

ORIGINAL ARTICLE

Cross-sectional Study on Suicide in People of Hungarian and Romanian Nationality in Bihor County, Romania

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Abstract. Introduction: Data provided by the “Mina Minovici” National Medico-Legal Institute Bucharest (Romania) demonstrate that most suicidal acts occur in Bucharest, followed by Satu Mare County and Harghita County. According to the 2021 census, more than one-fifth of Bihor County’s population is of Hungarian ethnicity. **Material and methods:** We conducted this study to compare suicidal acts between Romanians and Hungarians. Data were collected from the Bihor County Medico-Legal Service over a time interval from August 1, 2022, to July 31, 2023. **Results:** We found that most suicidal behaviors occurred in men, with an average age of 52 years. More than half of those who committed suicide were Hungarian. However, most women involved in suicidal acts were Romanian. Hanging was identified as the most common method of suicide. **Conclusions:** Although Hungarians represent only one-fifth of the total population in Bihor County, the study indicates that this ethnic group is more susceptible to suicide compared to Romanians.

Keywords: Hungarians, hanging, nationality, Romanians, suicide.

1. INTRODUCTION

Suicide refers to a voluntary and intentional act in which the victim takes his/her own life [1,2]. While suicide can sometimes be prevented, it claims more than 800,000 lives worldwide each year, affecting both younger and older generations [1,3]. As such, suicide remains a significant societal issue, even as interest in mental health has grown across the European Union, including Romania [4].

According to data from the World Health Organization, in 2019, the suicide rate in Romania was 9.74 deaths per 100,000 inhabitants [5]. In comparison, Hungary had a higher suicide rate of 16.65 deaths per 100,000 inhabitants in the same year [5]. Reports from the National Institute of Forensic Medicine “Mina Minovici” Bucharest, Romania, indicate that 2,401 suicides were recorded in Romania in 2019,

showing a decreasing trend compared to previous years [6]. In 2020, most suicides occurred in Covasna, Harghita, and Mures Counties, with Bihor County ranked 12th nationally [2].

The most common methods of suicide worldwide include hanging, followed by pesticide or other substance poisoning [7]. In Romania, hanging remains the most frequently used method [6].

According to the 2021 census, more than one-fifth of Bihor County's population is of Hungarian ethnicity [8]. This study aimed to evaluate the suicide rate in Bihor County, focusing on the two predominant nationalities in the region.

2. MATERIAL AND METHODS

The study was retrospective and observational, analyzing data collected from

the Bihor County Medico-Legal Service over a time period from August 1, 2022, to July 31, 2023. All included cases were classified as violent deaths due to suicide.

In each case, we evaluated the following variables: nationality, environment of origin, sex, age, blood alcohol level, type of suicide, history of suicide attempts, and diagnosed psychiatric disorders. The data were analyzed using Microsoft Excel 2016 and Statistical

Package for the Social Sciences (SPSS) 26. Results were represented in statistical tables and compared with international scientific data.

The primary variable observed was the suicide rate, with the primary goal of comparing suicidal acts between individuals of Romanian and Hungarian nationality in Bihor County, Romania.

3. RESULTS

Of the 473 deaths registered at the Bihor County Medico-Legal Service between August 1, 2022, and July 31, 2023, almost

half were classified as violent deaths (Table 1).

Table 1. Statistical data about suicide in Bihor County Medico-legal Service

	Number of Cases	Percentage
Number of Deaths between 01.08.2022-31.07.2023	473	-
Violent deaths	223	47%
Suicide	48	21%
Suicide Romanian Nationality persons	21	44%
Suicide Hungarian Nationality persons	27	56%
Suicidal acts by months		
August 2022	9	19%
July 2023	11	23%
June 2023	6	12%
May 2023	8	16%

Between August 1, 2022, and July 31, 2023, 48 suicides were recorded at the Bihor County Medico-Legal Service. Most cases involved males, with the majority originating from rural areas.

The ages of individuals in the study ranged from 21 to 81 years. Among people of Romanian nationality, ages ranged from 23 to 81 years, while those of Hungarian ethnicity ranged from 22 to 81 years. The most affected age group among Romanians was the fifth decade (40–49 years), followed by individuals aged 70 and above. The least affected age groups were the second (10–19

years) and third (20–29 years) decades, with two cases each.

For Hungarians, the fifth decade was also the most affected, with nine cases, followed by the fourth decade (30–39 years), which accounted for six cases. Similar to Romanians, the least affected decades were the second (three cases) and third (two cases). The average age of Romanian individuals was 53 years. A t-test was performed to compare the mean age observed in our study with the mean age documented in international literature. The analysis revealed that the difference between the two means

was statistically significant ($p = 0.005$) (Tables 2, 3).

Table 2. Descriptive statistics in people of Romanian nationality

Descriptive statistics people of Romanian Nationality				
	Number	Mean	Standard Deviation	Standard Error Mean
Age Rom.	21	53.3333	16.82359	3.67121

Table 3. Simple T test in people of Romanian nationality

One-Sample Test						
Test Value = 65						
	t	Degrees of freedom	Significance (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Age Rom.	-3.178	20	0.005	-11.66667	-19.3247	-4.0087

A simple t-test was performed for people of Hungarian nationality to observe if there is any difference between the mean age resulted from our data and the mean age documented

from the international literature. No significant statistical difference was observed between the two age means (Tables 4, 5).

Table 4. Descriptive statistics people of Hungarian nationality

Descriptive statistics people of Hungarian nationality				
	Number	Mean	Standard Deviation	Standard Error Mean
Age Hun.	27	50.6296	14.97472	2.88189

Table 5. Simple t-test people of Hungarian nationality

One-Sample Test						
Test Value = 55						
	t	Degrees of freedom	Significance (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
Age Hun.	-1.516	26	0.141	-4.37037	-10.2942	1.5534

Other population data are presented in Table 6.

Table 6 . Population data regarding suicidal acts in Bihor County (01.08.2022-31.07.2023).

Nationality/sex			
Romanian (sex) n/%	21/ 44%	Hungarian (sex) number/%	27/56%
F, number/%	3/ 14%	F	2/ 8%
M, number/%	18/ 86%	M	25/ 92%
Environment of origin			

Rural, number/%	31/ 65%	Urban, number/%	17/ 35%
Psychiatric disorders, number/%		Romanians, number/%	Hungarians, number/%
NO	38/ 80%	17/ 45%	21/ 55%
YES	10/ 20%	4/ 40%	6/ 60%
Depression, number/%	7/ 70%	2/ 29%	5/ 71%
Anxiety, number/%	3/ 30%	2/ 66%	1/ 33%
Blood alcohol		Romanians, number/%	Hungarians, number/%
NO	34/ 71%	16/ 76%	18/ 68%
YES	14/ 29%	5/ 24%	9/ 32%
Suicidal attempts, number/%		Romanians, number/%	Hungarians, number/%
NO	44/ 71%	19/ 80%	25/ 93%
YES	4/ 9%	2/ 10%	2/ 7%
Type of suicide, number/%		Romanians, number/%	Hungarians, number/%
Hanging		20/ 95%	27/ 97%
CO poisoning, burns		0	1/ 3%
Pesticides poisoning		1/ 5%	0

Although the data obtained did not show statistically significant results (Table 6), the p-value, which is very close to 0.05, suggests that alcohol consumption may be associated

with the development of suicidal ideation, leading to self-harm or death by suicide in both nationalities.

Table 7. Independent t-test.

Independent Samples Test										
		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Significance	t	Degrees of freedom	Significance (2-tailed)	Mean Difference	Standard Error Difference	95% Confidence Interval of the Difference	
									Lower	Upper
Blood alcohol	Equal variances assumed	3.827	0.057	1.161	46	.252	0.41386	0.35641	-.30355	1.13127
	Equal variances not assumed			1.213	45.545	.231	0.41386	0.34106	-.27285	1.10057

Data about suicide obtained in our study show that the mortality rate among people of Hungarian nationality (22.1 people per

100,000 inhabitants) is three times higher compared with Romanians (6 people per 100,000 inhabitants).

4. DISCUSSION

The act of suicide remains a significant issue worldwide. Recent studies indicate that the most common social factors predisposing individuals to suicide are loneliness, social isolation, and mental alienation [3,9]. Additional contributing factors include financial instability, substance addictions (alcohol or drugs), family-related challenges, and other issues [10,11].

Among European countries, Hungary ranks 9th in suicide mortality, a notably higher position compared to Romania, which is ranked 31st [12]. Considering that, according to the 2021 census, approximately one-fifth of Bihor County's population identifies as Hungarian, this study sought to compare the suicide mortality rate between the Romanian and Hungarian populations in the county to examine whether this trend applies to the Hungarian minority in the region. Between October 1, 2022, and July 31, 2023, the Bihor County Medico-Legal Service reported 48 suicide deaths, representing 21% of all violent deaths in the region, with over half of the victims identified as Hungarian.

International statistical data, alongside findings from our study group, indicate that the majority of individuals who died by suicide are male across both nationalities [13–15]. All individuals in the study were adults, ranging in age from 22 to 81, with no significant age differences observed between Romanians and Hungarians. A substantial proportion of the deceased originated from rural areas. Most suicides occurred during late spring and summer, a seasonal pattern corroborated by other specialized studies [11,16].

The average age of Hungarian individuals who died by suicide in Bihor County was slightly over 50 years, consistent with data from recent studies [17]. We found no statistically significant difference between this average age and those reported in international studies [17]. In contrast, the average age of Romanian individuals was 53 years, close to that of the Hungarian population but significantly lower

than the average age reported in recent specialized studies [3], demonstrating statistically significant differences.

The study revealed minor differences regarding documented psychiatric disorders. Fewer than 10% of individuals from both populations had a prior diagnosis of depression or anxiety.

While the analytical database did not yield statistically significant results concerning alcohol consumption, the p-value—nearing 0.05—suggests that alcohol consumption may play a role in fostering suicidal ideation among both populations. Hanging emerged as the preferred method of suicide for both nationalities, aligning with findings from national and international literature [18,19].

Given that the Hungarian population constitutes a significant ethnic minority in Bihor County (approximately one-fifth of the total population according to the 2021 census), the study's findings are particularly concerning. The suicide mortality rate for this ethnic minority is three times higher (22.1 deaths per 100,000 inhabitants) than that of the Romanian population (6 deaths per 100,000 inhabitants) and twice as high as the national rate in Hungary (11.8 deaths per 100,000 inhabitants).

5. CONCLUSIONS

Suicide in Bihor County represents nearly one-fifth of all violent deaths, with the Hungarian population surpassing the Romanian population in this regard. Despite constituting only one-fifth of the county's total population, the Hungarian ethnic minority is three times more likely to die by suicide compared to the Romanian population. Additionally, individuals of Hungarian ethnicity in Bihor County are twice as likely to resort to suicide compared to those in Hungary. These findings align with the latest data on suicide pathology in Bihor County. Over time, the suicide mortality rate has undergone notable changes at regional, national, and international levels.

conceived the original draft preparation. A.S.M., A.C., R.O., N.V., C.J.P. and C.B. were responsible for the data acquisition,

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collection and assembly of the articles. A.S.M., A.C., R.O., N.V., C.J.P. and C.B. were responsible for the conception and design. A.S.M. was responsible with the supervision of the manuscript.

Compliance with Ethics Requirements:

“The authors declare no conflict of interest regarding this article”.

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