatia			p*
	2019	2020	Total	
Mental disorders and behavioral disorders (F00-99)	152 (27.4)	155 (27.8)	307 (27.6)	0.88
Physical illness	58 (10.5)	90 (16.1)	148 (13.3)	*0.005*
Elderly hopelessness	43 (7.7)	31 (5.6)	74 (6.6)	0.14
Loss of job/poverty	4 (0.7)	5 (0.9)	9 (0.8)	0.74
Loss of child/marital partner	7 (1.3)	2 (0.4)	9 (0.8)	0.09
Dysfunctional families	18 (3.2)	14 (2.5)	32 (2.9)	0.46
Other (jealousy, poor grades, commited felony)	10 (2)	7 (1)	17 (2)	0.46
Undetermined	263 (47)	253 (45)	516 (46)	0.49

*χ^2 test

in 2003 (Leaune 2020, Sher 2020a, Zalsman et al. 2020, Banerjee et al. 2021). During the Spanish flu it was assumed that reduced social integration and interaction, as well as the fear of the epidemic, were the reasons for an increase in the frequency of suicides. A study concerning the SARS epidemic noted an increase in suicides among the elderly, aged 65 or older, and an increase in the frequency of suicides can be attributed to the fear of infection, fear of burdening one's family, general anxiety and social isolation (Sher 2020a, Zalsman et al. 2020).

This research shows there is no significant difference in the total number of suicides in the Republic of Croatia in 2019 and 2020. Research conducted in 21 countries, 16 of which are higher income countries and 5 are higher medium income, has shown that the number of suicides during the initial months of the pandemic remained unchanged od decreased compared to previous data. It is plausible that measures to mitigate the consequences of the pandemic, such as additional support for mental health and financial support, have reduced the harmful effects in the initial stages of the pandemic (Pirkis et al. 2021). A study conducted in the USA has shown that suicide rates are higher in rural than in urban areas, which is related to low social capital, severe social fragmentation and an increasing percentage of citizens without health care, as well as an increasing percentage of veterans (Brown & Schuman 2012).

Significant variation was noted in Croatia when comparing the number of suicides according to months of the year in 2019 and 2020. Specifically, during February of 2020 when the pandemic was beginning in Croatia, there were significantly more suicides than in the same month in 2019. There could have been a gradual increase in anxiety since the beginning of the pandemic in China at the end of 2019, which continued to spread and reached neighboring countries by February, most notably Italy. Observation for many years is necessary for analysis and conclusion, but this result may be due to the "climate of catastrophe and hopelessness" that dominated the early confrontation with the pandemic and the ways to combat the virus offered by the health system and the state, which resembled a war structure. It is possible that persons who committed suicide were taken aback by the new situation, unprepared, along with the catastrophe and hopelessness to which we were all exposed by the media and the health system, with high levels of threat, uncertainty, helplessness and emphasis on the easy spread of the new and unfamiliar disease with fatal outcomes (respirators, high mortality, inability to defend against a disease that leads to unknown consequences, and there is no cure), all of which are significant predisposing factors for suicide.

In Croatia, the first lockdown was instated on March 19th, 2020. Strict measures were slowly relaxed mid-May the same year. The second lockdown was instated on November 28th, 2020. Measures were enforced until the end of the year, extending into 2021. Even though during February of 2020 an increased number of suicides was recorded, there was no difference during the two lockdown periods. There are multiple reasons why during the harshest epidemiological measures the number of suicides would potentially not increase. Possible explanation could be found in support for mental health and financial situation in Croatia. Longer periods of time spent at home could in some cases strengthen family relationships, reduce everyday stress and create a collective feeling of "being in this together" (Pirkis et al. 2021). However, the increased risk of domestic violence in such situations cannot be dismissed. A study conducted in Great Britain regarding the first 6 weeks of lockdown among adults has shown that suicidal thoughts were more frequent. Additionally, it was shown that women, young people aged 18 to 29, people from socially endangered surroundings and people with existing difficulties with mental health experienced a worsening of mental health during the pandemic (O'Connor 2021).

Recent studies have observed a correlation between an increased unemployment rate and a higher prevalence of depression, alcohol addiction, substance abuse and suicides during COVID-19 pandemic (Sher 2020a). A study conducted in 63 states from 2000 to 2011 (including the economic crisis of 2008) has shown an increase in risk of suicide by 20 to 30% (Nordt 2015). Although the economic factor of the pandemic is important in the pathophysiology of suicidal behaviors, there were significantly fewer unemployed persons who

committed suicide in 2020 compared to 2019. Taking into consideration state financial support, the real economic crisis might be yet to come, which is a possible explanation for why there is no significant increase in suicides among unemployed persons during 2020. Due to the epidemiological measures, people spent less time in the workplace, which could have led to less pressure in the workplace, and the adverse effects of bad work environment and stress were reduced. The situation of uncertainty has led to a stronger fear of paying off the loan and the need to keep the job (fear of what will happen to the family if I kill myself, and we have a long-term loan?). The number of unknown employment status for 2020 is too large, so the results are inadequate for interpretation. Significantly fewer married persons have committed suicide in 2020 compared to 2019, which contributes to the correlation between loneliness and negative effects on mental health. According to research, suicide is more often committed by unmarried people. This result may indicate the effects of a pandemic due to epidemiological measures - that in a situation where they were forced to stay indoors with family and spouse, people were empowered and realized the "essence of life" in a family environment and found strength and motivation to survive. Analysis of previous suicide attempts and veteran status gave mixed results. Of the factors listed, a significant increase in the number of suicides in 2020 compared to 2019 was only observed in persons who have previously attempted suicide. It is a well-known fact that people who try to commit suicide often repeat it many times until they finally succeed, because they fail to change and solve the root of the problem that pushes them to commit suicide. A large number of veterans have resolved their status, which could have led to a positive shift in affective level and stabilization.

Some ended in resignation and passivity, so although depressed they did not have the strength to commit suicide, and some were comfortable with the uncertainty of the epidemiological situation because it repeats the “we are at a war" experience and combat behavior, making them feel empowered and important. There is also a protective factor in the family environment if they live in an adequate marriage because they spent more time indoors and became aware of why they fought in the war - for their family, and similarly like married people realized the “essence of life” during epidemiological measures in which they were locked in their homes. It is known that when there is more aggression (and homicide) in the environment, there is less suicide. In a pandemic, the complete structure gave the impression of a difficult situation, uncertainty, struggle, and an increase in aggression (like that in war). And there are fewer suicides in war. No significant variations were observed regarding the age, gender, education level, location and method of suicide.

The highest number of persons who committed suicide are high school level of education, but it is possible that the percentage of people with that level of education is higher in the population, so the result is partly expected. Although there is no significant variation regarding education level, a significant variation was observed in the number of suicides committed by persons employed in service and trade industries, namely that fewer of them have committed suicide in 2020 compared to 2019. During the pandemic, even during the strictest lockdown, food stores and supermarkets were essential, and a large number of service industry employers received state financial support, all of which could be contributing factors to the reduced number of suicides. It is important to mention that service and trade industries are a broad term and there is a large number of unknown occupation in 2020, so the documentation is not completely adequate. According to motives of suicide, there was a significant increase in the number of suicides in 2020 compared to 2019 in persons whose motive was physical illness. Besides persons with psychiatric conditions, an increased risk of suicide is observed in persons with chronic diseases (Bachman 2018). Physically ill people have been taught that during the treatment of their disease they often seek medical examination and support. Examinations provide security in the course of their treatment, and this was difficult during the pandemic. The unavailability of health care intensifies insecurity and anxiety, pessimism and fatalism, helplessness and hopelessness that lead to suicide. Limitations of this research regarding motives of suicide were: highest number of undetermined motives, and the category ‘physical illness’ is insufficiently clarified during data collection by the Police Department, therefore it remains impossible to determine whether it is a more or less serious illness, acute or chronic. There is a large number of undetermined motives, which is expected because the cause of suicide is very rarely known.

The motive is stated post mortem according to the assessment of the environment (the key person providing the data or the assessment of the Ministry of the Interior), which most likely did not have an insight into the mental state and functioning of the patient. Of all the established motives, the leading cause of suicide are still mental disorders and behavioral disorders (although mental and behavioral disorders is a broad term). Even though this is one of the highest-risk groups regarding suicidal behavior, this research has found no significant variation in the number of suicides during 2019 and 2020. However, recent studies assume that the real consequences of the pandemic on mental health will manifest after the pandemic crisis is over (Sher 2020a, Zalsman et al. 2020).

CONCLUSION

In the conducted research, there was no significant variation in the total number of suicides in 2019 and 2020 in Croatia. When comparing the number of suicides by months, a significant increase was observed during February, 2020, compared to the same month in

2019, which suggests that the spreading of the pandemic since the end of 2019, the uncertainty and produced cataclysmic atmosphere had a negative effect on mental health. In the current pandemic, in which social isolation is accepted and an increase in anxiety and depression was observed in the general population, it is possible for people with existing psychiatric disorders to not be stigmatized the way they are in so called normal conditions, which could reduce their levels of anxiety and depression and therefore number of suicides. Further research is needed to gain insight into the long-term mental health effects of the COVID-19 pandemic and the number of pandemic-related suicides.

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Contribution of individual authors:

Dubravka Holik conceived the presented idea, developed the theory and performed the computations.

Boris Dumenčić conducted and analysed the data acquisition process, and discussed results with all authors.

Maja Epih searched the literature, analysed and interpreted data, and took the lead in writing the manuscript.

Nikola Epih searched the literature, analysed and interpreted data and drafted the manuscript.

Bruno Popić conducted the data acquisition process, designed data acquisition and statistical analysis.

Elizabeta Matuzalem Marinović provided critical feedback and helped shape the research, analysed and drafted the manuscript.

Sanda Anton provided suggestions and psychiatric analysis and thus gave importance to the research results.

All authors approved the final version of the manuscript.

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