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Source / Izvornik: **COVID, 2024, 4, 998 - 1011**

Journal article, Published version

Rad u časopisu, Objavljena verzija rada (izdavačev PDF)

<https://doi.org/10.3390/covid4070069>

Permanent link / Trajna poveznica: <https://urn.nsk.hr/urn:nbn:hr:184:064956>

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Download date / Datum preuzimanja: **2025-04-03**

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Article

Insights into Positive Mental Health Amid the COVID-19 Pandemic: Evidence from a Study in Croatia

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Abstract: *Objective:* The COVID-19 pandemic has raised significant concerns about public health, particularly in terms of mental well-being due to heightened fear and uncertainty. The findings of this study are based on a survey conducted to evaluate the mental health status of the general population in Croatia during the COVID-19 pandemic. *Methods:* A survey conducted randomly and cross-sectionally included 588 respondents from all 21 counties in Croatia. The survey gathered demographic data and assessed various factors related to pandemic response measures and mental health using the Mental Health Continuum—Short Form (MHC-SF) scale. *Results:* Despite feeling adequately informed about COVID-19 (76.0%), most respondents (60.8%) expressed concerns about their loved ones during the pandemic. There were significant numbers who felt there was no risk of infection (50.9%) or believed they would not get infected (40.2%), while 72.4% were content with government measures. A statistical analysis indicated that mental health was not significantly different between genders, but age-related differences were evident, with those under 21 experiencing the most distress. The lowest level of psychological and social well-being was observed in respondents who were unemployed. *Conclusions:* The study identifies vulnerable groups in the Croatian population during the pandemic, including younger individuals, those on parental leave, students, and the unemployed, who exhibited worse mental health. The importance of implementing targeted mental health interventions to support these vulnerable groups is highlighted by these findings.

Keywords: mental health; COVID-19; pandemic; fear; anxiety; Mental Health Continuum—Short Form



Citation: Jovanović, Ž.; Spevan, M.; Bošković, S.; Švaljug, D.; Miletić, B. Insights into Positive Mental Health Amid the COVID-19 Pandemic: Evidence from a Study in Croatia. *COVID* **2024**, *4*, 998–1011. <https://doi.org/10.3390/covid4070069>

Received: 28 May 2024

Revised: 29 June 2024

Accepted: 5 July 2024

Published: 7 July 2024



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1. Introduction

The global COVID-19 pandemic has instilled widespread fear and uncertainty, profoundly altering social norms and lifestyles, with consequential impacts on mental well-being. Governments worldwide implemented lockdowns, social distancing measures, and travel restrictions to contain the virus's spread; however, these necessary actions disrupted the routine life of the population. The sudden alterations have at the same time heightened feelings of isolation, anxiety, and stress among people. Research shows a rise in health challenges like depression and anxiety as individuals struggle with an uncertain future and the loss of normality, especially in vulnerable groups such as healthcare workers, the elderly, and those with existing health issues [1]. The initial phase of the COVID-19 outbreak was associated with a multitude of psychological distresses, such as depression, panic attacks, anxiety, suicidal tendencies, delirium, and psychotic symptoms [2].

1.1. The Relationship between COVID-19 and Mental Health (REC 1)

COVID-19 and mental health relate to various social, economic, and previous health-condition aspects. The global health crisis has resulted in both a well-being threat and a significant mental health emergency. The virus and uncertainty about the future have caused an increase in anxiety and stress levels. According to the World Health Organization,

many individuals have reported symptoms of anxiety, depression, and stress related to the pandemic [3]. These health challenges have been exacerbated by the constant exposure to distressing news and the need to adapt quickly to changing circumstances. Lockdowns and social-distancing measures have lowered interactions, resulting in feelings of loneliness. According to studies, social isolation can lead to mental health consequences such as depression and anxiety [4]. Millions of individuals were affected by the pandemic, resulting in job losses and decreased income levels. These changes have led to an increase in various mental health issues [5]. Specific populations have been particularly affected by the COVID-19 situation [6]. A study by Huang et al. found that there were common mental health problems among healthcare workers during the COVID-19 pandemic. The most common was job burnout, followed by anxiety, depression, acute stress, and post-traumatic stress disorder [7]. Another study conducted by Alhoury et al. had consistent results [8]. It cannot be denied that healthcare workers faced continuous psychological pressure throughout the Covid pandemic worldwide [9–11]. Healthcare workers faced both professional and psychological burdens due to the uncertainties associated with Covid, rapidly changing treatment approaches, staffing shortages, and often being affected by the COVID illness themselves [12]. The stressors from the pandemic and disturbances in health services have often caused individuals with existing health conditions to experience a worsening of their symptoms [13]. The psychological well-being of previously chronically ill patients and those with previous depression was negatively impacted by this [14,15]. This shows the need for additional mental health measures in patients with chronic disease [16]. Infectious diseases such as COVID-19 have consistently been linked to psychological distress and manifestations of mental illness [17]. Although most research has focused on the psychological effects of the COVID-19 pandemic, studies like those by Shetty and colleagues have drawn attention to possible pathophysiological explanations for the increase in depression, such as potential direct viral infection of the brain or an indirect immune response triggering neuroinflammation after a cytokine storm during COVID-19 infection [18]. This area certainly remains insufficiently understood, and the relationship between COVID-19 infection and mental health will undoubtedly remain a subject of research in the coming years.

1.2. The Rationale of the Study and Research Hypothesis (REC 1)

Many studies have underscored the prevalence of depression, anxiety, and stress during the COVID-19 crisis. Moreover, sleep disturbances have become a significant concern, particularly for frontline healthcare workers who encounter high levels of trauma [19,20]. Banerjee advocates for strategies that address all challenges by incorporating public education on the psychological effects of pandemics, disease prevention, and health promotion. Central to Banerjee's discourse is the imperative integration of psychological and healthcare services, alongside the implementation of crisis intervention measures and the provision of mental health support [21]. The Croatian Institute of Public Health has issued guidelines aimed at mitigating the adverse effects of anxiety and stress caused by the COVID-19 pandemic. These directives aim to provide professionals with the necessary tools to provide psychosocial support, which will enhance resilience among both healthcare workers and the general population [22]. Even though the pandemic has subsided, the long-term effects on the mental health of healthcare workers are still unknown. It is also important not to forget the socioeconomic and cultural characteristics of specific geographical regions, which certainly need to be considered when considering the prevalence of mental disorders among the population [23–25]. Therefore, further research is essential to define the characteristics of the occurrence and spread of pandemic diseases, as well as their impact on the mental health of the population. This approach can help develop measures for the prevention and early detection of mental disorders, as well as guidelines for timely and adequate treatment. By identifying mental disorders at regional levels and gathering experiences, we can build a foundation for addressing mental disorders globally.

The aim of this study was to determine the presence of mental disorders among the population during the COVID-19 pandemic in Croatia and to compare them with the results of other studies. The findings of this research can be used to plan and implement public health measures for detecting, monitoring, and treating such disorders in Croatia. Although it is a regional study, the research results can be used in conducting similar studies on a global level, with the possibility of implementing these experiences in public health programs worldwide. Moreover, they are crucial for defining preventive measures that can be applied to future epidemiological challenges as they arise.

2. Methods

2.1. Study Design and Participants

The survey was distributed to the general population via social media channels, ensuring representation from all 21 counties in Croatia. A total of 588 respondents participated in the study. Sociodemographic information of the participants was collected to provide contextual understanding. Mental health was assessed utilizing the Mental Health Continuum—Short Form (MHC-SF)—Mental Health Questionnaire developed by Lamers et al. (2011) and validated in Croatia by Vuletić et al. in 2022 [26,27]. This instrument comprises 14 items segregated into three subscales. The first subscale, comprising three questions, evaluates emotional well-being (EWB). Social well-being (SWB) constitutes the subject of the second subscale, encompassing five items, while the third subscale focuses on psychological well-being, comprising six items [26]. Each item was assessed on a 6-point Likert scale ranging from 0 to 5, denoting frequencies from “never” to “every day” [26]. Scoring followed the guidelines stipulated in the MHC-SF protocol, with responses ranging from 0 (every day) to 5 (never). Composite scores were computed for emotional well-being (EWB: 1–18), social well-being (SWB: 1–30), and psychological well-being (PWB: 1–36) [26]. The validity of the MCH-SF scale was established through rigorous psychometric analysis, including the calculation of Cronbach’s alpha reliability coefficient. In the Croatian context, the total MCH-SF scale demonstrated high internal consistency with a Cronbach’s alpha coefficient of $\alpha = 0.92$ [27].

2.2. Statistical Analyses

The analysis was conducted using IBM SPSS Statistics Version 25 for Mac OS, a widely utilized software package for statistical analysis. Descriptive statistics were employed to characterize the sample, encompassing weighted percentages and mean values across all variables. Given the non-normal distribution of the data, non-parametric statistical tests were selected to identify significant differences. Specifically, the χ^2 -test, Mann–Whitney U test, and Kruskal–Wallis H test were utilized for this purpose. Furthermore, the Spearman correlation coefficient was employed to elucidate the strength and direction of associations between variables. Significance levels were determined based on a threshold p -value of 0.05, adhering to conventional standards of statistical significance. This rigorous analytical approach ensures robustness and reliability in the interpretation of findings.

2.3. Ethical Consideration

The study was ethically approved by the University of Rijeka’s ethics committee, ensuring compliance with the rigorous standards outlined in the Personal Data Protection Act of Croatia (Official Gazette 103/03–106/12) and the Act of Protection of Patients’ Rights in Croatia (Official Gazette 169/04, 37/08). Additionally, adherence to the ethical principles delineated in the Declaration of Helsinki was meticulously observed throughout the research process. Prior to participation, all respondents were provided with comprehensive information regarding the aims and objectives of the study. Voluntary consent was explicitly obtained from each participant, who was assured of his/her autonomy to opt-in or opt-out without any coercion. Participation in the study was strictly voluntary, affirming the principles of ethical research conduct.

3. Results

The study uncovered insights from 588 respondents exclusively from Croatia, spanning across all 21 counties. Among the participants, 53 (9.1%) identified as male, while 527 (89.6%) identified as female. The average age of respondents was 37 years ($SD = \pm 9.9$; Range 18–69 years). Regarding educational attainment, the majority held a high school degree ($N = 268, 46.1\%$), followed by bachelor's degrees ($N = 194, 33.4\%$) and master's degrees ($N = 114, 19.6\%$). In terms of employment status, 424 (78.1%) were employed, 96 (17.7%) were unemployed, and 10 (1.8%) were students. During the COVID-19 pandemic, 373 (71.7%) respondents maintained their employment, while 88 (16.9%) experienced unemployment, 36 (6.9%) were on paid leave, and 23 (4.4%) were on unpaid leave. Regarding sectors of employment, 208 respondents (40.2%) worked in the private sector; 123 (23.7%) in civil service; 101 (19.5%) in public service; and 86 (16.6%) identified with other categories, such as mothers with children, pregnant women, or students. The study also noted that 395 respondents (71.4%) had children, while 158 (28.6%) did not. During the pandemic, 337 respondents (60.8%) expressed concern for the well-being of their loved ones, while 173 (31.2%) did not report worry, and 44 (7.9%) were extremely worried. Most respondents demonstrated a solid grasp of the COVID-19 pandemic, with 421 (76.0%) feeling adequately informed, whereas 102 (18.4%) felt insufficiently informed, and 31 (5.6%) expressed a lack of interest in being informed. In terms of infection-risk perceptions, 281 respondents (50.9%) did not perceive any risk, 222 (40.2%) believed they would not contract the virus, and 49 (8.9%) believed they would be infected. Satisfaction with government measures was expressed by 399 respondents (72.4%), while 152 (27.6%) expressed dissatisfaction. A significant impact of the COVID-19 pandemic on the future of the population was acknowledged by 435 respondents (78.7%), whereas 73 (13.2%) did not contemplate it, and 45 (8.1%) believed there would be no impact. In terms of mobility, 253 respondents (45.8%) reported leaving their homes daily for work, with 170 (30.8%) doing so several times a week, 61 (11.1%) once a week, and 16 (2.9%) not leaving home at all. Regarding conflict situations arising from quarantine during the pandemic, 295 respondents (60.0%) reported experiencing reactions similar to those before the pandemic, 103 (20.9%) reported less conflict, 64 (13.0%) reported increased conflict, and 30 (6.1%) respondents lived alone (Table 1). The statistical analyses were conducted utilizing the Mann–Whitney U test, Kruskal–Wallis H test, and Chi-square test. The results revealed no statistically significant difference between genders concerning the overall MHC-SF scale and its three subscales. However, notable disparities emerged across age groups. Specifically, individuals younger than 21 years appeared to experience the greatest impact during the COVID-19 pandemic, as evidenced by significant differences across all three scales (EWB: $M = 2.56, SD = 1.192; p < 0.05$; PWB: $M = 2.24, SD = 1.120; p < 0.05$; SWB: $M = 3.50, SD = 1.022; p < 0.05$; Total MCH-SF: $M = 2.76, SD = 0.863; p < 0.05$). Conversely, no significant differences were observed based on educational attainment. Regarding employment status, unemployed respondents exhibited the most pronounced effects on their psychological and social well-being, with significant differences found across all scales (PWB: $M = 1.57, SD = 1.184; p < 0.05$; SWB: $M = 2.87, SD = 1.203; p < 0.05$). Those on paid leave experienced impaired emotional well-being (EWB: $M = 1.76, SD = 1.494; p < 0.05$). Moreover, individuals categorized under “Other,” such as mothers with children, pregnant women, and students, displayed a decreased overall score on the scale (Total MCH-SF: $M = 2.12, SD = 1.007; p < 0.05$). Additionally, individuals on paid leave exhibited a negative impact on social well-being (SWB: $M = 3.02, SD = 1.226; p < 0.05$) across all scales and employment statuses. Respondents without children exhibited greater emotional difficulty in coping with the COVID-19 pandemic and displayed a more negative overall scale score compared to those with children (EWB: $M = 1.61, SD = 1.206; p < 0.05$; Total MCH-SF: $M = 1.93, SD = 0.793; p < 0.05$). Furthermore, individuals with a high level of concern for the pandemic demonstrated the lowest levels of positive mental health and EWB ($M = 2.15, SD = 1.492; p < 0.05$; Total MCH-SF: $M = 2.10, SD = 1.098; p < 0.05$). Moreover, respondents who felt inadequately informed experienced the most significant negative impact across all

three scales and the overall scale (EWB: $M = 1.56$, $SD = 1.118$; $p < 0.05$; PWB: $M = 1.58$, $SD = 1.212$; $p < 0.05$; SWB: $M = 2.86$, $SD = 1.233$; $p < 0.05$; Total MCH-SF: $M = 2.03$, $SD = 1.005$; $p < 0.05$), while those who did not desire to be informed exhibited the best mental health. Respondents who perceived a risk of themselves or their loved ones being infected with the COVID-19 virus demonstrated poorer EWB and SWB, as well as a lower overall score on the scale (Total MCH-SF: $M = 2.18$, $SD = 1.075$; $p < 0.05$). Moreover, respondents who believed that the Government of the Republic of Croatia did not implement effective measures during the pandemic exhibited impaired PWB and SWB (PWB: $M = 1.48$, $SD = 1.173$; SWB: $M = 2.89$, $SD = 1.188$; $p < 0.05$). Furthermore, those who anticipated consequences for the population due to the pandemic showed reduced EWB ($M = 1.42$, $SD = 1.193$; $p < 0.05$). Additionally, respondents who did not leave their homes at all during the pandemic exhibited the worst scores on all three scales and the overall scale (EWB: $M = 2.38$, $SD = 1.431$; PWB: $M = 2.60$, $SD = 1.417$; SWB: $M = 3.57$, $SD = 1.179$; Total MCH-SF: $M = 2.90$, $SD = 1.214$; $p < 0.05$), while those who left their homes daily for work showed the best positive mental health. Moreover, respondents who frequently experienced conflict situations with family members exhibited negative mental health across all three scales and the overall scale (EWB: $M = 2.23$, $SD = 1.384$; PWB: $M = 1.82$, $SD = 1.202$; SWB: $M = 3.03$, $SD = 1.264$; Total MCH-SF: $M = 2.34$, $SD = 1.093$; $p < 0.05$) (Table 2). Spearman correlation analysis was employed to explore the relationship between participant characteristics and their Mental Health Continuum results. Weak positive correlations were observed between participants' employment status, parental status, level of information about COVID-19, perceptions of the effectiveness of government measures, and Mental Health Continuum scores, all of which were statistically significant ($r_s = 0.163$, $p = 0.000$; $r_s = 0.152$, $p = 0.001$; $r_s = 0.116$, $p = 0.010$; $r_s = 0.176$, $p = 0.000$, respectively). Additionally, weak negative correlations were found between participants' concerns about their loved ones being infected, their perceptions of the pandemic's future impact on the population, and their Mental Health Continuum scores, which were also statistically significant ($r_s = -0.123$, $p = 0.000$; $r_s = -0.108$, $p = 0.017$, respectively) (Table 3). Furthermore, a factor analysis was conducted to analyze the Mental Health Continuum scale and its three subscales. The Cronbach's alpha values were as follows: for emotional well-being, $\alpha = 0.870$; for psychological well-being, $\alpha = 0.834$; for social well-being, $\alpha = 0.846$; and for the total Mental Health Continuum scale, $\alpha = 0.909$. These values exceeded the commonly accepted threshold for internal consistency reliability (usually 0.70), indicating high reliability (Table 4).

Table 1. Sociodemographic data of the participants.

Variables n = 588	N	%
Gender		
Male	53	9.1
Female	527	89.6
Age		
<21	12	2.5
21 to 31	156	32.5
32 to 41	167	34.8
42 to 51	101	21.0
52 to 61	35	7.3
62>	9	1.9
Level of education		
Primary school	5	0.9
High School	268	46.1
Bachelor's degree	194	33.4
University degree	114	19.6

Table 1. *Cont.*

Variables n = 588	N	%
Are you employed?		
Yes	424	78.1
No	96	17.7
Student	10	1.8
Retired	7	1.3
Maternity leave	6	1.1
How has the situation with the COVID-19 pandemic affected your employment status?		
I do not work	88	16.9
I still have a job	373	71.7
I am currently on paid leave	36	6.9
I am currently on unpaid leave	23	4.4
Employment		
Civil service	123	23.7
Public sector	101	19.5
Private sector	208	40.2
Other	86	16.6
Do you have children?		
Yes	395	71.4
No	158	28.6
How worried are you about the COVID-19 pandemic?		
I am very worried	44	7.9
I am worried about my loved ones	337	60.8
I am not worried at all	173	31.2
Do you think you are sufficiently informed about the COVID-19 pandemic?		
Yes	421	76.0
No	102	18.4
I do not want to be informed	31	5.6
Do you think that you or your loved ones will become infected with the COVID-19 virus?		
Yes	49	8.9
No	222	40.2
I am not thinking about it	281	50.9
Do you think that the implemented measures of the Government of the Republic of Croatia are good enough to combat the COVID-19 pandemic?		
Yes	399	72.4
No	152	27.6
Do you think that the pandemic will affect the life of the population in the future?		
Yes	435	78.7
No	45	8.1
I am not thinking about it	73	13.2
How often do you leave your home?		
Every day for work	253	45.8
Several times a week	170	30.8
Once a week	61	11.1
I do not go out at all	16	2.9
Other	52	9.4
Do you get into conflict situations with family members more than before?		
More often	64	13.0
Equally	295	60.0
Rarely	103	20.9
I live alone	30	6.1

Table 2. Characteristics of the participants regarding three subscales of the MHC-SF scale—descriptive statistics.

Variable	Emotional Well-Being			Psychological Well-Being			Social Well-Being			MHC-SF Scale		
	Mean	SD	Test/p	Mean	SD	Test/p	Mean	SD	Test/p	Mean	SD	Test/p
Gender												
Male	1.28	1.204	9339.00/	1.36	1.113	10,017.00/	2.40	1.115	9779.00/	1.71	1.022	9764.00/
Female	1.38	1.141	0.336	1.28	1.007	0.831	2.46	1.242	0.635	1.72	0.953	0.642
Age groups												
<21	2.56	1.192		2.24	1.120		3.50	1.022		2.76	0.863	
21 to 31	1.18	1.007		1.31	0.961		2.32	1.214		1.64	0.904	
32 to 41	1.17	1.054	31.011/	1.23	1.054	11.516/	2.50	1.261	11.197/	1.67	0.969	14.883/
42 to 51	1.67	1.260	0.000	1.25	0.924	0.042	2.48	1.130	0.048	1.78	0.903	0.011
52 to 61	1.64	1.211		1.25	1.098		2.29	1.292		1.70	1.045	
62>	1.96	1.338		1.50	1.629		2.60	1.273		1.99	1.348	
Level of education												
Primary school	1.33	0.816		0.54	0.975		1.45	1.215		1.04	0.850	
Secondary school	1.39	1.168	0.547/	1.33	1.006	4.945/	2.54	1.232	5.698/	1.78	0.935	5.467/
Bachelor's degree	1.36	1.092	0.908	1.30	0.993	0.176	2.49	1.221	0.127	1.74	0.936	0.141
University degree	1.32	1.212		1.21	1.082		2.24	1.217		1.60	1.028	
Are you employed?												
Yes	1.31	1.125	29.673/	1.21	0.941	103.639/	2.31	1.214	69.201/	1.62	0.924	146.158/
No	1.56	1.133	0.483	1.57	1.184	0.000	2.87	1.203	0.037	2.01	0.994	0.130
Other	1.72	1.296		1.46	1.186		2.85	1.240		2.01	1.051	
How has the situation with the COVID-19 pandemic affected your employment status?												
I still have a job	1.24	1.073	13.717/	1.18	0.917	7.646/	2.24	1.203	32.161/	1.57	0.891	21.474/
I am currently on paid leave	1.76	1.494	0.003	1.36	1.292	0.054	2.81	1.198	0.000	1.96	1.193	0.000
I am currently on unpaid leave	1.28	0.981		1.38	1.086		3.02	1.226		1.95	0.897	
Other	1.73	1.208		1.60	1.200		2.98	1.129		2.12	1.007	
Employment												
Civil service	1.38	1.129		1.18	0.888		2.17	1.100		1.58	0.867	
Public sector	1.55	1.265	11.150/	1.35	1.134	3.139/	2.43	1.153	12.996/	1.78	1.029	7.929/
Private sector	1.15	1.027	0.011	1.18	0.895	0.371	2.40	1.278	0.005	1.61	0.882	0.048
Other	1.63	1.247		1.53	1.244		2.84	1.290		2.02	1.108	
Do you have children?												
Yes	1.26	1.102	27.119/	1.18	0.983	33.885/	2.39	1.247	35.298/	1.63	0.943	67.350/
No	1.61	1.206	0.028	1.55	1.056	0.243	2.58	1.204	0.083	1.93	0.973	0.002

Table 2. Cont.

Variable	Emotional Well-Being			Psychological Well-Being			Social Well-Being			MHC-SF Scale		
	Mean	SD	Test/p	Mean	SD	Test/p	Mean	SD	Test/p	Mean	SD	Test/p
How worried are you about the COVID-19 pandemic?												
I am very worried	2.15	1.492	24.586/	1.60	1.290	4.527/	2.67	1.198	1.854/	2.10	1.098	6.585/
I am worried about my loved ones	1.40	1.077	0.000	1.29	0.948	0.104	2.40	1.166	0.396	1.71	0.899	0.037
I am not worried at all	1.09	1.070		1.20	1.061		2.48	1.372		1.63	1.021	
Do you think you are sufficiently informed about the COVID-19 pandemic?			5.974/			6.006/			12.863/			11.736/
Yes	1.34	1.118	0.050	1.22	0.949	0.050	2.35	1.208	0.002	1.65	0.930	0.003
No	1.56	1.238		1.58	1.212		2.86	1.233		2.03	1.005	
I do not want to be informed	0.99	1.043		1.28	1.117		2.31	1.228		1.59	1.019	
Do you think that you or your loved ones will become infected with the COVID-19 virus?			13.555/			3.282/			7.958/			10.445/
Yes	1.96	1.470	0.001	1.66	1.345	0.194	2.93	1.124	0.019	2.18	1.075	0.005
No	1.42	1.115		1.28	0.951		2.45	1.245		1.73	0.935	
I am not thinking about it	1.21	1.067		1.23	0.993		2.36	1.233		1.63	0.939	
Do you think that the implemented measures of the Government of the Republic of Croatia are good enough to combat the COVID-19 pandemic?			21.272/			47.291/			52.115/			76.290/
Yes	1.27	1.033	0.128	1.21	0.923	0.017	2.27	1.206	0.001	1.60	0.896	0.121
No	1.58	1.332		1.48	1.173		2.89	1.188		2.00	1.022	
Do you think that the pandemic will affect the life of the population in the future?			9.050/			4.355/			3.996/			5.836/
Yes	1.42	1.139	0.011	1.34	1.037	0.113	2.51	1.208	0.136	1.77	0.956	0.054
No	1.33	1.248		1.15	0.750		2.25	1.179		1.58	0.880	
I am not thinking about it	1.04	1.049		1.12	1.046		2.19	1.369		1.49	0.997	
How often do you leave your home?												
Every day for work	1.29	1.101		1.19	0.852		2.23	1.162		1.59	0.855	
Several times a week	1.34	1.117	12.624/	1.33	1.110	16.697/	2.60	1.273	22.442/	1.79	0.995	19.872/
Once a week	1.61	1.217	0.013	1.39	1.036	0.002	2.69	1.195	0.000	1.90	0.963	0.001
I do not go out at all	2.38	1.431		2.60	1.417		3.57	1.179		2.90	1.214	
Other	1.23	1.101		1.17	1.083		2.43	1.302		1.63	1.020	

Table 2. Cont.

Variable	Emotional Well-Being			Psychological Well-Being			Social Well-Being			MHC-SF Scale		
	Mean	SD	Test/p	Mean	SD	Test/p	Mean	SD	Test/p	Mean	SD	Test/p
Do you get into conflict situations with family members more than before?												
More often	2.23	1.384	44.212/	1.82	1.202	23.374/	3.03	1.264	20.377/	2.34	1.093	31.334/
Equally	1.24	0.985	0.000	1.26	0.949	0.000	2.42	1.220	0.000	1.67	0.899	0.000
Rarely	1.05	1.066		1.01	0.923		2.14	1.147		1.42	0.847	
I live alone	1.80	1.244		1.38	1.168		2.48	1.245		1.86	1.047	

Note: Test value—Mann–Whitney U test; Kruskal–Wallis H test; Chi-square tests; SD—standard deviation; *p*-value = statistical significance.

Table 3. Relationship between variables and MHC-SF—Spearman correlation.

Variable		mhc	ewb	swb	pwb
Are you employed?	rs	0.163 **	0.092 *	0.193 **	0.107 *
	p	0.000	0.041	0.000	0.017
Do you have children?	rs	0.152 **	0.141 **	0.065	0.170 **
	p	0.001	0.002	0.152	0.000
Do you think you are sufficiently informed about the COVID-19 pandemic?	rs	0.116 *	0.008	0.122 **	0.089 *
	p	0.010	0.852	0.007	0.047
Do you think that you or your loved ones will become infected with the COVID-19 virus?	rs	-0.123 **	-0.159	-0.098 *	-0.075
	p	0.000	0.000	0.029	0.097
Do you think that the implemented measures of the Government of the Republic of Croatia are good enough to combat the COVID-19 pandemic?	rs	0.176 **	0.083	0.222 **	0.090 *
	p	0.000	0.067	0.000	0.046
Do you think that the pandemic will affect the life of the population in the future?	rs	-0.108	-0.129 **	-0.090 *	-0.090 *
	p	0.017	0.004	0.046	0.046

Note: * Correlation is significant at the 0.05 level; ** correlation is significant at the 0.01 level; p—p-value; rs—Spearman correlation coefficient, mhc—Mental Health Continuum; ewb—emotional well-being; swb—social well-being; pwb—psychological well-being.

Table 4. Item sum scores and Cronbach’s alpha reliabilities for the MHC-SF and the subscales.

Subscale	Min	Max	Mean	SD	No. of Items	Cronbach’s α
Emotional well-being	3	18	13.93	3.427	3	0.870
Psychological well-being	5	30	17.75	6.243	5	0.834
Social well-being	6	36	28.36	6.079	6	0.846
Total MHC-SF	14	84	59.93	13.655	14	0.909

4. Discussion

The aim of this study was to evaluate how Croatia’s population managed the challenges posed by the COVID-19 pandemic in terms of positive mental health. Despite previous comparative studies suggesting that women typically exhibit greater concern and susceptibility to anxiety during crises [2], our findings indicate no statistically significant difference in positive mental health between men and women. Furthermore, our research revealed that younger respondents, particularly those under 21, exhibited the lowest scores on the positive mental health scale. This observation resonates with studies conducted in China which propose that younger individuals, who are often more exposed to technology and extensive news coverage related to the pandemic, may experience heightened stress levels, thereby impacting their positive mental health [28]. Lockdown measures may have a disproportionately higher impact on the younger population due to their limited ability to socialize with peers. The long-term effects of the pandemic on mental health and education levels remain uncertain. Unemployed individuals or those on unpaid leave were found to experience a more negative impact on their mental health, encompassing both psychological well-being and social well-being. This could be attributed to factors such as job loss, reduced social interactions, limited educational opportunities, recreational constraints, and diminished freedom, as they spend more time at home. Research suggests that certain measures implemented to combat the pandemic may disproportionately affect vulnerable groups, such as the unemployed [29]. Within this study, the “Other” group, consisting of mothers with children, pregnant women, and students, emerges as particularly susceptible to mental health challenges induced by the pandemic. Huang et al. (2020) highlighted concerns regarding the high prevalence of depressive symptoms and limited access to

mental health services among these demographics. Additionally, the pandemic's impact on mothers and newborns has been noted to exacerbate stress and anxiety [30], while potential discrimination against Chinese students abroad may contribute to anxiety and stress-related disorders [31]. Contrary to the belief that having children is a risk factor for heightened concern during the COVID-19 pandemic, respondents without children exhibit poorer mental health compared to those with children. This contradicts previous assumptions, as respondents with children emerge as the most vulnerable group for heightened concern during the pandemic, despite neither women nor their children being at particular risk [32]. Moreover, social isolation and loneliness exacerbate poor mental health outcomes, with strong associations observed with anxiety, depression, self-harm, and suicide attempts. The correlation between insufficient knowledge among respondents and poorer mental health is also notable. Comparative research suggests that anxiety levels can increase during a pandemic outbreak, particularly if the media provides inaccurate or excessive information. Distrust of public authorities due to the perception of inadequate government measures in Croatia can further deteriorate mental health among respondents.

Respondents who are confined to their homes and refrain from going out altogether exhibit the worst mental health outcomes. This is concerning, as impaired mental health is a major risk factor due to the expected consequences of quarantine and its related social and physical isolation. Psychosocial hazards include suicide and self-harm, substance abuse (such as alcohol and drugs), gambling, domestic violence, and child abuse [33]. Our findings elucidate the correlation between mental health and the frequency of conflict situations experienced during quarantine. Additionally, individuals who are employed and have children tend to exhibit positive mental health outcomes. Conversely, those who harbor fears of contracting the COVID-19 virus, either for themselves or their loved ones, often experience negative mental health or heightened anxiety. Moreover, Japanese researchers have underscored the economic repercussions of the COVID-19 pandemic, as they significantly impact well-being. Economic insecurity may prompt the general population to hoard essential supplies, thereby exacerbating levels of fear and panic behavior. This research focused on the immediate effects of the COVID-19 pandemic on mental health. However, a fundamental question that future studies must address is the long-term impact of COVID-19 on mental health. A systematic review conducted by Bourmistrova et al. in 2022 showed a worsening of psychiatric symptoms in previously ill patients. At the same time, the levels of anxiety, depression, PTSD, and sleep disorders were comparable to the prevalence of these issues in the general population [34]. However, it remains unclear whether we can expect a further increase in mental disorders related to the consequences of the COVID-19 pandemic, regardless of whether they are due to the direct impact of the disease or the socioeconomic consequences that will burden a significant portion of the population for years. In this context, the occurrence of Long COVID symptoms, which persist over an extended period, will undoubtedly play a special role [35,36]. How much Long COVID, by its mere presence, will mentally burden patients and potentially turn into a chronic condition with an increase in mental disorders remains unclear. Another topic for future research is the role of vaccination. Specifically, in the study by Gao et al., vaccination reduced the risk of cognitive disorders and sleep disturbances and indicated a possible beneficial effect in preventing Long COVID symptoms [37]. The development of psychological support tools, the application of coping strategies, and cognitive-behavioral therapy can certainly help manage stress and negative emotions. A network of social support, starting with family and friends and moving to social support groups in the community, can play a crucial role in providing emotional assistance, developing self-regulation skills, and increasing resilience to stress. Although these methods of coping with the COVID-19 pandemic were not the subject of this research, they proved significant during the pandemic itself [38,39]. In the work of Sanchez-Gomez and colleagues, COVID-19 is understood as a collective traumatic event that can generate symptoms related to post-traumatic stress disorder during the pandemic [40]. However, considering the still-widespread Long COVID symptomatology and the fear of a new epidemic, it is possible that mental disorders caused

by COVID-19 will continue to rise. Therefore, psychological support mechanisms will be a significant element in combating the long-term psychological effects of the COVID-19 pandemic and crucial for preserving mental health in a post-pandemic world.

5. Conclusions

This study evaluated the positive mental health of Croatia's population in response to the challenges posed by the COVID-19 pandemic. The study underscores the detrimental effects of social isolation and insufficient knowledge on mental health, highlighting the role of improving the public health communication strategies to combat misinformation and build trust in public authorities. Accurate and transparent information can alleviate anxiety and improve mental health outcomes. Future longitudinal studies should examine the long-term mental health impacts of COVID-19, focusing on the persistence of psychiatric symptoms and the development of Long COVID are the priorities, as well as investigating the possible role of vaccination in mitigating mental health issues and preventing Long COVID symptoms. It is necessary to explore the effectiveness of various coping strategies, psychological support tools, and community support networks in managing pandemic-induced stress and fostering resilience and to expand access to mental health services, particularly for vulnerable groups.

By addressing these areas, we can better support the mental health of the population and mitigate the long-term psychological effects of the COVID-19 pandemic.

6. Limitations of the Study

The research conducted with a sample of 588 respondents represents only 0.03% of the active population of the Republic of Croatia, underscoring the need for further investigation in this area to attain more comprehensive insights. It is important to note that not all respondents answered all the questions, thus resulting in another limitation of this study. Additionally, the study primarily engaged a younger population that is more likely to utilize social networks and participate in online surveys.

Author Contributions: Conceptualization, M.S. and D.Š.; methodology, M.S. and D.Š.; software, M.S.; validation, Ž.J. and S.B.; formal analysis, Ž.J.; investigation, M.S., D.Š. and S.B.; writing—original draft preparation, M.S. and S.B.; writing—review and editing, B.M. and Ž.J.; supervision, B.M. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The authors declare that this article was prepared in accordance with the ethical guidelines of the Lucerne Canton Hospital, Switzerland.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Acknowledgments: We thank Leo Jankovic (California Institute of Technology) for his support in language editing of the manuscript.

Conflicts of Interest: The authors confirm that there are no conflicts of interest to disclose, in line with the editor's guidelines and our ethical obligations as researchers.

References

1. Pfefferbaum, B.; North, C.S. Mental Health and the Covid-19 Pandemic. *N. Engl. J. Med.* **2020**, *383*, 510–512. [CrossRef] [PubMed]
2. Xiang, Y.T.; Yang, Y.; Li, W.; Zhang, L.; Zhang, Q.; Cheung, T.; Ng, C.H. Timely mental health care for the 2019 novel coronavirus outbreak is urgently needed. *Lancet Psychiatry* **2020**, *7*, 228–229. [CrossRef] [PubMed]
3. World Health Organization. Mental Health and COVID-19. 2020. Available online: <https://www.who.int/teams/mental-health-and-substance-use/covid-19> (accessed on 17 January 2023).
4. Brooks, S.K.; Webster, R.K.; Smith, L.E.; Woodland, L.; Wessely, S.; Greenberg, N.; Rubin, G.J. The psychological impact of quarantine and how to reduce it: Rapid review of the evidence. *Lancet* **2020**, *395*, 912–920. [CrossRef] [PubMed]

5. Galea, S.; Merchant, R.M.; Lurie, N. The Mental Health Consequences of COVID-19 and Physical Distancing: The Need for Prevention and Early Intervention. *JAMA Intern. Med.* **2020**, *180*, 817–818. [[CrossRef](#)]
6. Lai, J.; Ma, S.; Wang, Y.; Cai, Z.; Hu, J.; Wei, N.; Wu, J.; Du, H.; Chen, T.; Li, R.; et al. Factors Associated With Mental Health Outcomes Among Health Care Workers Exposed to Coronavirus Disease 2019. *JAMA Netw Open* **2020**, *3*, e203976. [[CrossRef](#)] [[PubMed](#)]
7. Huang, J.; Huang, Z.T.; Sun, X.C.; Chen, T.T.; Wu, X.T. Mental health status and related factors influencing healthcare workers during the COVID-19 pandemic: A systematic review and meta-analysis. *PLoS ONE* **2024**, *19*, e0289454. [[CrossRef](#)] [[PubMed](#)]
8. Alhourri, A.; Abu Shokor, M.; Marwa, K.; Sharabi, A.; Mohammad Nazir Arrouk, D.; Al Hourri, F.N. COVID-19 and Its Impact on Healthcare Workers: Understanding Stigma, Stress, and Quality of Life. *Cureus* **2023**, *15*, e37846. [[CrossRef](#)] [[PubMed](#)]
9. Maliwichi, L.; Kondowe, F.; Mmanga, C.; Mchenga, M.; Kainja, J.; Nyamali, S.; Ndasauka, Y. The mental health toll among healthcare workers during the COVID-19 Pandemic in Malawi. *Sci. Rep.* **2024**, *14*, 10327. [[CrossRef](#)] [[PubMed](#)]
10. Duden, G.S.; Reiter, J.; Paswerg, A.; Weibelzahl, S. Mental health of healthcare professionals during the ongoing COVID-19 pandemic: A comparative investigation from the first and second pandemic years. *BMJ Open* **2023**, *13*, e067244. [[CrossRef](#)] [[PubMed](#)]
11. Arias-Ulloa, C.A.; Gómez-Salgado, J.; Escobar-Segovia, K.; García-Iglesias, J.J.; Fagundo-Rivera, J.; Ruiz-Frutos, C. Psychological distress in healthcare workers during COVID-19 pandemic: A systematic review. *J. Saf. Res.* **2023**, *87*, 297–312. [[CrossRef](#)]
12. Tekin, S.; Glover, N.; Greene, T.; Lamb, D.; Murphy, D.; Billings, J. Experiences and views of frontline healthcare workers' family members in the UK during the COVID-19 pandemic: A qualitative study. *Eur. J. Psychotraumatol.* **2022**, *13*, 2057166. [[CrossRef](#)] [[PubMed](#)]
13. Lee, M.; Chang, Y.; Ahmadinejad, N.; Johnson-Agbakwu, C.; Bailey, C.; Liu, L. COVID-19 mortality is associated with pre-existing impaired innate immunity in health conditions. *PeerJ* **2022**, *10*, e13227. [[CrossRef](#)] [[PubMed](#)]
14. Salah, H.; Ibrahim Rabie, A.L.S.; Said, A.S.A.; AlAhmad, M.M.; Shaaban, A.H.; Khalil, D.M.; Hussein, R.R.S.; Khodary, A. COVID-19's Psychological Impact on Chronic Disease Patients Seeking Medical Care. *Healthcare* **2023**, *11*, 888. [[CrossRef](#)]
15. Jung, S.J.; Jeon, Y.J.; Yang, J.S.; Park, M.; Kim, K.; Chibnik, L.B.; Kim, H.C.; Koenen, K.C. Impact of COVID-19 on mental health according to prior depression status: A mental health survey of community prospective cohort data. *J. Psychosom. Res.* **2021**, *148*, 110552. [[CrossRef](#)] [[PubMed](#)]
16. Sayeed, A.; Kundu, S.; Al Banna, M.H.; Christopher, E.; Hasan, M.T.; Begum, M.R.; Chowdhury, S.; Khan, S.I. Mental Health Outcomes of Adults with Comorbidity and Chronic Diseases during the COVID-19 Pandemic: A Matched Case-Control Study. *Psychiatr. Danub.* **2020**, *32*, 491–498. [[CrossRef](#)] [[PubMed](#)]
17. Bao, Y.; Sun, Y.; Meng, S.; Shi, J.; Lu, L. 2019-nCoV epidemic: Address mental health care to empower society. *Lancet* **2020**, *395*, e37–e38. [[CrossRef](#)] [[PubMed](#)]
18. Shetty, P.A.; Ayari, L.; Madry, J.; Betts, C.; Robinson, D.M.; Kirmani, B.F. The Relationship Between COVID-19 and the Development of Depression: Implications on Mental Health. *Neurosci. Insights* **2023**, *18*, 26331055231191513. [[CrossRef](#)]
19. Xiao, H.; Zhang, Y.; Kong, D.; Li, S.; Yang, N. The Effects of Social Support on Sleep Quality of Medical Staff Treating Patients with Coronavirus Disease 2019 (COVID-19) in January and February 2020 in China. *Med. Sci. Monit.* **2020**, *26*, e923549. [[CrossRef](#)] [[PubMed](#)]
20. Li, Z.; Ge, J.; Yang, M.; Feng, J.; Qiao, M.; Jiang, R.; Bi, J.; Zhan, G.; Xu, X.; Wang, L.; et al. Vicarious traumatization in the general public, members, and non-members of medical teams aiding in COVID-19 control. *Brain Behav. Immun.* **2020**, *88*, 916–919. [[CrossRef](#)]
21. Banerjee, D. The COVID-19 outbreak: Crucial role the psychiatrists can play. *Asian J. Psychiatr.* **2020**, *50*, 102014. [[CrossRef](#)]
22. Hrvatski Zavod za javno zdravstvo. Program za Očuvanje Mentalnog Zdravlja Borbom Protiv Negativnih Utjecaja Tjeskobe i Stresa. Available online: <https://www.hzjz.hr/aktualnosti/program-za-ocuvanja-mentalnog-zdravlja-borbom-protiv-negativnih-utjecaja-tjeskobe-i-stresa/> (accessed on 17 January 2023).
23. Cortina, J.; Hardin, S. The Geography of Mental Health, Urbanicity, and Affluence. *Int. J. Environ. Res. Public Health* **2023**, *20*, 5440. [[CrossRef](#)] [[PubMed](#)]
24. Jafari, E.; Pirmoradi, M.; Mohebbi, E.; Kamal, M.A.; Hosseinkhani, Z.; Meshkini, M. The Impact of Socioeconomic Inequality on Mental Health among Adolescents in Qazvin, Iran: Blinder-Oaxaca Decomposition Method. *Med. J. Islam. Repub. Iran* **2023**, *37*, 48. [[CrossRef](#)] [[PubMed](#)]
25. Bhugra, D.; Watson, C.; Wijesuriya, R. Culture and mental illnesses. *Int. Rev. Psychiatry* **2021**, *33*, 1–2. [[CrossRef](#)]
26. Lamers, S.M.; Westerhof, G.J.; Bohlmeijer, E.T.; ten Klooster, P.M.; Keyes, C.L. Evaluating the psychometric properties of the Mental Health Continuum-Short Form (MHC-SF). *J. Clin. Psychol.* **2011**, *67*, 99–110. [[CrossRef](#)] [[PubMed](#)]
27. Vuletić, G.; Erdešić, J.; Nikić, L.B. Faktorska struktura i validacija hrvatske verzije upitnika mentalnoga zdravlja MHC-SF. *Medica Jadertina* **2018**, *48*, 113–124. Available online: <https://hrcak.srce.hr/204661> (accessed on 17 January 2023).
28. Qiu, J.; Shen, B.; Zhao, M.; Wang, Z.; Xie, B.; Xu, Y. A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: Implications and policy recommendations. *Gen. Psychiatr.* **2020**, *33*, e100213, Erratum in *Gen. Psychiatr.* **2020**, *33*, e100213corr1. [[CrossRef](#)] [[PubMed](#)]
29. Rashidi Fakari, F.; Simbar, M. Coronavirus Pandemic and Worries during Pregnancy; a Letter to Editor. *Arch. Acad. Emerg. Med.* **2020**, *8*, e21.

30. Zhai, Y.; Du, X. Mental health care for international Chinese students affected by the COVID-19 outbreak. *Lancet Psychiatry* **2020**, *7*, e22. [[CrossRef](#)] [[PubMed](#)]
31. Lauri Korajlija, A.; Jokic-Begic, N. COVID-19: Concerns and behaviours in Croatia. *Br. J. Health Psychol.* **2020**, *25*, 849–855. [[CrossRef](#)]
32. Gunnell, D.; Appleby, L.; Arensman, E.; Hawton, K.; John, A.; Kapur, N.; Khan, M.; O'Connor, R.C.; Pirkis, J.; Caine, E.D. COVID-19 Suicide Prevention Research Collaboration. Suicide risk and prevention during the COVID-19 pandemic. *Lancet Psychiatry* **2020**, *7*, 468–471. [[CrossRef](#)]
33. Shigemura, J.; Ursano, R.J.; Morganstein, J.C.; Kurosawa, M.; Benedek, D.M. Public responses to the novel 2019 coronavirus (2019-nCoV) in Japan: Mental health consequences and target populations. *Psychiatry Clin. Neurosci.* **2020**, *74*, 281. [[CrossRef](#)] [[PubMed](#)]
34. Bourmistrova, N.W.; Solomon, T.; Braude, P.; Strawbridge, R.; Carter, B. Long-term effects of COVID-19 on mental health: A systematic review. *J. Affect. Disord.* **2022**, *299*, 118–125. [[CrossRef](#)]
35. Phu, D.H.; Maneerattanasak, S.; Shohaimi, S.; Trang, L.T.T.; Nam, T.T.; Kuning, M.; Like, A.; Torpor, H.; Suwanbamrung, C. Prevalence and factors associated with long COVID and mental health status among recovered COVID-19 patients in southern Thailand. *PLoS ONE* **2023**, *18*, e0289382. [[CrossRef](#)] [[PubMed](#)]
36. Al-Jabr, H.; Hawke, L.D.; Thompson, D.R.; Clifton, A.; Shenton, M.; Castle, D.J.; Ski, C.F. Interventions to support mental health in people with long COVID: A scoping review. *BMC Public Health* **2023**, *23*, 1186. [[CrossRef](#)] [[PubMed](#)]
37. Gao, P.; Liu, J.; Liu, M. Effect of COVID-19 Vaccines on Reducing the Risk of Long COVID in the Real World: A Systematic Review and Meta-Analysis. *Int. J. Environ. Res. Public Health* **2022**, *19*, 12422. [[CrossRef](#)] [[PubMed](#)]
38. Rizzi, D.; Asperges, E.; Rovati, A.; Bigoni, F.; Pistillo, E.; Corsico, A.; Mojoli, F.; Perlini, S.; Bruno, R. Psychological Support in a COVID-19 Hospital: A Community Case Study. *Front. Psychol.* **2022**, *12*, 820074. [[CrossRef](#)]
39. Molebatsi, K.; Musindo, O.; Ntlantsana, V.; Wambua, G.N. Mental Health and Psychosocial Support During COVID-19: A Review of Health Guidelines in Sub-Saharan Africa. *Front. Psychiatry* **2021**, *12*, 571342. [[CrossRef](#)]
40. Sanchez-Gomez, M.; Giorgi, G.; Finstad, G.L.; Urbini, F.; Foti, G.; Mucci, N.; Zaffina, S.; León-Perez, J.M. COVID-19 Pandemic as a Traumatic Event and Its Associations with Fear and Mental Health: A Cognitive-Activation Approach. *Int. J. Environ. Res. Public Health* **2021**, *18*, 7422. [[CrossRef](#)]

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