

Alcohol as a Potential Predictor of East-West Gradient in the Suicide Rates in Europe

Razvodovsky YE^{1*} and Kandrychyn SV²

¹International Academy of Sobriety, Grodno, Republic of Belarus.

²Minsk Regional Hospital, Minsk, Belarus.

Corresponding Author Information

Razvodovsky YE

International Academy of Sobriety, Grodno, Republic of Belarus.

Received: November 01, 2025; **Accepted:** December 02, 2025; **Published:** December 10, 2025

Copyright: © 2025 Author. This is an open access article distributed under the terms of the Creative Commons Attribution 4.0 International license.

Citation: Razvodovsky YE, Kandrychyn SV. Alcohol as a Potential Predictor of East-West Gradient in the Suicide Rates in Europe. Clin Med Microbiol. 2025; 1(1):1-3.

ABSTRACT

Background: Alcohol abuse is a risk factor for suicidal behavior. Until now, there are no convincing explanations for the East-West gap in the suicide rates in Europe.

Objective: To assess the role of alcohol as a potential predictor of the gradient of suicide rates in Europe.

Materials and Methods: The analysis was carried out using the indicators of the WHO database selected for the period from 1990 to 2020 (suicide mortality rate, alcohol-related mortality rate).

Results: The suicide mortality closely correlates with the alcohol-related mortality in Western and Eastern European countries. In addition, the East-West gradient in the suicide rates closely correlates with the East-West gradient in the alcohol-related mortality rate.

Conclusions: These findings confirm the existing idea that alcohol makes a significant contribution to the burden of suicide mortality in the European region. These results also suggest that alcohol is a key predictor of the East-West gap in suicide rates.

KEYWORDS

Suicide, Alcohol-related mortality, East-West gradient, Europe.

Introduction

Suicide remains one of the main causes of violent death in Europe [1]. Although suicide rates have been declining in most European countries in recent years, they remain quite high in the former Soviet Union (Lithuania, Belarus, Russia, and Ukraine) [1-3].

The main cause of suicidal behavior is mental pathology, including alcohol dependence [8]. A close connection between alcohol and suicide in European countries has been shown at both the

individual and population levels [3-6]. At the same time, the alcohol-attributable fraction of suicide mortality in Eastern European countries is significantly higher than in Western European countries [7]. There is also evidence that alcohol is a key determinant of the gradient in the suicide rates between Eastern and Western European countries [9].

The aim of the present study was to analyze the relationship between alcohol and suicide at the population level in Western and

Eastern European countries.

Materials and Methods

The analysis was performed using standardized indicators of suicide mortality and mortality from alcohol-related causes for the period from 1990 to 2020 contained in the WHO database. The relationship between suicide and alcohol-related mortality rates were assessed separately for Western and Eastern European countries using Pearson correlation analysis. Statistical data processing was performed using the Statistica 12. Stat Soft software package.

Results

Between 1990 and 2020, the suicide rates in Western and Eastern Europe decreased by 29.8% and 35.5%, respectively. The suicide rates in Western Europe decreased linearly (Figure 1). In Eastern Europe, this indicator increased sharply in the mid-1990s, after which it showed a downward trend, against the background of which an oscillation was observed in 2008-2009 (Figure 1). During the same period, the alcohol-related mortality rates in Western and Eastern Europe decreased by 49.6% and 49.9%, respectively. The graphical evidence suggests similar trends in the suicide and alcohol mortality rates in Western and Eastern Europe (Figure 2).

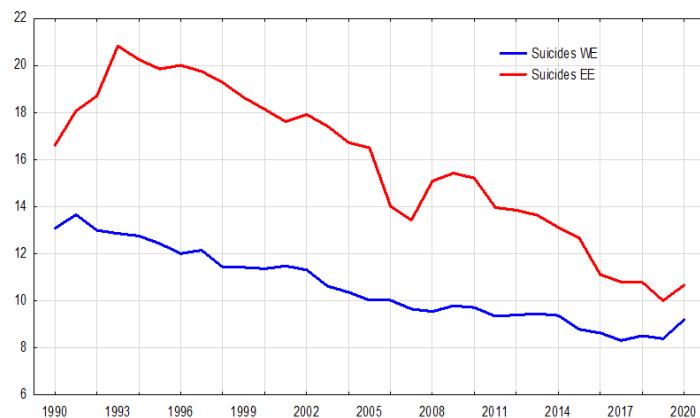


Figure 1: Trends in the suicides rate in the European region between 1990 and 2020.

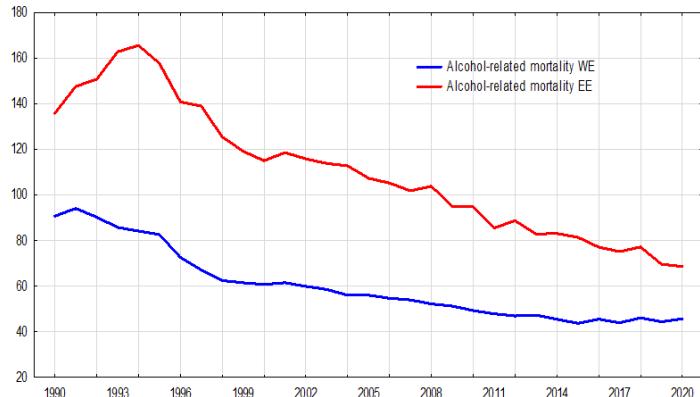


Figure 2: Trends in the alcohol-related mortality rate in the European region between 1990 and 2020.

During the period under review, the suicide rates, as well as the alcohol mortality rates in Eastern Europe, significantly exceeded the same indicator in Western Europe. The East-West gradient in suicide rates and alcohol-related mortality rates during the period under review decreased by 57.1% and 49.2%, respectively (Figure 3).

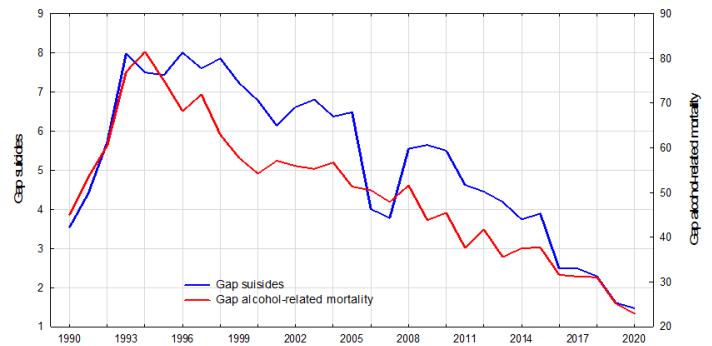


Figure 3: Trends in the East-West gap in the suicide rates and alcohol-related mortality rates in Europe.

The results of the correlation analysis suggest a close relationship between the suicide and the alcohol-related mortality rates in Western ($r=0.99$; $p<0.000$) and Eastern ($r=0.99$; $p<0.000$) Europe. In addition, the East-West gradient in the suicide rates closely correlates with the East-West gradient in the alcohol-related mortality rates ($r=0.99$; $p<0.000$).

Discussion

The decline in suicide rates in Europe over the past decades has not been convincingly explained. It is assumed that the reasons for this trend may be the general improvement in the health of the population, as well as the implementation of national suicide prevention programs [10]. It seems plausible, that significant fluctuations in the suicide rate in Eastern European countries were due to socio-economic factors. The sharp increase in this indicator in the first half of the 1990s was due to the socio-economic crisis caused by the collapse of the Soviet Union [9]. The oscillation of the suicide rates in 2008-2009 is associated with the global financial crisis. It should be noted that in Western European countries there was no surge in suicidal activity during this period [1].

Conclusion

In conclusion, parallel trends in suicide and alcohol-related mortality rates indirectly indicate that the decline in suicide rates observed in recent decades in Europe was largely due to a decline in alcohol-related problems. In addition, the close relationship between the gradient in the suicide rates and the gradient in alcohol-related mortality rates between Eastern and Western European countries suggests that alcohol is a key factor in the existence of the East-West gap in suicides rate.

References

1. Kandrychyn SV, Razvodovsky YE. The spatial regularities of violent mortality in European Russia and Belarus: ethnic and historical perspective. *J Psychiatry*. 2015; 18:305.
2. Landberg J. Alcohol and suicide in Eastern Europe. *Drug Alcohol Rev*. 2008; 27:361-373.
3. Mäkinen IH. Eastern European transition and suicide mortality. *Soc Sci Med*. 2000; 51:1405-1420.
4. Norstrom T. Alcohol and suicide: a comparative analysis of France and Sweden. *Addiction*. 1995; 90:1463-1469.
5. Pridemore WA. Heavy drinking and suicide in Russia. *Soc Forces*. 2006; 85:413-430.
6. Ramstedt M. Alcohol and suicide in 14 European countries. *Addiction*. 2001; 96:59-75.
7. Razvodovsky YE. Alcohol and suicide in Belarus. *Psychiatr Danub*. 2006; 18:290-296.
8. Razvodovsky YE. Blood alcohol concentration in suicide victims. *European Psychiatry*. 2010; 25:1374.
9. Varnik A, Wasserman D, Dankowicz M, Eklund G. Age-specific suicide rates in the Slavic and Baltic regions of the former USSR during perestroika, in comparison with 22 European countries. *Acta Psychiatr Scand Suppl*. 1998; 34:20-25.
10. Ngavi N. Global, regional, and national burden of suicide mortality 1990 to 2016: systematic analysis for the Global Burden of Disease Study 2016. *BMJ*. 2019; 364:194.