*COVID-19 forum: Original paper*

# DEPRESSION MEASURED BY PHQ-9 IN KOSOVO DURING THE COVID-19 OUTBREAK: AN ONLINE SURVEY

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## SUMMARY

**Background:** *There are reports from countries and in the scientific literature that COVID-19 affect also mental health world-wide. The aim of this study was to understand the level of depression as a result of the COVID-19 situation and possible associations with sociodemographic variables.*

**Subjects and methods:** *It's a cross-sectional study. The participants were 155 respondents recruited online in the period 27.04.2020 until 05.06.2020, who completed the Albanian version of PHQ-9.*

**Results:** *Mean score of depression resulted 10.94 (SD=9.22). 63% of participants agreed that the situation has worsened their psychological state; 35.6% had a mild to severe form of depression and 18.7% had minimal symptoms. 13.4% of participants saw iCBT as helpful, 16.8% a little while 65.8% wanted to try it. Significantly higher depression resulted for females and age-group 18 to 24 years. No significant differences by levels of education, marital status, employment, socio-economic status and by expectations regarding iCBT. Gender and perception of worsened psychological state showed predictive abilities for depression.*

**Conclusion:** *The situation with Covid-19 has increased depression levels especially among females and 18 to 24 years old and thus expectations for e-psychotherapy. Online treatments seem feasible solutions for outbreak times. Studies in future are needed to better scientifically elaborate these findings.*

**Key words:** *COVID-19 - depression - PHQ-9 - online - Kosovo*

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## INTRODUCTION

The outbreak of COVID-19 is severely affecting physical health and lives. The COVID-19 pandemic has been spreading across Kosovo from March, too. There are reports from countries and in the scientific literature that COVID-19 affect also mental health worldwide. The WHO has also expressed its concern over the pandemic's mental health and psycho-social consequences (World Health Organization 2020). Holmes et al. (2020) think that this impact might be profound. Recent studies, addressing the impact of COVID-19 exhibit the highest levels of psychological distress, although results have varied across studies. Stress, anxiety and depression are among the variables found and measured. Measuring psychological distress in the general population of Italy during the COVID-19 pandemic Mazza et al (2020) showed an increased percentage of people with high and very high levels of distress compared to the European epidemiological statistics. Higher levels of anxiety, depression and trauma symptoms (but not dramatically) were reported compared to previous population studies, in UK (Shevlin et al. 2020). Also, one study suggest that the psychological well-being of the general Danish population is affected negatively by the COVID-19 pandemic (Sønderskov et al. 2020). A recent KFF poll (Panchal et al. 2020), show that 45% of USA adults reported that their mental health has been negatively impacted due to virus. Now, we have also preliminary evidence from population surveys from China showing significantly elevated symptomatology levels in distres related to COVID-19 (Huang & Zhao 2020, Qiu et al. 2020, Wang C. et al. 2020; Wang Y. et al. 2020).

Already the first studies show a level of depression in the general population during the Covid-19 outbreak. There are nine studies that have used PHQ-9 and one PHQ-2. Based on the cut-off of PHQ-9, 10 and above, the prevalence of depression has been from 17.3 to 31.6%. Thus, Rossi et al. (2020) in 18147 Italians find 17.3%; Ueda et al. (2020) in 1000 Japanese find 18.1%; Zhu et al. (2020) in 836 Chinese find 20.8%; Pieh et al. (2020) in 1005 Austrian find 21%; Shevlin et al. (2020) in 2025 UK respondents finds 22.1%; Liu et al. (2020) in 14592 Chinese population finds 24.1%; Mechili et al. (2020) in 281 Albanians find 25.4%; Šljivo et al. (2020) in general population of Bosnia and Herzegovina finds 28.4% and Jia et al. (2020) in 3097 British respondents finds 31.6%. The only PHQ-2 study by González-Sanguino et al. (2020) found 18.7% depression in the Spanish population.

The first case with COVID-19 in Kosovo was identified on 13 March 2020 and three days later a Public Health Emergency was announced with strict lockdown restrictions put in place. In the period when data were collected for this study 27.04.-05.06.2020 we have an increase in the number of infected from 780 reaches 1158 and deaths from 22 to 30 (Kosovo's population is about 1.8 million inhabitants). This marks a period when the phase of relief begins after very restrictive initial restrictions.

Faced with the pandemic in Kosovo, the provision of essential mental health services to the population in the form of home visits, emergency psychiatric visits, telephone lines of psychological assistance, etc. has continued. The Prizren Mental Health Center continued to offer ICBT online therapy as part of the Implemental project, funded by European Commission, Horizon 2020 framework. In order to support the wider population the online platform IFightDepression was also offered through the un-giuded version.

After the war, Kosovo, like many other post-war societies, is experiencing many challenges, including economic stagnation, widespread poverty, high unemployment, the movement of population from rural to urban areas, and poor quality of life, according to many agency reports. There are few studies conducted in Kosovo that provide data on depression levels. These studies are not very relevant to our work. Arënliu et al (2016) analyzing data from the European Social Survey, Sixth Round (ESS-6) through the CES-D questionnaire finds higher average for depressive symptoms in the Kosovar population than the average reported in other European countries, but similar to those in Eastern European countries. Males had lover significant values than females. Shahini et al. (2019) on 373 adults (247 war veterans and 126 women of other war veterans), through the Adult Self Report (ASR) questionnaire finds that the prevalence of the Anxious / depressive subscale in the deviant range resulted in 4.8% of males and 4% of females, in the subscale of withdrawal / depression 7.2% of males and 9.6% of females, without any significant gender difference; comparable to those found in other countries. Studying the sample of 249 respondents (17-70 years old, $M_{age} = 36.6$) of the general population of the Drenica region, Fanaj et al. (2014) found depression at the clinical level in 10.7%.

The aim of this study is to understand the presence of depression in general population as a result of the situation created by COVID-19, possible associations with sociodemographic variables and expectations regarding the psychotherapy offered / supported on the Internet. To our knowledge, this is among the first researches in Kosovo in the field of mental health in the current situation with Covid-19.

## SUBJECTS AND METHODS

A cross-sectional design was utilized and a snowball recruitment strategy was applied. Participants were recruited through a web-based survey disseminated through several online channels including Facebook (OS Psikiatri page). Facebook is increasingly being used as an effective research recruitment strategy (Thornton et al. 2016, Koenings et al. 2014) with support that online administration of questionnaires results in acceptable reliability of responses (Carlbring et al. 2007, Garb 2007). Participants gave online consent that their participation was voluntary, confidential and unidentifiable. The questionnaire was delivered through Google Forms where the responses were collected. The data were processed from the responses received in the period of 40 days (27.04.-05.06.2020) after the announcement in the media. Socio-demographic information was obtained regarding age, gender, place of residence, marital status, employment status, socioeconomic status, level of education, previous diagnosis and treatment of any mental illness or depression, and expectations regarding ICBT. Participants also completed the Albanian version of PHQ-9 translated and back-translated by the co-authors of this paper. The PHQ-9 scale is a self-reporting tool designed to measure nine depressive symptoms based on the DSM-IV diagnostic criteria that occurred in the past 2 weeks. The responses were summed to total score ranging from 0 to 27. Based on previous guidance (Kroenke et al. 2010), depressive symptoms were classified by severity, into minimal (scores of 0-4), mild (5-9), moderate (10-14), moderately severe and severe (15-27). Martin et al. (2009) concluded that PHQ-9 seems to be a useful tool to recognize subthreshold depressive disorder in the general population (see also Wang et al. 2014; Shin et al. 2020). Psychometric properties for the PHQ-9 have been shown to be good, with an internal consistency in the Cronbach's range alpha = 0.86-0.89 and a test-retest reliability of r=0.84 (24); also Kocalevent et al. (2013) in the general population has found that Cronbach's α for the PHQ-9 scale reached the value of α=0.87 and Rief et al. (2004) α=0.89. Cronbach alpha was used to assess the internal consistency of the PHQ-9, and an alpha value of >0.8 was considered a criterion of good reliability in this study. Approval for research was obtained from the Ethical-Professional Committee of the University Clinical Hospital Service of Kosovo, no. 836, dated 05.05.2020. Data processing was performed with SPSS 21.0 and Microsoft Excel 2007.

## RESULTS

The participants were 155 respondents (117 females, 38 males). Respondents were between 15 and 58 years old with average age of 24.49 years (SD=9.22).

Mean overall score of depression was 10.94 (SD=9.22), 12.03 for women and 7.6 for men. Moderate to severe symptoms of depression were reported by 35.6% of the participants and 18.7% had mild symptoms. Most of participants (90.2%) had not been previously treated for any mental health problem other than depression, 16.3% had been previously diagnosed with depression and 8.6% had received treatment for depression. Sixty-three percent of the participants agreed that COVID-19 situation has worsened their psychological state. A limited proportion of participants thought that iCBT can be helpful ranging from 13.4% who thought it can be helpful to 16.8% who reported that it may be a little helpful. However, 65.8% of the participants stated that they would want to try it iCBT (Table 1).

**Table 1.** Demographic characteristics of the participants (n=155) in the survey

|  | N | % | Mean | SD |
|---|---|---|---|---|
| **Gender** | | | | |
| Male | 38 | 24.5 | 7.61 | 7.77 |
| Female | 117 | 75.5 | 12.03 | 7.59 |
| **Resdence** | | | | |
| Urban | 100 | 64.5 | 10.84 | 7.67 |
| Rural | 54 | 34.8 | 10.96 | 8.22 |
| Missing | 1 | 0.6 | | |
| **Age group** | | | | |
| 14 to 17 years old | 26 | 16.8 | 8.19 | 7.16 |
| 18 to 24 years old | 74 | 47.7 | 13.18 | 7.64 |
| 25 to 34 years old | 27 | 17.4 | 7.19 | 7.62 |
| 35 to 44 years old | 12 | 7.7 | 9.00 | 8.21 |
| 45 to 54 years old | 4 | 2.6 | 11.25 | 4.99 |
| 55 to 64 years old | 4 | 2.6 | 11.75 | 6.55 |
| Over 65 years old | 0 | 0 | | |
| **Education** | | | | |
| Primary | 9 | 5.8 | 13.33 | 10.61 |
| Secondary | 79 | 51.0 | 10.73 | 7.63 |
| Bachelor | 56 | 36.1 | 11.77 | 7.87 |
| Master | 10 | 6.5 | 6.90 | 5.34 |
| Doctoral | 1 | 0.6 | | |
| **Marita status** | | | | |
| Not married | 107 | 69.0 | 10.93 | 8.06 |
| Married | 38 | 24.5 | 11.92 | 7.44 |
| Separated | 2 | 1.3 | 3.50 | 3.54 |
| Widowhood | 4 | 2.6 | 12.25 | 7.59 |
| Missing | 4 | 2.6 | | |
| **Economic situation** | | | | |
| Poor | 14 | 9.0 | 14.64 | 5.21 |
| Middle | 97 | 62.6 | 10.49 | 7.70 |
| Good | 44 | 28.4 | 10.74 | 8.67 |
| **Employment** | | | | |
| No | 103 | 66.5 | 11.29 | 7.79 |
| Sesonal | 15 | 9.7 | 11.07 | 7.99 |
| Yes | 37 | 23.9 | 9.92 | 8.08 |
| **Previous treatment for mental health problems others than depression** | | | | |
| No | 138 | 89.0 | 10.51 | 7.71 |
| Yes | 15 | 9.7 | 15.13 | 8.64 |
| **Previously diagnosed with depression** | | | | |
| No | 128 | 82.6 | 10.18 | 7.60 |
| Yes | 25 | 16.1 | 14.96 | 8.31 |
| **Previously treated with depression** | | | | |
| No | 139 | 89.7 | 10.37 | 7.52 |
| Yes | 13 | 8.4 | 15.23 | 9.52 |
| **Type of treatment taken** | | | | |
| Medicaments | 40 | 25.8 | 11.13 | 8.02 |
| Psychotherapy | 12 | 7.7 | 11.42 | 8.92 |
| Medicaments and psychotherapy | 6 | 3.9 | 15.67 | 10.17 |
| **Perception of worsened psychological state from COVID-19 situation** | | | | |
| No | 55 | 35.5 | 6.71 | 7.01 |
| Yes | 96 | 61.9 | 13.33 | 7.35 |
| **Expectations for help from e-psychotherapy** | | | | |
| I don't believe it helps me | 6 | 3.9 | 9.50 | 8.46 |
| I don't know, to try it | 98 | 63.2 | 10.91 | 7.75 |
| It can help me a little | 25 | 16.1 | 8.84 | 7.86 |
| It can help me a lot | 20 | 12.9 | 14.70 | 8.05 |
| **Depression** | | | | |
| No depresion | 43 | 27.7 | 1.60 | 1.50 |
| Minimal symptoms | 27 | 17.4 | 6.52 | 1.25 |
| Mild Depression | 29 | 18.7 | 12.07 | 1.39 |
| Medium Depression | 25 | 16.1 | 16.76 | 1.09 |
| Severe Depression | 30 | 19.4 | 22.37 | 2.11 |

Mann-Whitney test revealed significant gender differences of depression scores ($Md_{females}$=12, N=116; $Md_{males}$=3.5, N=38; Z=-3.239, p<0.00). Significant difference has also resulted for both somatic ($Md_{females}$=5, N=117; $Md_{males}$=2.5, N=38; Z=-2.554, p<0.01) and cognitive / affective ($Md_{females}$=6, N=116; $Md_{males}$=3, N=38; Z=-2.958, p<0.00) subscales.

We found significant difference in depression levels between those who were previously treated for any mental health problems other than depression or not ($Md_{treatmhyes}$=16, N=15; $Md_{treatmhno}$=10, N=137; Z=-1.977, p<0.04). There is a significant difference in that those who were diagnosed with depression had higher levels of depression ($Md_{dgyes}$=17, N=25; $Md_{dgno}$=10, N=127; Z=-2.644, p<0.00). There is a significant difference in that those who had been treated before for depression had higher levels of depression ($Md_{treatdyes}$=18, N=13; $Md_{treatdno}$=10, N=138; Z=-1.977, p<0.04). There is also a significant difference in that those who agreed that the situation with COVID-19 had worsened their psychological state had higher levels of depression ($Md_{yes}$=14, N=96; $Md_{no}$=4, N=55; Z=-5.024, p<0.00).

Kruskal-Wallis analysis doesn't reveal significant differences by levels of education, marital status, employment status, socio-economic status and by expectations regarding iCBT. The only significant difference is found by age-group $X^2$ (5, n=146)=17.141, p<0.00; whereas group of respondents 18 to 24 years (Md=14) had the significantly highest depressive scores as compared to age-group 45 to 54 years and 55 to 64 years (Md=11.5) and 35 to 44 years (Md=6).

Regarding response items female resulted with higher scores in all items but significantly only for depressed mood, low energy, low self-esteem, concentration difficulties and suicidal ideation (Table 2).

A multiple standard regression analysis was run to predict depression from gender, age, education, marital status, employment, socio-economic status, previous treatment for mental health problems, previously diagnosed with depression, previously treated with depression, perception of worsened psychological state from COVID-19 situation and expectations for help from e-psychotherapy. These variables statistically significantly predicted depression, F(11, 142) = 4.185, p<0.000, R2=0.260. Only gender and perception of worsened psychological state from covid-19 situation added statistically significantly to the prediction, p<0.00 (Table 3).

## DISCUSSION

Findings that 61.9% of the participants agreed that COVID-19 situation has worsened their psychological state, is higher than reports in Italy - 38% (Moccia et al. 2020); Spain - 31% (Odriozola-González et al. 2020) and China - 35% (Qiu et al. 2020); but similar to Iran (61.1%; Jahanshahi et al. 2020) and Bangladesh - 59.7% (Al Banna et al. 2020). The finding that 35.6% of the participants reported depression symptoms ranging from moderate to severe (cut-off point 10 and more),

**Table 2.** Percentages of PHQ-9 item responses, mean and gender significances of the participants in the survey

| Item response | 0 (not at all) + 1 (several days) | 2 (more than half the days) | 3 (nearly every day) | Mean | Gender/ Sig. p |
|---|---|---|---|---|---|
| Depressed mood | 41.9% | 14.8% | 43.8% | 1.59 | 0.012 |
| Sleep problems | 51.0% | 15.5v | 33.5% | 1.31 | 0.116 |
| Low energy | 43.2% | 20.0% | 36.8% | 1.50 | 0.001 |
| Low self-esteem | 53.5% | 14.2% | 32.3% | 1.25 | 0.030 |
| Concentration difficulties | 57.6% | 15.7% | 26.8% | 1.08 | 0.001 |
| Appetite change | 56.7% | 18.7% | 24.5% | 1.11 | 0.233 |
| Psychomotor agitation or retardation | 54.8% | 17.4% | 27.7% | 1.18 | 0.285 |
| Anhedonia | 62.5% | 12.3% | 25.2% | 1.00 | 0.860 |
| Suicidal ideation | 76.0% | 5.8% | 18.2% | 0.84 | 0.018 |

**Table 3**. Multiple Regression Analysis Summary for variables and Depression (PHQ-9)

| Variable | B | SEB | Beta |
|---|---|---|---|
| Age | -0.912 | 0.709 | -0.130 |
| Gender | 3.459 | 1.486 | 0.190* |
| Education | 0.782 | 1.337 | 0.048 |
| Marital status | -0.896 | 0.855 | -0.084 |
| Socio-economic status | 0.535 | 1.079 | 0.044 |
| Employment | -1.177 | 1.085 | -0.087 |
| Previous treatment for mental health problems others than depression | 0.238 | 0.785 | 0.026 |
| Previously diagnosed with depression | 1.935 | 2.289 | 0.074 |
| Previously treated with depression | 2.865 | 1.968 | 0.135 |
| Perception of worsened psychological state from COVID-19 situation | 0.540 | 2.737 | 0.019* |
| Expectations for help from e-psychotherapy | 5.874 | 1.295 | 0.361 |
| Constant | 5.980 | 4.780 | |

indicates a high level of depression in this sample, considering the average lifetime and 12-month prevalence estimates of major depression were 14.6% and 5.5% in high-income countries and 11.1% and 5.9% in low- to middle-income countries (Bromet et al. 2011). Also these findings are higher compared to studies in general populations in other countries that have used PHQ-9 which has resulted in moderate to severe (cut-off point 10 and more) of 3.8 to 8.8% (Shinn et al. 2020; Kocalevent et al. 2013; Rief et al. 2004). Also, the high level of depression in this study is evident when comparing our results with the few depression studies in Kosovo (with other questionnaires) that show depression at the clinical level is 10.7% (Fanaj et al. 2014) and in a sample of war veterans about 7% (Shahini et al. 2019). Hovewer, one study in Kosova has reported nearly prevalence of depression (27%; cut-off>10), but this is conducted in a small sample of primary care patients not general population (Ajredini et al. 2019). Our findings are slightly higher compared to the study in Albania 25.2% / 25.6%, which also used PHQ-9 (Mechili et al. 2020) and to the study in general population of Bosnia and Herzegovina 28.4% (Šljivo et al. 2020) as well as the all other studies cited here who scored 17.3 to 31.6%. It is clear that the population is suffering psychologically as studies (Xiang et al. 2020, Kang et al. 2020) show. Finding that women are significantly more affected by depression is in line with many studies (Rossi et al. 2020, Mazza et al. 2020, Wang et al. 2020, Šljivo et al. 2020). The findings that those with

previous treatment for mental health problems, those who were diagnosed, those who had been treated before had higher levels of depression indicates that the situation caused by Covid-19 may be exacerbating the condition of people with pre-existing disorders (Yao et al. 2020) and people with a psychological disorder (Karaşar et al. 2020). It is interesting to note that respondents 18 to 24 years have significantly higher levels of depression. This is in line with findings of other studies (Rossi et al. 2020, Shevlin et al. 2020, Huang & Zhao 2020, Šljivo et al. 2020). There have been findings earlier that perhaps young people more easily activate stress due to their greater access to information through social media (Cheng et al. 2014), which undoubtedly in this time period has been very bad (increase in the number of infected and deaths). Other factors could be restrictive measures, interruption of schooling, etc. In 2017, an exploratory study in Kosovo (Fanaj et al. 2017) found that 17.5% of the sample expected e-psychotherapy to be beneficial and 57.8% considered it may be beneficial. In this study we have an increase in expectations because 29% saw it as somehow helpful and 63.2% were willing to try it; we see this as particularly positive given that depression causes feelings of hopelessness and negatively impacts help-seeking behavior. This may also be in line with the suggestions that it is the right moment for a shift towards online prevention, treatment, and care (Wind et al. 2020). Findings that there are no significant differences in the levels of depression according to marital status, employment and

socio-economic status can be explained in part by the fact that we are dealing here more with a reactive depression by the situation that the population is going through, even also literature findings are inconsistent in this regard. Findings that only gender and perception of worsened psychological state from covid-19 situation added statistically significantly to the prediction can be explained by the well-known fact that the female gender is more sensitive and by the fact that the level of distress experienced by the Covid-19 pandemic is clearly causing depression.

## Limitations

We should mention here some limitations of this study. Undoubtedly, the cross-sectional nature of the research, then the use of Facebook for recruitment can bring obstacles to having a representative sample because of the inability to access the Internet or social networks (elderly, low socioeconomic cases, psychiatric patients etc.). Also, self-reporting without the possibility of an objective assessment by professionals can be listed here.

## CONCLUSIONS

Worsening of psychological condition and high levels of depression speak about the high level of mental health problems in Kosovo as a result of COVID-19 pandemic, especially in youths. These should be addressed as appropriately and timely as possible. There is need for continuing with services such as internet psychotherapy as a worth to try solution. However, more in-depth studies are needed which will shed more light on this period of pandemic coping.

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