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RESEARCH ARTICLE

The COVID-19 Pandemic and Psychological Health Problems: Repeated Cross-Sectional Study

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Abstract:

Introduction:

The COVID-19 pandemic strained many aspects of daily life, and the propensity of the virus to spread rapidly affected the world, bringing both stress and psychological health problems throughout the world. This study aims to investigate the level of psychological issues and problems among the population during the COVID-19 pandemic.

Methodology:

This was a repeated cross-sectional study (N = 650) made of Pre-Pandemic (n = 338) and During-Pandemic COVID-19 (n = 312) samples conducted in Dardania (Kosovo) municipalities of Prishtina, Prizren, Ferizaj, Gjilan, Gjakova, Peja, Podujeva, Suhareka, Mitrovica, and Vushtrri. The study used both the Demographic Questionnaire and the General Health Questionnaire 28.

Results:

There was a significant difference between the two samples in psychological health problems in general ($p = .001$), as well as depression ($p = .001$), social dysfunction ($p = .001$), somatization ($p = .001$), anxiety and insomnia ($p = .001$) in particular. Furthermore, Chi-square analysis showed a very large effect size for participants' reported accidents, natural disasters, losing a loved one, chronic illnesses, displacement, Domestic violence, imprisonment, and especially divorce.

Conclusion:

The COVID-19 pandemic increased psychological health problems, and there is a need for the mobilization of psychological health experts to support and decrease the level of risk in the population in future times.

Keywords: Psychological health problems, Pre-during COVID-19, Repeated cross-sectional study, COVID-19 pandemic, Chronic illnesses, Psychological health experts.

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1. INTRODUCTION

It has been over two years since the Coronavirus disease 2019 (COVID-19) destabilized the lifestyle of the entire global population. COVID-19 is infectious and caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2) virus [1]. In addition, COVID-19 continues to spread globally and negatively affects the public' physical and psychological health problems. On March 11 2020, the World Health Organization (WHO) characterized the COVID-19 disease as a pandemic.

Studies around the world have reported that over the past two years, the COVID-19 pandemic has caused significant

psychological problems throughout the world. The psychological health of the public, in general, was negatively affected by uncertainty around both the COVID-19 endpoint and the lack of early or effective treatments [2]. Furthermore, the continuous media depictions of sick people, the number of daily deaths due to COVID-19, and restrictions on visiting or even attending the funerals of loved ones have increased psychological health problems among the public in general [3].

These restrictions and changes in lifestyle arrangements have increased the levels of domestic violence among couples [4]. Studies have reported that because of domestic violence, the number of divorces has also increased [5]. Therefore, one of the aims of the present study is to investigate the relationships between the COVID-19 pandemic on the one

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hand, and domestic violence and divorces on the other. Finally, the uncertainty surrounding continued employment among working people has added to overall mental instability [6]. In this paper, the researchers investigated to what extent COVID-19 affected levels of depression, anxiety and insomnia, somatization, as well as social dysfunctions among the general public in Dardania (Kosovo).

1.1. Literature Review

There are major studies in many parts of the world that have conducted investigations on the prevalence of psychological health problems, including depression, anxiety and insomnia, somatization [7], and social dysfunction [8]. Studies have reported that different groups of people showed various levels of psychological problems, however, the highest levels were prevalent among non-infected (but otherwise chronic disease) patients, people in quarantine, patients suspected of infection, physicians, and nurses [9]. This study indicates that people from different countries and groups complained about increased levels of psychological problems.

Researchers from different countries and cultures have conducted research on the impact of COVID-19 on vulnerable groups of the public in general, such as children, young, elderly, healthcare professionals [10], and women [4, 11]. A study by the Australian Institute of Criminology (AIC) for instance, has reported a significant increase in domestic violence among Australian women during the first three months of the COVID-19 pandemic [4, 12]. The majority of the women in this study [12] reported that the domestic violence has either started or escalated during the pandemic.

Moreover, these women reported that they were unable to seek help from outside because of the COVID-19 restrictions. According to World Health Organization reports, the European Union has seen a rise of 60% in emergency calls from women experiencing domestic violence [11]. The increased isolation of individuals and the difficulty to seek help outside due to COVID-19 restrictions have increased the number of abusers and the abused among the population worldwide [11, 13].

Children and adolescents on the other hand, were the groups that experienced physical isolation from school, teachers, classmates, and relatives and thus were more vulnerable to developing loneliness, which is associated with mental health problems (*i.e.*, anxiety, stress, and depression) [10].

Loneliness is reported to be strongly associated with the negative emotional experience of a discrepancy between actual and desired social contact [10, 14]. Loneliness is also significantly associated with mental health problems (including depression and anxiety) among children and adolescents of different countries and cultures [15]. These results were derived from a major study with 51,576 participants around the world, including the United States, China, Europe, Australia, India, Malaysia, Korea, Thailand, Israel, Iran, and Russia [15]. Furthermore, longitudinal and cross-sectional studies of children and adolescents reported that loneliness during childhood may have a negative impact on mental health up to nine years later [15].

In addition, the level of future psychological problems (including depression and anxiety among children and adolescents) depends on the length of loneliness or isolation from loved ones [14]. Since the length of loneliness is found to be a predictor of future psychological health as well, then responsible institutions should consider psychological intervention in groups of children that were isolated during the COVID-19 pandemic. This is especially important because children that experienced enforced isolation or quarantine were both five times more likely to seek psychological assistance and experience higher levels of posttraumatic stress [16]. These studies suggest that the enforced social distancing of children and adolescents during the COVID-19 pandemic could have a strong negative impact on their future psychological health and increase their future prevalence of posttraumatic stress [15].

The COVID-19 pandemic has caused similar psychological issues among elderly people as well, but for slightly different reasons [17]. Previous and current studies reported that psychological problems are more common in elderly people than the younger generation [17]. Considering that studies reporting the relationship between increased age and psychological problems were conducted before the COVID-19 pandemic, it is important to consider that these problems could also escalate during the pandemic, especially when the public media showed them as the group that is most vulnerable to infection and mortality from COVID-19 [2].

Moreover, the elderly people had limited access to seek help from outpatient clinics due to travel restrictions and enforced quarantine, and elderly individuals were less likely to use smartphones and internet services to help themselves [17]. Therefore, the psychological health of elderly people has worsened, with poorer health conditions for the elderly with existing psychological needs and the potential for the development of psychological problems for those with no pre-existing psychological history [18]. The Pan American Health Organization has recognized the increased risks from the COVID-19 pandemic [18], reporting that [19]:

Although all age groups are at risk of contracting COVID-19, older persons are at a significantly higher risk of mortality and severe disease following infection, with those over 80 years old dying at five times the average rate. An estimated 66% of people aged 70 and over have at least one underlying condition, placing them at increased risk of a severe impact from COVID-19. Older persons may also face age discrimination in decisions on medical care, triage, and life-saving therapies. Global inequalities mean that already pre-COVID-19, as many as half of older persons in some developing countries did not have access to essential health services. The pandemic may also lead to a scaling back of critical services unrelated to COVID-19, further increasing risks to the lives of older persons (p. 2).

Although information like the above is accurate, it may have caused elderly individuals to panic more and potentially develop psychological problems, including depression, stress, insomnia and somatization. Special attention needs to be paid to elderly people during the COVID-19 pandemic because they are portrayed as most vulnerable to infection, and this fear has made them suffer from psychological and physical problems

[17]. These problems escalate more when they are prevented by restrictions from travelling and seeking help in outpatient clinics [19].

Not only young adults and elderly people but the public has also been impacted by psychological health problems during the COVID-19 pandemic. Healthcare workers, for instance, were reported to face increased levels of psychological problems, including depression, anxiety and insomnia, somatization and distress [7]. In the study with 1,257 healthcare workers from 34 different hospitals, it was reported that depression, anxiety insomnia, somatization and distress resulted from lack of information about COVID-19, long-term workload, fear of exposure to COVID-19 patients, and shortage of medication [7].

Similar conclusions were derived from a study conducted in the Netherlands. In this study, it was found that psychological problems such as anxiety, depression, worry, and loneliness were increased in people with no previous psychological issues [20]. People with no chronic history or psychological issues before were observed to have developed significant psychological problems during the COVID-19 pandemic [21]. Furthermore, the level of psychological problems has increased among the general public around the world [21].

A meta-analysis of 66 studies with 221,970 participants was conducted to analyze the prevalence of psychological problems during the COVID-19 pandemic in different populations [9]. This massive analysis has shown that levels of anxiety, insomnia, depression and distress have significantly increased since the start of COVID-19 pandemic [9]. Among 1,366 participants in the USA public, 42% reported anxiety, while 38% of them reported depression symptoms during the COVID-19 pandemic, which were clinically significant findings [22].

Wu and colleagues (2021) further investigated the effect of previous crises in the USA and other countries. The prevalence of psychological problems like insomnia and depression that the public experienced was lower than during the COVID-19 pandemic [9]. Similarly, the COVID-19 pandemic has increased the level of stress among working parents due to economic disruption, increased unemployment, and social isolation [23]. Overall, COVID-19 related studies have generally reported that the pandemic was associated with an increase in psychological issues among the global population.

In this study, the purpose was to assess the level of psychological health problems, somatization, social dysfunction, anxiety/insomnia, and depression between two periods, before and during the COVID-19 pandemic. Based on the purpose of this study, we came up with the research question:

RQ: What are the effects of the COVID-19 pandemic on psychological health problems?

Hypothesis of the research are:

H0: The level of psychological health problems is the same

Pre and During COVID-19 Pandemic.

H1: The level of psychological health problems is higher During COVID-19 Pandemic.

H2: The level of somatization is higher During COVID-19 Pandemic.

H3: The level of social dysfunction is higher During COVID-19 Pandemic.

H4: The level of anxiety and insomnia is higher During COVID-19 Pandemic.

H5: The level of depression is higher During COVID-19 Pandemic.

2. METHODOLOGY

The data were collected from two different respondents in two periods of time: A cross sectional study. As a methodology, it was more suitable for our research goal, less time consuming, cheaper, and easier way to gather data. The STROBE guidelines were followed.

2.1. Sample

The inclusion criteria of the study were above 16-year-old participants that gave verbal consent. Verbal consent was assured because the first contact with respondents was *via* phone to assure distance requirements during the pandemic. As such, investigators initially contacted the respondents and explained the investigation, objectives, anonymity, confidentiality, and later asked verbally by phone if they were willing to take part in research as participants. Upon agreement, appropriate time and place were agreed upon to meet and fill in the questionnaires.

The sample was selected *via* the snowball approach by 15 data collectors. The data collectors were students with master's degree in social science. The data were collected among the general population in Dardania (Kosovo).

The total number of the sample selected from various Dardanian (Kosovo) provinces was 650 participants. The total sample was initially measured during the Pre-Pandemic (n = 338) and then During-Pandemic (n = 312) periods.

The Pre-pandemic sample was gathered during the months of May, June, and July of 2018, which was the period before COVID-19. The pandemic sample participant data were gathered during July, August, and September of 2021. All participants fulfilled the GHQ-28 questionnaire, but at different times (Pre and During the Pandemic-19) and in different areas. The precise differences between the sample' demographics are shown in Table 1.

By looking at the descriptive statistics below, we can infer that the sample during the COVID-19 pandemic had both younger female participants from cities and non-Albanian minorities, compared to the prior COVID-19 pandemic sample. Also, although both samples had similar incomes, the During COVID-19 sample was more educated, engaged or married, as well as had more children.

Table 1. Descriptive statistics for demographic variables pre and during COVID-19 pandemic.

Variable	Pre-COVID-19		During-COVID-19	
	M	SD	M	SD
Gender	0.52	0.50	0.45	0.50
Birth Date	2.15	1.11	2.78	1.04
Location	0.59	0.49	0.52	0.50
Ethnicity	0.06	0.34	0.19	0.90
Education	1.10	0.47	2.02	0.96
Income	2.97	1.99	2.97	1.66
Marital Status	0.58	0.93	1.80	1.02
Children	0.20	0.40	0.61	0.49

2.2. Instruments

2.2.1. Demographic Questionnaires

These questionnaires were prepared by the authors of this research and consisted of questions related to categorical variables. The categorical variables of birth date (0 = 1954 – 1964 to 4 = 1995 – 2001), education (0 = none to 5 = doctorate), gender (0 = female, 1 = male), residence (0 = city, 1 = suburbs/villages), death of loved ones (relatives and/or family members, 0 = no, 1 = yes), chronic disease (0 = no, 1 = yes), abuse (family home, work, or in other situations, 0 = no, 1 = yes), reported accidents and injuries (car accidents, fights, being victim of different situations, 0 = no, 1 = yes), financial incomes (lack of money to fulfill personal or familiar needs, 0 = no, 1 = yes), displacement (within the country, 0 = no, 1 = yes) and divorce (0 = no, 1 = yes) were all coded accordingly.

2.2.2. General Health Questionnaire 28 (GHQ 28)

The questionnaire is derived from the original GHQ [24] with 28 items. This questionnaire is framed to determine mental health; psychological health problems can be identified by summarizing all 28 items. The higher scores indicate a higher level of psychological health problems. In addition, factor analyses of the GHQ 28 identified 4 subscales: Somatic Symptoms (items from 1-7), Anxiety-insomnia (items 8-14), Social dysfunction (items 15-21), and Severe Depression (items 22-28). This questionnaire takes 5 minutes to administer, and although there is no need for training before using it, there is a need for minimal expertise for assessment. The GHQ 28 has both a cross-cultural applicability [25] and an excellent 2-month test-retest reliability ($r = 0.90$) [26].

The disadvantage of the GHQ 28 is that the questionnaire is not framed to detect chronic mental health conditions but is designed to screen the mental health statements instead, which are not suitable to measure change over time. The advantages of the GHQ are ease of use, 5-minute administration on the sample, and there is no need for special training or equipment to use GHQ 28. This questionnaire is a screening tool suitable

for the purpose of our research because it is available in 38 languages [27] and is applicable to cross-cultural studies [25].

2.3. Procedure

The Pre-pandemic sample was gathered during the months of May, June, and July of 2018. During the pandemic, the sample was gathered during July, August, and September of 2021. Due to the coronavirus time and infection, the data were collected both face-to-face and through electronic platforms (such as google form) between November and December of 2021.

The procedures of this study complied fully with the provisions of the Helsinki Declaration regarding research on human participants. Participation in the study was on a voluntary basis, and we took a verbal consent from respondents. Firstly, investigators contacted the potential respondents *via*. phone, email, or face-to-face (from a distance), in order to explain the purpose of this investigation, gather verbal consent, and to decide about the suitable time, date, place and modality of collecting the data. After verbal consent was assured, the participants were asked to complete both questionnaires anonymously. The questionnaires produced 36 variables: Demographic ($n = 8$) and GHQ 28 ($n = 28$). The investigation used the snowball sampling methodology; the questionnaires were distributed to the sample population *via*. 15 data collectors.

3. RESULTS

To account for heteroskedasticity, the robust chi-square and Welch ANOVA were used. The chi-square statistic was used to analyze the 10 binary questions about the participants' experiences. The variables were categorical, independent, as well as mutually exclusive. Further, the number of participants from both samples ($N = 650$) assured the lowest expected value to be 67.68. All participant's with missing data's were excluded from research. With the assumptions met, the chi-square results are shown in Table 2.

Table 2. Number of participants, percentage, chi square statistic, and odds ratio for participants Pre and During the COVID-19 pandemic (N = 650).

Variable	COVID-19	No		Yes		-	
		n	%	n	%	χ^2	Exp(B)
Loss of Loved One	Pre	204	50.4	134	39.6	109.98***	6.14
	During	62	19.9	250	80.1		
Difficult Illness	Pre	262	77.5	76	22.5	111.72***	5.99
	During	114	36.5	198	63.5		
Domestic Violence	Pre	309	91.4	29	8.6	125.22***	9.74
	During	163	52.2	149	47.8		
Accident or Damage	Pre	252	74.6	86	25.4	80.63***	4.44
	During	124	39.7	188	60.3		
Natural Disaster	Pre	290	85.8	48	14.2	67.78***	4.61
	During	177	56.7	135	43.3		
Financial Difficulties	Pre	239	70.7	99	29.3	131.86***	7.00
	During	80	25.6	232	74.4		
Displacement	Pre	278	82.2	60	17.8	141.61***	8.05
	During	114	36.5	198	63.5		
Divorce	Pre	333	98.5	5	1.5	169.37***	51.46
	During	176	56.4	136	43.6		
Imprisonment	Pre	326	96.4	12	3.6	141.31***	19.92
	During	180	57.7	132	42.3		

Note: *** p < .001.

Table 3. Mean, standard deviation, robust Welch ANOVA F values, and Cohen’s – D statistics.

Variable	Pre-COVID-19		During-COVID-19		FWelch	Cohen's-D
	M	SD	M	SD		
Psychological Health Problems	26.16	24.26	39.45	19.63	59.32***	-0.85
Somatic Symptoms	6.83	6.04	10.81	4.47	92.16***	-1.06
Anxiety Insomnia	7.16	7.02	10.83	5.75	53.52***	-0.81
Social Dysfunction	7.76	5.59	9.47	4.73	17.84***	-0.47
Severe Depression	4.41	6.96	8.33	6.95	51.67***	-0.80

Note: *** p < .001.

The findings in Table 2 above show that the number of participants who reported negative experiences during the COVID-19 is significantly higher compared to the pre-pandemic period. This shows that people reported experiencing accidents, natural disasters, losing a loved one, having a difficult illness, displacement, domestic violence, and imprisonment more to a significant degree during the COVID-19 pandemic period than before. However, the odds ratio analysis added even more details to the overall picture.

The odds ratio analysis presents a general negative picture that the pandemic brought about to the population of Dardania (Kosovo). During the pandemic times, it was almost 6 times more likely to lose a loved one or have a difficult illness, 4 and a half times more likely to experience accidents or natural disasters, 8 times more likely to be displaced, and 7 times more likely to be in a financial difficult situation. Such desperate times may have required desperate measures, thereby, it was found that it was 9.74 times more likely to experience domestic violence and 20 times more likely to be imprisoned.

The most likely outcome to occur in such turmoil was

divorce. The odds of having a divorce were 51.46 times more likely During the COVID-19 pandemic than before.

The analysis continued with GHQ-28 and its subscales. To account for the heteroskedastic variance and infer the effect of COVID-19 on the population, the robust Welch ANOVA was carried out. The results of these analyses are found in Table 3.

Table 3 above shows that there were significant differences in the GHQ-28 DVs when measured prior and after the COVID-19 pandemic. More precisely, the mean of severe depression, social dysfunction, anxiety/insomnia, and somatic symptoms significantly increased for the worse during the pandemic. Since the combined mean of these variables constitutes a general psychological health problem variable in the GHQ instrument, the latter also significantly increased for the worse.

A bigger picture may be attained if Tables 2 and 3 were to be combined. As the odds of experiencing accidents, natural disasters, losing a loved one, having a difficult illness, displacement, domestic violence, and imprisonment increased, general psychological health problems also increased (Tables 2

and 3). In this repeated cross-sectional study, all the GHQ-28 DVs highly significantly differed between the two periods. In addition, there was a large effect size on the differences between the two periods for all the GHQ-28 DVs, while a medium effect size on social dysfunction.

4. DISCUSSION

This investigation aimed to find what are the effects of COVID-19 pandemic on psychological problems. The first main finding of the study is that there is a significant increase in the death of loved ones during the COVID-19 pandemic. This may come from the fact that Dardanian (Kosovo) health services and policies did not have a regulation and legislative framework to face the extraordinary pandemic situations. In addition, there is also a low quantity and quality of health services in Dardania (Kosovo), as well as very limited and primitive online and distance health services.

Usually, health services in Dardania (Kosovo) (especially private ones) are expensive and not affordable for the population, adding to the fact that the Dardanian (Kosovo) population did not have health insurance. Our findings are in line with other investigations that found a notable increase in death during the pandemic in countries like China, Asian Countries, Republic of Korea, the Middle East, Iran, Southern Europe, Italy, Spain, North Europe, the UK, and in the USA, fewer cases in Africa, but numbers of the deaths are increased especially among the countries with limited healthcare services [28].

A major finding of this research is an extremely high likelihood of divorce. This outcome may be linked to domestic violence during the COVID-19 pandemic. This may come from the lack of readiness of the population to adapt to the new lifestyle and routine. People could not reorganize their daily routine, and it looks like this expanded in domestic violence. In line with our findings is an investigation that shows the level of domestic violence is three times more likely in China, 30% higher in France, and 40-50% higher in Brazil. Also, alarming percentages were reported in Italy, Spain, and the USA, where this was also associated with the risk of physical harm and abuse [28]. Furthermore, researchers concluded that change in lifestyle is associated with domestic violence. The data has been found among different countries [29] and negative lifestyle among Israel respondents [30]. Lastly, the research found that COVID-19 impacted the change in the daily life of the people from Singapore, and this is associated with domestic violence [31].

In addition, although we did not investigate the percentage of people that got married in Dardania (Kosovo) during the COVID-19 pandemic, the previously mentioned findings above show that the increase in domestic violence may be one reason that can explain such a high increase in divorce. Investigations indicate a high association between domestic violence and divorce in Canadian [5], Chinese population [13, 32].

However, domestic violence may partly account for the high divorce rates. Other findings emphasize the shortfall of divorce and marriage in the USA [33] and Japan [34]. In Japan, the divorce percentage was shortened by 25% [35], while only 7% in Denmark [36]. Thus, future studies could investigate

why there was such a particularly high divorce rate in Dardania (Kosovo).

Other outcomes of our investigation indicate the increase in financial difficulties during the COVID-19 pandemic. There have been restrictions and closing of borders, including limitations in daily work among different businesses in Dardania (Kosovo); costing the government budget 24 million Euro's less [37]. In concordance with our findings are researchers that indicate the global financial risk during COVID-19 [38], where this period had a negative impact on financial incomes among young groups, people with larger families, and people with low incomes [39]. Findings indicate that financial issues are associated with the increase in displacement among people. According to investigators, people moved to different towns and places looking for a job after they experienced unemployment during the COVID-19 pandemic, especially Hispanics, young workers, women, and people with a low level of education [40].

Other research findings are not in the same line with ours. Research in Chicago find out that COVID-19 decreased the level of crime instead [41], but this does not stand for partner violence and homicide in the USA [42]. There are also findings that imprisonment decreased in San Marino, Monaco, Iceland, Slovenia, Cyprus, Luxemburg, Norway, Andorra, Scotland, the UK, Italy, Netherland, Albania, Portugal, France, and Northern Ireland [43], rather than increased as it was the case in our research. Similarly, another investigation did not find an increase in the percentage of traffic accidents among Japanese population during the COVID-19 pandemic period [44].

Regarding psychological health problems, our investigation indicates that there is a significant difference in the average level during COVID-19 pandemic group compared to before. More precisely, the outcomes of our research indicate a significantly higher level of psychological disturbances among the during COVID-19 pandemic group ($F_{Weich} = 59.32, p < .01, \text{Cohen's } D = -0.85$). Since the significantly different findings between Pre and During COVID-19 pandemic groups are in favor of H1, then we reject H0.

The decrease in psychological health outcomes is in accordance with Peirce and his colleagues' (2020) findings; investigators indicate that during the COVID-19 pandemic, people experienced greater psychological problems compared to the time before [45]. In general, these investigations indicate that psychological problems were at a higher level in 2020 compared to 2018 and 2019 [46]. Furthermore, another investigation showed a higher level of psychological problems at the beginning of the COVID-19 pandemic among Chinese population [47], especially with samples that previously (before COVID-19) experienced or showed higher signs of psychological distress and problems during the COVID-19 pandemic. Chadi *et al.* (2021) found that adolescents experienced a higher frequency of emergency visits for psychological problems during the pandemic compared to the pre-pandemic period. Authors concluded that there is a significant impact of the pandemic on the worsening of Canadian adolescents' psychological wellbeing [48].

Outcomes of this investigation also showed that there was a significant difference in the average level of somatization in the during COVID-19 pandemic group. Somatization is significantly higher ($F_{Weich} = 92.16, p < .01, \text{Cohen's } D = -1.06$) in the participants during- COVID-19 pandemic sample. Since these significant differences are in favor of our H2, then we reject H0.

Our findings about somatization are in line with Petersone *et al.*'s (2021) research; they found the highest level of physical symptoms among Danish respondents during the COVID-19 pandemic time [49]. Other investigators that compared the two periods concluded that somatization was higher among patients in hospital Guangzhou with the highest level of education [50 - 55].

The following finding was the only one with a medium effect size. The outcome of our investigation also showed that Social Dysfunction was significantly higher ($F_{Weich} = 17.84, p < .01, \text{Cohen's } D = -0.47$) among the during COVID-19 pandemic participants. Since this finding is in favor of our H3, then we reject H0.

Our findings regarding Social Dysfunction are in line with the Fruehwirth *et al.* (2021) study, where the authors indicate that the pandemic affects the need for online learning and increases social isolation among respondents from North Caroline, which contribute to the level of depression and anxiety [8]. Moreover, people who had social anxiety before the COVID-19 pandemic experienced a higher level of mental difficulties; this research concluded that COVID-19 indicates the need for socialization and a higher sense of loneliness [56].

Anxiety and insomnia were also found to be higher. More precisely, Anxiety and Insomnia were significantly higher ($F_{Weich} = 53.52, p < .01, \text{Cohen's } D = -0.81$) among the during- COVID-19 pandemic participants, compared to before. Since this finding is in favor of our H4, then we reject H0 here as well.

Our findings about anxiety and insomnia are in line with other research that report that there is a movement from a moderate anxiety disorder before the COVID-19 pandemic (18.1%) to severe anxiety disorder in the first four months of the COVID-19 pandemic period (25.3%) [8]. Zijlmans *et al.* (2021) found a higher level of social problems, particularly in relationships with peers during the pandemic and among the young participants (children and adolescents) with psychological problems in the Netherlands [50].

Finally, the outcomes of our investigation indicate that there is a significant difference in the level of depression. Depression was significantly higher ($F_{Weich} = 51.67, p < .01, \text{Cohen's } D = -0.80$) among the during COVID-19 pandemic participants. Since these findings are in favor of H5, then we reject H0 here too.

In line with our depression related finding is the research of Meaklim and colleagues (2021), where it was found that USA samples who suffered from insomnia before the COVID-19 pandemic were more susceptible to depression during the COVID-19 pandemic [51, 52]. Robinson *et al.* (2022) also found a higher level of depression at the beginning of the COVID-19 pandemic, which then persisted [53]. Moderate and severe depression increased from 21.5% (before the Pandemic COVID-19) to 31.7% during the COVID-19

pandemic period [8]; the level of depression was at the highest during the COVID-19 pandemic, compared to pre-COVID-19 pandemic. Moreover, the level of depression was higher among adolescents and mother participants, but there were no changes in the level of anxiety between mothers and children [54].

Various research mention above were generally in line with our findings, particularly for DVs like: Psychological Health, Somatization, Anxiety/Insomnia, Social Dysfunction, Depression, Death of Loved Ones, Domestic Violence, and Financial Problems. However, there are also some investigations that contradict our findings, such as the level of Divorce, Traffic Accidents, and Imprisonment. Nevertheless, all these researches show various nuances of how the pandemic hit different countries of the world. In this regard, an investigation highlights the importance of focusing on psychological issues and problems and the implication of the COVID-19 pandemic on psychological health. This should prioritize the specific psychological services during the pandemic situations and frame different intervention projects among the population and health services, including health experts and policies.

4.1. Study Limitations

This current investigation has its limitations. One of the limitations is that Pre and During Pandemic samples consisted of different participants. This barred a true longitudinal study analysis with repeated measures analysis, which might have allowed for potential added insight into the influence of the COVID-19 pandemic per each DV development longitudinally. They are not the same participants, despite that the investigators' sampling methods tried to erase any big differences in demographic, social, and cultural characteristics.

Additionally, an important variable that was not clearly specified was the sample's history of mental health difficulties [12]. Even though the investigators included the variable in the Demographic questionnaire that asked for chronic diseases, there still was no particular question about psychological issues.

CONCLUSION

During the pandemic times, the population was 4 times more likely to lose a loved one, have a difficult illness, experience accidents, natural disasters, displacement, be in a financially difficult situation, be imprisoned, and be divorced. As the likelihood of these negative effects rose, psychological health decreased. This was so because depression, anxiety, insomnia, and social dysfunction increased to a significantly higher degree during the COVID-19 pandemic period. Our research shows the importance of mobilizing psychological health experts and institutions that provide such services to better help and prevent the population at risk from a future potential pandemic situation to help avoid these negative outcomes from arising again.

LIST OF ABBREVIATIONS

- SARS-CoV-2** = Severe acute respiratory syndrome coronavirus-2
WHO = World Health Organization
AIC = Australian Institute of Criminology

GHQ 28 = General Health Questionnaire 28

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

The study fulfils the requirements of Law No. 04/L-135 on Scientific- Research •Activities, ethical principles of Heimerer College, and has been given full ethical approval.

HUMAN AND ANIMAL RIGHTS

No animals were used in this research. All procedures performed in studies involving human participants were in accordance with the ethical standards of institutional and/or research committee and with the 1975 Declaration of Helsinki, as revised in 2013.

CONSENT FOR PUBLICATION

Informed consent was obtained from all participants.

STANDARDS OF REPORTING

STROBE guidelines were followed.

AVAILABILITY OF DATA AND MATERIALS

The data and supportive information are available within the article.

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CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

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REFERENCES

- [1] 2022.WHO announces COVID-19 outbreak a pandemic Available from:<https://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/3/who-announces-covid-19-outbreak-a-pandemic>
- [2] Tsamakias K, Triantafyllis A, Tsipsios D, et al. COVID-19 related stress exacerbates common physical and mental pathologies and affects treatment (Review). *Exp Ther Med* 2020; 20(1): 159-62. [<http://dx.doi.org/10.3892/etm.2020.8671>] [PMID: 32509006]
- [3] Moris D, Tsilimigras DI, Schizas D. Cancer and COVID-19. *Lancet* 2020; 396(10257): 1066. [[http://dx.doi.org/10.1016/S0140-6736\(20\)32069-9](http://dx.doi.org/10.1016/S0140-6736(20)32069-9)] [PMID: 33038962]
- [4] Carrington K, Morley C, Warren S, et al. The impact of COVID-19 pandemic on Australian domestic and family violence services and their clients. *Aust J Soc Issues* 2021; 56(4): 539-58. [<http://dx.doi.org/10.1002/ajs4.183>] [PMID: 34898756]
- [5] Bowlus AJ, Seitz S. Domestic violence, employment, and divorce. *Int Econ Rev* 2006; 47(4): 1113-49. [<http://dx.doi.org/10.1111/j.1468-2354.2006.00408.x>]
- [6] The intersection of COVID-19 and mental health (2020). *Lancet Infect Dis* 2020; 20(11): 1217. [[http://dx.doi.org/10.1016/S1473-3099\(20\)30797-0](http://dx.doi.org/10.1016/S1473-3099(20)30797-0)]
- [7] Lai J, Ma S, Wang Y, et al. Factors associated with mental health outcomes among health care workers exposed to coronavirus disease. *JAMA Netw Open* 2020; 3(3): e203976. [<http://dx.doi.org/10.1001/jamanetworkopen.2020.3976>] [PMID: 32202646]
- [8] Fruehwirth JC, Biswas S, Perreira KM. The Covid-19 pandemic and mental health of first-year college students: Examining the effect of Covid-19 stressors using longitudinal data. *PLoS One* 2021; 16(3): e0247999. [<http://dx.doi.org/10.1371/journal.pone.0247999>] [PMID: 33667243]
- [9] Wu T, Jia X, Shi H, et al. Prevalence of mental health problems during the COVID-19 pandemic: A systematic review and meta-analysis. *J Affect Disord* 2021; 281: 91-8. [<http://dx.doi.org/10.1016/j.jad.2020.11.117>] [PMID: 33310451]
- [10] Tsamakias K, Tsipsios D, Ouranidis A, et al. COVID-19 and its consequences on mental health (Review). *Exp Ther Med* 2021; 21(3): 244. [<http://dx.doi.org/10.3892/etm.2021.9675>] [PMID: 33603852]
- [11] Mazza M, Marano G, Lai C, Janiri L, Sani G. Danger in danger: Interpersonal violence during COVID-19 quarantine. *Psychiatry Res* 2020; 289: 113046. [<http://dx.doi.org/10.1016/j.psychres.2020.113046>] [PMID: 32387794]
- [12] Boxall H, Morgan A, Brown R. The prevalence of domestic violence among women during the COVID-19 pandemic. *Statistical Bulletin. Canberra: Austral Insti Criminol* 2020; 28. [<http://dx.doi.org/10.52922/sb04718>]
- [13] Zhang H. The influence of the ongoing COVID-19 pandemic on family violence in China. *J Fam Violence* 2022; 37(5): 733-43. [<http://dx.doi.org/10.1007/s10896-020-00196-8>] [PMID: 32921903]
- [14] Perlman D, Peplau LA. *Toward a social psychology of loneliness. Personal relationships in disorder.* London: Academic Press 1981.
- [15] Loades ME, Chatburn E, Higson-Sweeney N, et al. Rapid systematic review: the impact of social isolation and loneliness on the mental health of children and adolescents in the context of COVID-19. *J Am Acad Child Adolesc Psychiatry* 2020; 59(11): 1218-1239.e3. [<http://dx.doi.org/10.1016/j.jaac.2020.05.009>] [PMID: 32504808]
- [16] Qualter P, Brown SL, Munn P, Rotenberg KJ. Childhood loneliness as a predictor of adolescent depressive symptoms: an 8-year longitudinal study. *Eur Child Adolesc Psychiatry* 2010; 19(6): 493-501. [<http://dx.doi.org/10.1007/s00787-009-0059-y>] [PMID: 19777287]
- [17] Nikolakakis N, Dragioti E, Paritsis N, Tsamakias K, Christodoulou NG, Rizos EN. Association between happiness and psychopathology in an elderly regional rural population in Crete. *Psychiatriki* 2020; 30(4): 299-310. [<http://dx.doi.org/10.22365/jpsych.2019.304.299>] [PMID: 32283533]
- [18] PAHO (Pan American Health Organization). 2022. Available from:<https://www.paho.org/en/news/30-9-2020-people-over-60-have-been-hardest-hit-covid-19-americas> [Accessed: 2022, September 30].
- [19] Pan American Health Organization (PAHO). Policy brief: The impact of COVID-19 on older persons. 2022. Available from:<https://www.paho.org/en/documents/policy-brief-impact-covid-19-older-persons> [Retrieved on 1. April. 2022].
- [20] Pan KY, Kok AAL, Eikelenboom M, et al. The mental health impact of the COVID-19 pandemic on people with and without depressive, anxiety, or obsessive-compulsive disorders: a longitudinal study of three Dutch case-control cohorts. *Lancet Psychiatry* 2021; 8(2): 121-9. [[http://dx.doi.org/10.1016/S2215-0366\(20\)30491-0](http://dx.doi.org/10.1016/S2215-0366(20)30491-0)] [PMID: 33306975]
- [21] McGinty EE, Presskreischer R, Han H, Barry CL. Psychological distress and loneliness reported by US adults in 2018 and April 2020. *JAMA* 2020; 324(1): 93-4. Available from:<https://jamanetwork.com/> [<http://dx.doi.org/10.1001/jama.2020.9740>]
- [22] Guerrini CJ, Schneider SC, Guzik AG, et al. Psychological distress among the U.S. general population during the COVID-19 pandemic. *Front Psychiatry* 2021; 12(642918): 642918. [<http://dx.doi.org/10.3389/fpsy.2021.642918>] [PMID: 34239459]
- [23] Gautam M, Thakrar A, Akinoyemi E, Mahr G. Current and future challenges in the delivery of mental healthcare during COVID-19. *SN SN Compr Clin Med* 2020; 2(7): 865-70. / [<http://dx.doi.org/10.1007/s42399-020-00348-3>]
- [24] Goldberg DP, Hillier VF. A scaled version of the general health questionnaire. *Psychol Med* 1979; 9(1): 139-45. [<http://dx.doi.org/10.1017/S0033291700021644>] [PMID: 424481]
- [25] Kilic C, Rezaki M, Rezaki B, et al. General health questionnaire (GHQ12 & GHQ28): Psychometric properties and factor structure of the scales in a Turkish primary care sample. *Soc Psychiatry Psychiatr Epidemiol* 1997; 32(6): 327-31. [<http://dx.doi.org/10.1007/BF00805437>] [PMID: 9299926]
- [26] Robinson RG, Price TR. Post-stroke depressive disorders: A follow-up study of 103 patients. *Stroke* 1982; 13(5): 635-41. [<http://dx.doi.org/10.1161/01.STR.13.5.635>] [PMID: 7123596]

- [27] Sterling M. General health questionnaire – 28 (GHQ-28). *J Physiother* 2011; 57(4): 259. [http://dx.doi.org/10.1016/S1836-9553(11)70060-1] [PMID: 22093128]
- [28] Sim MR. The COVID-19 pandemic: Major risks to healthcare and other workers on the front line. *Occup Environ Med* 2020; 77(5): 281-2. [http://dx.doi.org/10.1136/oemed-2020-106567] [PMID: 32238444]
- [29] Campbell AM. An increasing risk of family violence during the Covid-19 pandemic: Strengthening community collaborations to save lives. *Foren Sci Int: Rep* 2020; 2: 100089. [http://dx.doi.org/10.1016/j.fsir.2020.100089]
- [30] Vignansky E, Timor U. Domestic violence against partners according to wife-beaters: Construction of lifestyle and life meaning – Turn this to uppercase. *Int J Offender Ther Comp Criminol* 2017; 61(10): 1125-50. [http://dx.doi.org/10.1177/0306624X15617223] [PMID: 26615042]
- [31] Zoey XL. Covid-19 and its impacts on domestic violence crime rates. *NUS Libraries* 2021. Available from: <https://scholarbank.nus.edu.sg/handle/10635/216921> [Retrieved on 27.06.2022].
- [32] Guan Y. Xi'an marriage registry resumed work. *Xi'an Daily* 2020; 5: 2020. [In Chinese.].
- [33] Manning D W, Payne K K. Marriage and divorce decline during the covid-19 pandemic: A case study of five states. *Socius* 2021. [http://dx.doi.org/10.1177/23780231211006976] [PMID: 34307872]
- [34] Ghaznavi C, Kawashima T, Tanoue Y, *et al.* Changes in marriage, divorce and births during the COVID-19 pandemic in Japan. *BMJ Glob Health* 2022; 7(5): e007866. [http://dx.doi.org/10.1136/bmjgh-2021-007866] [PMID: 35569835]
- [35] Komura M, Ogawa H. COVID-19, marriage, and divorce in Japan. *Rev Econ Househ* 2022; 20(3): 831-53. [http://dx.doi.org/10.1007/s11150-022-09609-7] [PMID: 35492426]
- [36] Fallesen P. Decline in rate of divorce and separation filings in Denmark in 2020 compared with previous Years. *Socius* 2021; 7 [http://dx.doi.org/10.1177/23780231211009991]
- [37] Tax Administration of Kosovo (TAK). 2020. Available from: <https://www.atk-ks.org/komunikate-per-media-zevendesues-drejt-ori-i-pergjithshem-i-atk-se-ekrem-hysenaj-sot-ka-prezantuar-raportin-e-punes-per-vitin-2020/> [Retrieved on 27.06.2022].
- [38] Zhang D, Hu M, Ji Q. Financial markets under the global pandemic of COVID-19. *Finance Res Lett* 2020; 36: 101528. [http://dx.doi.org/10.1016/j.frl.2020.101528] [PMID: 32837360]
- [39] Powell A, Francis-Devine B, Clark H. Coronavirus: Impact on the labour market. *Common Library Research Briefing*. United Kingdom: House of Common Library 2021. Available from: <https://researchbriefings.files.parliament.uk/documents/CBP-8898/CBP-8898.pdf> [Accessed; 19.07.2022].
- [40] Cortes MG, Forsythe CE. The heterogeneous labor market impacts of the covid-19 pandemic. *Upjohn Institute Working Paper*. 2020; pp. 20-327. [http://dx.doi.org/10.17848/wp20-327]
- [41] Campedelli GM, Favarin S, Aziani A, Piquero AR. Disentangling community-level changes in crime trends during the COVID-19 pandemic in Chicago. *Crime Sci* 2020; 9(1): 21. [http://dx.doi.org/10.1186/s40163-020-00131-8] [PMID: 33134029]
- [42] Boman JH IV, Gallupe O. Has COVID-19 changed crime? Crime rates in the United States during the pandemic. *Am J Crim Justice* 2020; 45(4): 537-45. [http://dx.doi.org/10.1007/s12103-020-09551-3] [PMID: 32837168]
- [43] Aebo FM, Tiago MA. Prisons and prisoners in Europe in pandemic times: An evaluation of the short-term impact of the COVID-19 on prison populations. *UNIL Ecole des Science Criminelles* 2020. Available from: https://www.researchgate.net/profile/Marcelo-Aeabi/publication/342345043_Prisons_and_Prisoners_in_Europe_in_Pandemic_Times_An_evaluation_of_the_short-term_impact_of_the_COVID-19_on_prison_populations/links/5efda2d54585155050849ee1/Prisons-and-Prisoners-in-Europe-in-Pandemic-Times-An-evaluation-of-the-short-term-impact-of-the-COVID-19-on-prison-populations.pdf [Retrieved on 27.06.2022].
- [44] Katayama Y, Kiyohara K, Kitamura T, Hayashida S, Shimazu T. Influence of the COVID-19 pandemic on an emergency medical service system: A population-based, descriptive study in Osaka, Japan. *Acute Med Surg* 2020; 7(1): e534. [http://dx.doi.org/10.1002/ams2.534] [PMID: 32685173]
- [45] Pierce M, McManus S, Hope H, *et al.* Mental health responses to the COVID-19 pandemic: A latent class trajectory analysis using longitudinal UK data. *Lancet Psychiatry* 2021; 8(7): 610-9. [http://dx.doi.org/10.1016/S2215-0366(21)00151-6] [PMID: 33965057]
- [46] Bougas G. Will the COVID-19 pandemic lead to a mental health pandemic? In: *World Health Organization, Scientific Brief* 2022. Available from: <https://www.who.int/news/item/02-03-2022-covid-19-pandemic-riggers-25-increase-in-prevalence-of-anxiety-and-depression-worldwide> [Retrieved on 27.06.2022].
- [47] Robinson E, Sutin AR, Daly M, Jones A. A systematic review and meta-analysis of longitudinal cohort studies comparing mental health before *versus* during the COVID-19 pandemic in 2020. *J Affect Disord* 2022; 296: 567-76. [http://dx.doi.org/10.1016/j.jad.2021.09.098] [PMID: 34600966]
- [48] Chadi N, Spinoso-Di Piano C, Osmanlii E, Gravel J, Drouin O. Mental health-related emergency department visits in adolescents before and during the COVID-19 pandemic: A multicentric retrospective study. *J Adolesc Health* 2021; 69(5): 847-50. [http://dx.doi.org/10.1016/j.jadohealth.2021.07.036] [PMID: 34462192]
- [49] Petersen MW, Dantoft TM, Jensen JS, *et al.* The impact of the Covid-19 pandemic on mental and physical health in Denmark – a longitudinal population-based study before and during the first wave. *BMC Public Health* 2021; 21(1): 1418. [http://dx.doi.org/10.1186/s12889-021-11472-7] [PMID: 34275461]
- [50] Zijlmans J, Teela L, van Ewijk H, *et al.* Mental and social health of children and adolescents with pre-existing mental or somatic problems during the COVID-19 pandemic lockdown. *Front Psychiatry* 2021; 12: 692853. [http://dx.doi.org/10.3389/fpsy.2021.692853] [PMID: 34305685]
- [51] Meaklim H, Junge MF, Varma P, Finck WA, Jackson ML. Pre-existing and post-pandemic insomnia symptoms are associated with high levels of stress, anxiety, and depression globally during the COVID-19 pandemic. *J Clin Sleep Med* 2021; 17(10): 2085-97. [http://dx.doi.org/10.5664/jcsm.9354] [PMID: 33985647]
- [52] Gibson J. Domestic violence during COVID-19: The GP role. *Br J Gen Pract* 2020; 70(696): 340. [http://dx.doi.org/10.3399/bjgp20X710477] [PMID: 32586806]
- [53] Davidson JR, McFarlane AC. The extent and impact of mental health problems after disaster. *J Clin Psychiatry* 2006; 67(2): 9-14. Available from: <https://www.psychiatrist.com/read-pdf/7049/> [Accessed: 26.07.2022]. [PMID: 16602810]
- [54] Wright N, Hill J, Sharp H, Pickles A. Interplay between long-term vulnerability and new risk: Young adolescent and maternal mental health immediately before and during the COVID-19 pandemic. *JCPP Adv* 2021; 1(1): e12008. [http://dx.doi.org/10.1111/jcv2.12008] [PMID: 34485987]
- [55] Zhang M, Xin X, Li R. Investigation on psychological health and resilience of clinical nursing students in “Post-Pandemic Era”. *Open J Med Psychol* 2021; 10(4): 70-9. [http://dx.doi.org/10.4236/ojmp.2021.104007]
- [56] Ho JTK, Moscovitch DA. The moderating effects of reported pre-pandemic social anxiety, symptom impairment, and current stressors on mental health and affiliative adjustment during the first wave of the COVID-19 pandemic. *Anxiety Stress Coping* 2022; 35(1): 86-100. [http://dx.doi.org/10.1080/10615806.2021.1946518] [PMID: 34184570]