

# Predictors of Depression Problems of Adults Who Live in the Security Endangered Territory

Momčilo Mirković<sup>1</sup>, Sladjana Djurić<sup>1</sup>, Goran Trajković<sup>2</sup>, Jovana Milošević<sup>1</sup>, Zorica Sojević Timotijević<sup>1</sup>

<sup>1</sup>University in Priština – Kosovska Mitrovica, School of Medicine, Kosovska Mitrovica, Serbia;

<sup>2</sup>University of Belgrade, School of Medicine, Belgrade; Serbia

## SUMMARY

**Introduction** By the year 2020, if current trends for demographic and epidemiological transition continue, the burden of depression will have increased to 5.7% of the total burden of disease, thus becoming the second leading cause of disability-adjusted life year (DALY) lost. Early detection of people at risk of developing any mental disorder is extremely important in the prevention of all mental disorders.

**Objective** The objective of the study was to determine depression predictors among adult residents in four Kosovo and Metohia municipalities predominantly inhabited by Serbian population.

**Methods** This cross-sectional study included the representative sample of adults in Leposavić, North Kosovska Mitrovica, Gnjilane and Priština and was performed in October/November of 2009. The sample was selected from the list of citizens older than 18, received in the above mentioned municipalities. The Goldberg General Health Questionnaire (GHQ-28) was used as a research instrument. The methods of statistical analysis included descriptive statistics, simple and multiple logistic regression analysis, and analysis of variance, with a significance level of 0.05.

**Results** Problems with depression have been significantly associated with female sex (OR=2.24), older age (OR=1.01), lower levels of education (OR=0.50), unemployment (OR=1.09), poor financial situation (OR=0.45), abuse (OR=0.08) and assessment of the future political and security situation as a highly risky one (OR=3.01).

**Conclusion** To determine risk groups being in greater risk to suffer from depression is important for planning, enhancing, promoting and implementing the prevention strategies for this disease.

**Keywords:** prevention; promotion; the Goldberg General Health Questionnaire (GHQ-28)

## INTRODUCTION

According to the Diagnostic and Statistics Manual of Mental Disorders V (DSM V), depression is characterized by the presence of five or more symptoms in a two-week period and represents a change from previous functioning, including at least one of the symptoms of depressed mood, loss of interest or pleasure, significant weight loss when not dieting or weight gain, insomnia or hypersomnia, psychomotor agitation or retardation, fatigue, feelings of worthlessness or guilt, inability to concentrate and recurrent thoughts of death or suicide [1]. Global Burden of Diseases (GBD) 2000 analysis shows that unipolar depressive disorders place an enormous burden on society and are ranked as the fourth leading cause of burden among all diseases, accounting for 4.4% of the total disability-adjusted life year (DALYs) and the leading cause of years lived with disability (YLDs), accounting for 11.9% of total YLDs. By the year 2020, if current trends for demographic and epidemiological transition continue, the burden of depression will have increased to 5.7% of the total burden of disease, thus becoming the second leading cause of DALYs lost. Worldwide it will be second only to ischemic heart disease for DALYs lost for both genders. In the developed regions depression is to be the highest ranking cause of

burden of disease [2]. Until the year 2000, the same research was conducted in Serbia. Unipolar depressive disorders were ranked as third for women and sixth for men, totally ranked as fourth for DALYs lost for both genders [3].

Mental health problems, specifically depression, are diseases that should not be overlooked due to great morbidity and burden. Depression causes an impairment in functional well-being and a decrease in the quality of life [4, 5, 6], a decrement in health [7, 8], physical distress and health problems [8]. Depression can cause impairment in a person's home role, as well as at work, relationships and social network. These can result in limitations of daily activities such as job insecurities [8] and an increased risk of early mortality due to physical disorders and suicide [9]. Therefore, there is a need to identify subpopulations that are at high risk of suffering from depression. Early detection of people at risk of developing mental disorders is extremely important in the prevention of mental disorders [10]. Several questionnaires that can help in detecting people at risk have been created so far, but the Goldberg General Health Questionnaire (GHQ-28) is one of the most commonly used for this purpose [11].

According to Muñoz et al. [12], the following three levels of prevention are distinguished: (1) universal prevention targeting entire populations, (2) selective prevention targeting sub-

## Correspondence to:

Momčilo MIRKOVIĆ  
Mihajla Gavrilovića street  
11118 Belgrade  
Serbia  
momcilomirkovic76@gmail.com

groups with an increased risk to develop symptoms of a given disorder and (3) indicated prevention targeting individuals with elevated symptoms of a given disorder who do not meet the criteria of the disorder. The latter two levels are also described as targeted prevention. Evidence, found in a recent meta-analytic review, proves that both universal and targeted depression prevention programs are more effective in preventing depressive symptoms compared to no intervention [13]. There are several reasons why a targeted approach, compared to a universal approach, will lead to larger effect sizes [12]. First, in a selective approach, participants are more likely to increase their depressive symptoms over time, making it easier to detect a preventive effect of the intervention in the experimental conditions as opposed to the control conditions. Furthermore, a decrease of symptoms can only be found within those adolescents who have elevated levels at baseline, and thus the effect size is more likely to be larger in the selective group.

After the bombing of the Federal Republic of Yugoslavia, in June 1999, the Autonomous Province of Kosovo came under UN administration [14], but stressful events, especially for non-Albanian population, have continued. More than half of Serbian citizens fled the province, and those who remained were subjected to daily attacks. Many of them were kidnapped or killed [15]. Living in such politically unstable and unsafe area has affected their mental health, but data on this health component are deficient. In September and October of 1999 Salama et al. [16] carried out the study on the mental health of Gnjilane and Priština population, using the Goldberg's questionnaire. In March and April of 2012 Mirković et al. [17] carried out a study of the mental health of North Kosovska Mitrovica population, using the same questionnaire.

## OBJECTIVE

The objective of this study was to determine the predictors of depression among adult residents of four Kosovo and Metohia municipalities predominantly inhabited by Serbian population.

We have hypothesized that depression problems are worse among females, elders, residents with lower education, unemployment, in unfavorable financial situation, among displaced persons, among those who suffered abuse as well as those getting poor social support. In addition to above-mentioned, we have also hypothesized that depression problems are to be worse among people who assess the political and security situation as a highly risky one.

## METHODS

This cross-sectional study included the representative sample of adults in Leposavić, North Kosovska Mitrovica, Gnjilane and Priština and was performed in October and November of 2009.

The sample was selected from the list of citizens older than 18 years, received in the above-mentioned municipalities.

There were 10,418 citizens above the age of 18 in Leposavić, 20,779 in Kosovska Mitrovica, 11,300 in Gnjilane and 90 in Priština.

The required sample size for assessing mental disorders prevalence, with the assumption of their frequency in the population of 20%, with 0.4 (4%) accuracy assessment and confidence level of 95% was 385. Out of total, 60 respondents were surveyed in Priština, 139 in North Kosovska Mitrovica, 88 in Gnjilane and 98 in Leposavić.

The mechanism used for obtaining a random sample of households and respondents is a combination of two sampling techniques: stratification and multi-stage sampling. Four municipalities were identified as the primary strata, a further division of the local community resulted in 23 strata (one of which is a separate stratum Priština, as the only city), designated as units of the first stage of a two-phase sampling. From each stratum 50% of the local community (11 local communities in Leposavić, North Kosovska Mitrovica, Gnjilane, and Priština as a separate stratum) was randomly selected. From the resulting list of the local communities by municipalities, every second local community was selected, beginning with the first on the list. Thus, the municipality Leposavić selected the following local communities: Leposavić (center), Sočanica and Vračevo. North Kosovska Mitrovica local community selected Ibar. For the municipality of Gnjilane the following local communities were selected: Šilovo, Kmetovce, Koretište, Gornji Makreš, Poneš, Pasjan and Parteš, while Priština was a separate stratum. The households were the second stage units. Since there are no data on households, the method for rapid epidemiological survey [18] was chosen for their selection, the one used in cases with no complete data for the sample creation.

The survey was conducted in 158 households, 39 of which in Leposavić, with 98 adults surveyed, in North Kosovska Mitrovica 55 households with 139 adults surveyed, in Gnjilane 35 households with 88 adults surveyed and in Priština 29 households with 60 adults surveyed.

Observation units of the survey are the respondents, and the units of analysis are the subjects to which the content of the questionnaire refers.

The questionnaire used for obtaining sociodemographic characteristics of the respondents consisted of the questions about gender, age, education, occupation, self-rated financial situation, marital status, the presence of mental disorders in the family, social support, abuse and, considering the characteristics of the territory where they lived, having been displaced or not and whether they were taking the current and future political and security situation as a risky one.

The Goldberg General Health Questionnaire [11] was used for obtaining information about mental health characteristics.

The questionnaire consisted of 28 questions divided into four groups with seven questions related to psychosomatic problems, anxiety and insomnia, social functioning and depression. Out of these questions, seven were formulated in positive terms, and 21 questions in the negative sense. In cases of questions asked in the positive way, the

following response scale was used: 1 = better than usual, 2 = as usual, 3 = worse than usual, 4 = much worse than usual. For 18 questions asked in the negative sense the following responses were used: 1 = not at all, 2 = no more than usual, 3 = more than usual, 4 = much more than usual. For the question C2 the following response scale was used: 1 = less than usual, 2 = same as usual, 3 = more than usual, 4 = much more than usual. For the questions D4 and D7 the following response scale was used: 1 = definitely not, 2 = I do not think I am, 3 = I think I am, 4 = I definitely am. The classical way of scoring was as follows: the answers one and two were scored by 0 (zero), and the answers three and four scored by 1 (one). This scoring method seemed to be sensitive to temporary conditions and allowed detection of mental health deterioration [19]. The scoring in this way did not reveal long-term chronic problems with mental health. To overcome this deficiency a new scoring was proposed in 1985, so that only the first answer was scored with 0, and the others with 1 [20]. Since the tested territory's political and security situation had been deteriorating for many years, we applied a new, modified scoring system proposed in 1985. The author of the questionnaire suggested in 1998 the best threshold to be arithmetic mean of all points of respondents [21], as used in this research. The responses about depression are used for the purposes of this manuscript.

The methods of statistical analysis included descriptive statistics, simple and multiple logistic regression analysis and analysis of variance, with a significance level of 0.05.

## RESULTS

### Characteristics of the respondents

The majority of the participants were females (51.9%), the mean age was  $44.6 \pm 16.32$  years, ranged from the age of 18 to 86, with 69% of them being married. The average number of family members was 3.83; most of them (61.7 %) completed high school, and were pensioners (43.3%). Out of 385 respondents, 36.7% assessed their financial status as moderate, 12.5% were displaced persons and 96.9% were satisfied with their social support.

Out of 385 respondents, 1.1% experienced violence by family members, 9.1% experienced violence by persons who are not family members and 89.8% had never been abused. Most of the respondents estimated the current political and security situation as a highly risky one (40.5%), and most respondents believed that the political and security situation would be highly risky in the future (35.9%) as well.

### Predictors of depression problems

The highest average value of depression was among respondents in Priština (1.38), while the lowest was among those in Kosovska Mitrovica (0.33), and the difference was statistically significant ( $F=19.502$ ,  $p<0.001$ ), suggesting

**Table 1.** Descriptive statistical measure of depression problems

Descriptive statistical measure	N	$\bar{X}$	SD	95% CI	Min–Max
Leposavić	98	0.38	0.91	0.19–0.56	0–5
North K. Mitrovica	139	0.33	1.07	0.15–0.51	0–7
Gnjilane	88	0.89	1.43	0.58–1.19	0–5
Priština	60	1.38	1.32	1.04–1.72	0–4
Total	385	0.63	1.23	0.51–0.76	0–7

N – number of respondents;  $\bar{X}$  – arithmetic mean; SD – standard deviation; CI – confidence interval; Min – minimum value; Max – maximum value

that the problem was the highest among respondents in Priština and the least pronounced among the respondents in Kosovska Mitrovica (Table1).

To determine the association of depression with a variable that can be a risk factor, the simple logistic regression for each of these variables was made first. The following variables were allocated as predictors: gender, age, number of family members, education, employment status, financial status, abuse, feeling the current and future political and security threat. Problems with depression were significantly associated with female gender, older age, fewer family members, lower levels of education, unemployment, poor financial condition, abuse and assessment of current and future political and security situation as a highly risky one (Table 2).

In order to determine how these variables jointly affect depression, the multiple logistic regression analysis was performed. All variables, having been previously identified as predictors, were entered into the multiple logistic model. In this way, the following variables are featured as predictors: gender, education, financial status, abuse and assessment of the political and security situation in the future, which means that problems with depression were significantly associated with female gender, lower education, poor financial situation, abuse and assessing future political and security situation as a highly risky one (Table 3).

## DISCUSSION

This research examined the predictors of depression problems of the residents who lived in the security endangered territory, in four municipalities in Kosovo and Metohia, among demographic, socioeconomic and other characteristics of the population, resulting from the characteristics of the territory. The used questionnaire (GHQ-28), also used for mental health assessment in previous research, has shown acceptable reliability and validity for use among adult population in different countries and was used as a screening test by the World Health Organization in one of the multicenter studies [11].

The highest average value of the results was among the respondents in Priština (1.38), then in Gnjilane (0.89), Leposavić (0.38), and the lowest among the respondents in North Kosovska Mitrovica (0.33), so this difference was statistically significant. The average value for all four municipalities is 0.63. An interesting issue is that there are no differences between the respondents in Leposavić

**Table 2.** Predictors of depression problems of respondents determined by simple logistic regression

Variables	B	SE	p	OR	95% CI	
					Upper	Lower
Gender	1.072	0.321	0.001	2.922	1.557	5.486
Age	0.056	0.010	<0.001	1.058	1.037	1.079
Number of family members	-0.230	0.111	0.039	0.795	0.639	0.989
Education	-1.085	0.196	<0.001	0.338	0.230	0.496
Occupation	0.274	0.075	<0.001	1.315	1.135	1.522
Financial situation	-1.242	0.191	<0.001	0.289	0.199	0.420
Abuse	-2.226	0.356	<0.001	0.108	0.054	0.217
Current security threats	1.091	0.241	<0.001	2.978	1.858	4.774
Future security threats	1.293	0.256	<0.001	3.643	2.206	6.016

B – partial coefficient logistic regression; SE – standard error; p – level of significance; OR – odds ratio; CI – confidence interval

**Table 3.** Predictors of depression problems of respondents determined by multiple logistic regression

Variables	B	SE	p	OR	95% CI	
					Upper	Lower
Gender	0.809	0.404	0.045	2.245	1.017	4.952
Age	0.018	0.015	0.239	1.018	0.988	1.048
Number of family members	0.246	0.134	0.066	1.279	0.984	1.662
Education	-0.693	0.274	0.011	0.500	0.292	0.855
Occupation	0.088	0.110	0.425	1.092	0.879	1.356
Financial situation	-0.799	0.247	0.001	0.450	0.277	0.730
Abuse	-1.610	0.425	<0.001	0.200	0.087	0.460
Current security threats	-0.481	0.500	0.336	0.618	0.232	1.648
Future security threats	1.102	0.517	0.033	3.010	1.093	8.288

and Kosovska Mitrovica, and between the respondents in Priština and Gnjilane. Since the questionnaire is not diagnostic, a diagnosis of depression cannot be established based on these results, but we can only detect the persons who have problems that indicate depression and are at greater risk of developing this disease. It can be said, based on the obtained results, that the problems indicating depression are most present and most pronounced among the respondents in Priština, while they are least present among the respondents in North Kosovska Mitrovica.

It is interesting that the average value of positive responses among the respondents in Gnjilane and Priština compared to 1999, when the residents of the two municipalities were subjected to identical studies [16], decreased from 1.9 to 1.1. This can be explained by the fact that the inhabitants, after the initial shock, caused by the well-known events in the specified year, over the years got adapted and external influences became less important in the development of problems that would indicate depression.

In this study the problems with depression are associated with gender, education, self-estimated material condition, abuse and assessment of the political and security situation in the future. These factors are more pronounced in females than in males, in respondents with lower levels of education and in those who are in an unfavorable financial situation, in those who are abused and in those who assess the future political and security situation as highly risky. These results are consistent with the evidence existing in the literature. In the survey “Burden of Disease and Injury in Serbia” conducted in 2002 and 2003 estimation is based on disability-adjusted life year (a composite measure of

health). In this study, unipolar depression is ranked third among women and sixth among men, suggesting that the disease significantly burdens women, and the incidence of this disease is higher in women than in men [3]. Parker and Brotchie [22] in their study came to the conclusion that depression is more common among females as well, but pointed out that this difference in comparison to men decreased as compared to the past. Luxton et al. [23] and Weinberger et al. [24] also concluded the same in their research. Chang-Quan et al. [25] conducted a meta-analysis in order to determine the relationship between education and the risk of depression, which included the data from the literature that consisted of 24 cross-sectional studies and 12 prospective longitudinal studies of 9,494 cases and 50,988 respondents who were in the control group, discovering that the lower level of education was associated with greater risk of morbidity of depression in the elderly. Lee [26] in his research also found that depression is more common among people with lower level of education, but has also established the mechanisms of how education affects the occurrence of depression, concluding that the level of education affects cognitive ability, income, social status, social networking ability and health behavior, and that these factors are associated with the level of education, which affect the risk of depression, simultaneously highlighting the cognitive ability. Talala [27] followed the trend of the relationship of socioeconomic differences and self-rated symptoms related to depression in the period from 1979 to 2002, and confirmed their relationship, which lasted nearly equal in extent to the observed 24-year period. Butterworth et al. [28] examined the relationship between financial difficulties and the occurrence of de-

pression, with its results showing that financial hardship is strongly and independently associated with depression, even when controlling the effects of other measures of socioeconomic status and demographic characteristics. Shamseddeen et al. [29] determined in their research the fact that depression occurrence is linked to abuse, while Miniati et al. [30] found that patients with an experience of abuse in the past and suffering from depression appear to have more severe forms of the disease and the person is harder to cure. There is frequent occurrence of depression in people who have experienced war without participating in it, as confirmed by Bolton et al. [31] in their study of the survivors and displaced persons in Uganda, Neria et al. [32] in the study of the children of Israel in the war in the Gaza Strip in 2008 and 2009, as well as Kashdan et al. [33] in the study of the Albanian survivors in armed conflicts in Kosovo and Metohia.

Possible limitations of this study come from the type of study that examines the relationship between variables in a defined time point, which could call in question variables' causality, since there is no information on their relationship in a prolonged time period. The hypothesis of the research is partly confirmed, since the sample size could be considered a restriction, because bigger sample could be more favorable for detecting more discrete association

as statistically significant. Finally, the declaration of the respondents is subjective, and it may also be a limiting factor in the results interpretation.

## CONCLUSION

The results have showed that depression problems in four municipalities in Kosovo and Metohia are more common among females than among males, among respondents with lower levels of education and those in an unfavorable financial situation, among those who are abused and those who assess the future political and security situation as highly risky. Determining risk groups who are in greater risk to suffer from depression is important for planning, enhancing, promoting and implementing the prevention strategies for this disease.

## NOTE

The data used in this manuscript are part of the doctoral dissertation titled „Assessment of Mental Health of Inhabitants of Politically- and Security-Endangered Territory,“ author Momčilo Mirković.

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## Предиктори проблема са депресијом код одраслих становника који живе на безбедносно угроженој територији

Момчило Мирковић<sup>1</sup>, Слађана Ђурић<sup>1</sup>, Горан Трајковић<sup>2</sup>, Јована Милошевић<sup>1</sup>, Зорица Сојевић Тимотијевић<sup>1</sup>

<sup>1</sup>Универзитет у Приштини, Медицински факултет, Косовска Митровица, Србија;

<sup>2</sup>Универзитет у Београду, Медицински факултет, Београд, Србија

### КРАТАК САДРЖАЈ

**Увод** Уколико се постојећи тренд демографске и епидемиолошке транзиције настави, до 2020. године оптерећење депресијом ће се повећати на 5,7% укупног оптерећења болестима, чиме ће постати други узрок годинама живота коригованих у односу на неспособност (енгл. *disability-adjusted life year – DALY*). Рано откривање особа код којих постоји ризик од развоја било којег менталног поремећаја је изузетно значајно у превенцији свих менталних поремећаја.

**Циљ рада** Циљ рада је био да се утврде предиктори проблема са депресијом код одраслих становника у четири општине на Косову и Метохији насељених претежно српским становништвом.

**Методе рада** Ова студија пресека обухватила је репрезентативни узорак одраслих становника Лепосавића, северне Косовске Митровице, Њилана и Приштине, а урађена је у периоду октобар – новембар 2009. године. Узорак је изабран из спискова становника старијих од 18 година наве-

дених општина. Као инструмент истраживања коришћен је Голдбергов упитник о општем здрављу. Статистичке методе обухватиле су методе дескриптивне статистике, просту и вишеструку линеарну регресију и анализу варијансе, са нивоом значајности од 0,05.

**Резултати** Проблеми са депресијом су значајно више повезани са женским полом ( $OR=2,24$ ), нижим степеном образовања ( $OR=0,50$ ), незапосленосту ( $OR=1,09$ ), лошијом материјалном ситуацијом ( $OR=0,45$ ), злостављањем ( $OR=0,08$ ) и проценом да ће будућа политичка и безбедносна ситуација бити ризичнија ( $OR=3,01$ ).

**Закључак** Препознавање људи код којих је већи ризик да оболе од депресије значајно је у планирању и примени стратегија које треба да помогну у спречавању развоја и ширења ове болести.

**Кључне речи:** превенција; промоција; Голдбергов упитник о општем здрављу (*GHQ-28*)

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