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Original Article

## Impact of Infodemic on Older People Mental Health during the COVID-19 Pandemic

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### SUMMARY

**Background:** The COVID-19 pandemic has had a significant impact on the mental health of older people. One concern is the exposure to a lot of pandemic-related information without any evidence-based background through the media and social networks. This study aimed to examine the effect of exposure to such information on the mental health of older people.

**Methods:** The study is a cross-sectional correlational study. Sampling was focused on selecting older people through a systematic sample according to a random starting point and with a fixed, periodic interval, between late 2020 and early 2021, with a total of 200 participants age above 60 considered as older people.

**Results:** We found that a significant percentage of older people had a high level of clinical symptoms/distress, according to the General Health Questionnaire (GHQ) scales. These results show that being exposed COVID-19 information from the media during the pandemic is a risk predictor for mental health/distress, GHQ-28 scores, (OR ExpB = 2.11,  $p = .001$ ). Similar results were found for Media Info (OR ExpB = 1.37,  $p = .008$ ). For each point increase in media information, the risk for general mental health problems increases 1.37 times.

**Conclusion:** Through the results it was clear that older people are at risk of mental health problems, and being exposed to the infodemic increased this risk significantly, as well as being exposed to media where elevated risk of death from SARS-CoV-2 for older people was reported.

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### 1. Introduction

In March 2019, the World Health Organization (WHO) declared Coronavirus 2019 (COVID-19) a global pandemic, indicating a rapid increase in the number of infections<sup>1</sup> and the virus's continuous global spread.<sup>2</sup> During this unprecedented pandemic, the entire population was exposed both to physical threat and psychological distress, but older people have unquestionably been among the most vulnerable groups.<sup>3,4</sup>

According to the WHO (2019), older people in many countries faced the greatest risks and challenges from COVID-19 because they are at a greater risk of developing serious illness.<sup>5</sup> As a result, the psychological problems accompanying COVID-19 were already more extreme for older generations compared with younger generations. Moreover, "social distancing" measures have given rise to a crisis in social isolation, placing older adults at an increased risk of developing or increasing mental health issues,<sup>6,7</sup> such as depression, anxiety,<sup>8</sup> post-traumatic stress disorder,<sup>9</sup> and suicide.<sup>10,11</sup>

In Kosovo the first case of COVID-19 was identified on 13 March 2020. After this, another important event was on 14 of March where the country was quarantined. On 17 March 2020, the president signed a decree declaring a state of emergency. Referring to the statistics about three months later, there were around 1,500 positive

cases (500 cases per million inhabitants) and about 30 registered deaths (16 per million inhabitants). Like most of the region, Kosovo has experienced four waves of the pandemic. As of 26 May 2021, Kosovo has an accumulated total of 103,599 positive cases and 2,176 registered deaths (55,312 cases per million inhabitants and 1,162 registered deaths per million inhabitants, on average). The fatality rate in Kosovo (around 2.6 registered deaths per 100 cases) is however, higher than in other countries that have been more affected by the virus, example Serbia (around 1.0 registered deaths per 100 cases).<sup>12</sup>

At a time like this, besides the information and citizen's awareness, this situation was accompanied by a lot of fake news, complicating the social and psychological problems of the audience/citizens, leading to fear, anxiety, and social insecurity. Many media were driven by the material interests, especially the online portals, social networks, etc., offering fake or false news to the public for the sole purpose of their material gain.<sup>13</sup>

A cross-sectional study<sup>14</sup> conducted in Kosovo evaluated the symptoms of anxiety and depression among healthcare professionals.

Frequent exposure to negative information was another important indicator for mental distress throughout pandemics.<sup>15</sup> It appears as though receiving information from the media has some advantages, for instance individuals can have less uncertainty, develop a better understanding of the potential health threat, and act to reduce their level of risk.<sup>16</sup> Nevertheless, some researchers have warned that widespread media coverage of the COVID-19 pandemic

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may unnecessarily elevate feelings of fear and insecurity related to the pandemic.<sup>17</sup> It has been reported that 27.5% of the most watched English videos on YouTube about COVID-19 featured non-factual information sourced from entertainment news, internet news, and consumer outlets, with 62 million views worldwide.<sup>18</sup> In the context of public health crises, many studies have examined the relationship between media exposure and mental health.<sup>19,20</sup> Research has shown that exposure to COVID-19 information can cause psychological health problems associated with depressive symptoms.<sup>20</sup> Critically, because of the scale and seriousness of COVID-19, media coverage has been excessively centered around pandemic-related news, which could additionally affect people that are already facing mental health problems.<sup>21</sup>

However, preliminary studies do not provide extensive insights as to whether frequent exposure to COVID-19 information has an impact on the mental health of older people. This information would be especially relevant given that most news and information indicate that is older people who are more vulnerable to death from COVID-19. Thus, the aim of the current study is to evaluate the impact of the exposure to COVID-19 information on the mental health of people over 60 years old.

## 2. Methodology

The design is a cross-sectional and correlational research design. Questionnaires were given to the respondents within the premises of their houses/apartments. Sample selection was done randomly, with predetermined selection criteria of age (over 60 years) and city.

The selection of the sample was systematic because the neighborhoods were selected, a starting point of the neighborhood was defined and the respondents were selected from each house. All participants were informed about the questionnaire, including the specifics and goals of this study. Participants were interviewed from interviewers through standard questionnaires because all participants were equal or above 60 years ( $\geq 60$ ) and to ensure that they understand the questions we used this procedure for gathering a data.

Participation was voluntary and each participant had the opportunity to leave the questionnaire uncompleted if they did not feel ready to continue. The time to complete the questionnaires was no longer than 30–35 minutes.

### 2.1. Participants

The study sample included 200 respondents over or equal 60 years ( $\geq 60$ ) who were citizens of the Republic of Kosovo from two different cities. The mean age of the sample was  $M = 69.7$  ( $SD = 7.29$ ). In terms of gender, 78 (39%) of the total sample were men. Of these 11 (5.5%) lived alone, while 189 (94.5%) lived in the community. The sample of 200 respondents was chosen based on demographic information on the population of Kosovo, in Kosovo there are less than 10% older adults until 2021, and we used a sample size calculator to identify that a sample size of 200 respondents represented the population of those cities with a level of confidence over 90%.

### 2.2. Measures

Sociodemographic information was collected through a demographic questionnaire, which included data about participants' age, gender, social status, level of education, with whom they live, social status, and level of education.

In order to assess exposure to pandemic information, we formulated a self-report survey to collect the necessary data. This survey assessed the frequency of access to such information, whether through interpersonal contact, classical media, social networks etc.

The General Health Questionnaire (GHQ-28), which was developed by Goldberg and Hillier in 1979, was used to assess the general health of participants.<sup>22</sup> The questionnaire consists of four subscales, each consisting of seven questions, that measure somatic symptoms, anxiety and insomnia, social dysfunction and depression. GHQ-28 scoring. According to a study by Goldberg and Hillier,<sup>23</sup> participants with total score of 23 or below should be classified as individuals without clinical symptoms, while participants with a score  $\geq 24$  may be classified as having clinical symptoms. It is recommended that each research derive a cut-off score based on the average of the respective sample, and we also followed this path, and report results on this basis.

### 2.3. Ethical issues

The procedure of this study complied fully with the provisions of the Helsinki Declaration regarding research on human participants. The ethics committee of Heimerer College approved the plan for this study.

### 2.4. Statistical analysis

Statistical analyses were performed using SPSS, version 26. We were interested to examine the presence of mental health problems among older adults who were exposed into the different news through different sources, and what are the variables that can be protective factors, like education. Overall, there was less than 1% missing data.

Descriptive statistics were used to find the percentage of clinical and nonclinical cases in the sample of older adults. We used Pearson correlation to test the interaction between mental health constructs and infodemics, and binary logistic regression to search for predictors of mental health problems in the sample of older adults. For building models, we used a benchmark of  $p > .05$  and tested the models (see Results section). We calculated the goodness of fit for several logistic regression models using the Hosmer-Lemeshow test.

## 3. Results

A very high number of participants presented symptoms above the cut-off across all scales of GHQ, according to the results obtained we found that a significant percentage of older people scored high in clinical symptoms/distress, according to the GHQ scales. 51% of older people had clinical somatic symptoms, 50.5% had clinical symptom of anxiety and insomnia, 36% had clinical social dysfunction, 35.5% clinical symptoms of depression, and 43% of them showed clinical symptoms/distress of GHQ-28 scores (Table 1).

Table 2 shows the coefficients of correlation between general mental health problems and infodemic, including media information, COVID-19 information and social interaction. Regarding the infodemic; COVID-19 information and media information both correlate positively and significantly with all GHQ scales, including somatic symptoms, anxiety, social dysfunction, depression and GHQ-28 scores.

Table 3 summarizes subgroup comparisons across key variables. For somatic symptoms, there was a significant difference for symptom severity on somatic symptoms ( $\chi^2 = 8.861, p < .031$ ). Chi-square analysis showed no statistically significant differences for gender or

marital status in reported somatic symptoms subscale according to symptom severity. Self-reported clinical somatic symptoms ( $\chi^2 = 8.861, p < .031$ ) differed significantly for participants with lower education compared to those with higher education, perhaps suggesting that more highly educated older adults were better able to manage the influence of different news sources.

Following correlation, chi-square analysis to address the pri-

**Table 1**  
Frequency table for scales of GHQ and GHQ 28 score.

Variables	N	%
Somatic symptoms		
Non-clinical symptoms	98	49.0
Clinical symptoms	102	51.0
Anxiety insomnia		
Non-clinical symptoms	99	49.5
Clinical symptoms	101	50.5
Social dysfunction		
Non-clinical symptoms	128	64.0
Clinical symptoms	72	36.0
Depression		
Non-clinical symptoms	129	64.5
Clinical symptoms	71	35.5
GHQ-28 scores		
Non-clinical symptoms	114	57.0
Clinical symptoms	86	43.0

GHQ, General Health Questionnaire; N, number; %, percentage.

**Table 2**  
Bivariate Pearson correlations between infodemic and GHQ-28 (N = 200).

	Somatic symptoms	Anxiety	Social dysfunction	Depression	GHQ-28 scores
Covid-19 information	<b>.375**</b>	<b>.349**</b>	<b>.312**</b>	<b>.312**</b>	<b>.392**</b>
Media information	<b>.348**</b>	<b>.409**</b>	<b>.345**</b>	<b>.325**</b>	<b>.415**</b>
Social interactions	<b>.240**</b>	<b>.224*</b>	<b>.205**</b>	<b>.173**</b>	<b>.245**</b>

Note: Correlations higher than .30 are in bold. GHQ, General Health Questionnaire; N, number.

\*  $p < .05$  \*\*  $p < .01$ .

**Table 3**  
Chi-square analysis for somatic symptoms.

Variables	Categories	No case	Case	N	$\chi^2$	df	p
Gender	Female	64	58	122	1.498	1	.221
	Male	34	44	78			
Education	Primary education	16	23	39	8.861	3	<b>.031</b>
	Lower secondary education	22	37	59			
	Upper secondary education	25	28	53			
	Higher education	22	10	32			
Marriage	Yes	58	67	125	.902	1	.342
	No	40	35	75			

N, number;  $\chi^2$ , Chi-square; df, degrees of freedom; p, p value.

**Table 4**  
Binary logistic regression for GHQ-28 scores and infodemic.

	B	SE	Wald	df	p	Exp(B)	95% CI for EXP(B)	
							Lower	Upper
Covid-19 Info	0.746	.232	10.30	1	<b>.001</b>	2.11	1.335	3.331
Media Info	0.319	.120	7.11	1	<b>.008</b>	1.37	1.088	1.736
Social interaction	0.140	.140	.990	1	.320	1.15	.881	1.533
Gender	0.926	.365	6.435	1	<b>.011</b>	2.52	1.275	5.456
Living	0.462	.777	.355	1	.552	1.59	.341	7.087
Married	-.563	.378	2.214	1	.137	0.57	.138	2.306
Education (0–1)	1.730	.613	7.967	1	<b>.005</b>	5.64	1.487	17.109
Education (0–2)	1.678	.554	9.174	1	<b>.002</b>	5.35	1.629	14.853
Education (0–3)	.509	.543	.878	1	.349	1.66	.534	4.606
Constant	-7.588	1.55	23.96	1	<b>.001</b>	.001		

Note:  $R^2 = .325$  (Nagelkerke R square); model  $\chi^2(9) = 50.866, p = .001$  (omnibus test);  $\chi^2(8) = 13.7, p = .089$  (Hosmer and Lemeshow test). B, beta; CI, confidence interval; df, degrees of freedom; GHQ, General Health Questionnaire; p, p value; SE, standard error.

mary aim of the study, we developed and tested a new model, shown in Table 4, where we show the best model obtained, including predicted variables such as infodemic (Covid 19 Information and Media Information), social interaction, gender, living cohesion, marriage status and level of education (comparing primary education with secondary, and university). The obtained model shown in Table 3 shows an overall percentage of 70.5%, with 75 respondents predicted as cases with non-clinical symptoms and 54 as a case with clinical symptoms. Therefore, only 29.5% of the participants were incorrectly assigned to their respective group.

The findings indicate that being exposed to media information and COVID-19 information during the pandemic is a risk predictor for GHQ-28 scores, (OR ExpB = 2.11,  $p = .001$ ), and 95% CI (1.335, 3.331) for each point increase in COVID-19 information, the risk for general mental health problems increases 2.11 times. Similar results were found for Media Info (OR ExpB = 1.37,  $p = .008$ , 95% CI 1.088, 1.736) for each point increase in media information, the risk for general mental health problems increases 1.37 times. Regarding gender, findings indicate females are 2.52 times more likely to develop general mental health problems than males (OR ExpB = 2.52,  $p = .011$ ) 95% CI (1.275, 5.456). Having a high school diploma in comparison to having a primary school diploma predicted a decreased risk for developing general mental health problems. For instance, older people with a primary school diploma were five times more likely to develop mental health problems (OR ExpB = 5.64,  $p = .005$ ) 95% CI (1.487,

17.109). Older people with university diplomas scored lower and did not predict significantly mental health outcomes.

Somatic symptoms were explored, with an overall percentage of 71.6%, with 131 respondents predicted as non-cases and 62 as cases. The findings indicated that media information and COVID-19 information during pandemic was a risk predictor for high GHQ-28 scores. With increased scores in COVID-19 information, there was an increased score in clinical somatic symptoms (OR, ExpB = 1.98,  $p = .001$ ). More precisely, individuals with increased COVID-19 information scores were 1.98 times more likely to show somatic symptoms. For media information, each score increase gave a 1.32 times higher risk for clinical somatic symptoms (OR, ExpB = 1.302,  $p = .021$ ).

Clinical symptoms of depression were increased in older people by exposure to COVID information and media information, where each increased score in COVID-19 information predicted an increased score in depression. Participants with a high score in COVID-19 information were 1.86 times more likely to report clinical symptoms of depression (OR, ExpB = 1.86,  $p = .006$ ). Each score increase for media information was associated with a 1.33 times higher risk of clinical social dysfunction (OR, ExpB = 1.33,  $p = .016$ ).

According to our results, older people with lower education levels scored higher in clinical symptoms in depression.

#### 4. Discussion

The results of our research study, with 200 older people over the age of 60, show that there is a significant relationship between COVID-19 information, media information and psychological distress. In our sample, as presented in Table 1, there was high percentage of older adults with clinical symptoms.

According to the Center for Disease Control and Prevention, over 80% of deaths are of persons over 60 years and this indicates the sensitivity of the situation.<sup>24,25</sup> The age groups over 60 have been characterized as the most vulnerable target group<sup>26</sup> not only in relation to physical health but also concerning mental health. Moreover, this group of individuals has been experiencing other challenges, such as having to spend more time at home, lack of physical contact with other family members or friends, and other activities.

Our study revealed that information related to the susceptibility and vulnerability of the older people communicating to infection has affected the mentality of the older people, where the information received has a severe mental impact. This does not mean that other people did not have psychological health concerns because previous studies have shown that the pandemic has had a negative impact on psychological distress in different age groups.<sup>27,28</sup> Nevertheless, there seems to be a significant difference of older people's mental health before and during the pandemic, as the results of a recent study show that there was an increase in psychological distress, when compared to their condition in 2018 when the pandemic had not yet begun to spread.<sup>29</sup>

Our study results indicate that infodemics can lead to deterioration in mental health, starting with the appearance of symptoms of anxiety, somatic symptoms, social dysfunction, depression (see Tables 2, 3, 4). It is for this reason that the information disseminated about the effect of the pandemic has also contributed to the increase in psychological distress.

It is important to note that information about the pandemic has been extremely wide-spread since the appearance of the virus and its global spread. Information has been spread on every social network and various social media which can be distributed without any kind of control or verification of accuracy. This information may not have

been true but nevertheless reached everyone's ears and only been established as untrue later, if at all. Given the sensitivity of the situation, this has had a detrimental impact on mental health.

The major concerns raised by reports regarding the COVID-19 pandemic have been shown in other studies but in different age groups.<sup>30</sup> Being directly exposed to a factor which is considered a health risk and which can be fatal is seen as an indicator in the increase of mental health problems.<sup>14</sup> The results of our study show that being indirectly informed of events, and information that incompetent persons may give is a cause of increasing psychological distress (Tables 2, 3, 4). How information is perceived, given the fact that we have been exposed to it most of the time, is very important.

Our study results have shown that people who have university education have scored lower results and do not predict mental health concerns compared to those who have lower levels of education, see Tables 3 and 4. Other studies have yielded similar results.<sup>31</sup>

#### 5. Limitations

The main limitation of the study is the lack of a sample from other age groups. This would allow comparison and a conclusion as to whether these findings are applicable only for older adults or for all age groups. These findings will contribute to greater awareness of the vulnerability of older adults to mental health risks associated with the infodemic, and the insights we have uncovered will be applicable in a wide variety of contexts, including media and health system policy.

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