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Research Article

Alcohol Psychoses and Gender Gap in Suicide Rates in the Former Soviet Republics

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Abstract

Background: Across most countries, suicide rates are significantly higher for men compared to women, while women typically have higher rate of suicidal attempts. The gender difference in the suicide rates is particularly large in the Eastern European countries. There is suggestive evidence of a crucial role of harmful drinking in explanation of this phenomenon.

Objective: In present study we will test the hypothesis of the close aggregate level link between harmful drinking and gender gap in suicide mortality rates in the former Soviet republics Russia, Ukraine and Belarus using data on sex-specific suicide rates and alcohol psychoses incidence rates between 1980 and 2010.

Method: Time-series analytical modelling techniques were used to examine the relationship between trends in the incidence of alcohol psychoses rates (independent variable) and gender gap in suicide mortality (dependent variable).

Results: According to the results of correlation analysis, there is strong positive relationship between alcohol psychoses and gender gap in suicide mortality in Russia ($r=0,91;p<0,000$), Ukraine ($r=0,71;p<0,000$) and Belarus ($r=0,90;p<0,000$).

Conclusions: The outcomes of this study provide indirect support for the hypothesis that harmful drinking is a major contributor to the high gender gap in suicide mortality and its dramatic fluctuations in the former Soviet republics during the last few decades.

Keywords: Alcohol Psychoses; Suicides; Gender Gap; Russia; Ukraine; Belarus; 1980-2010.

Introduction

Gender inequality in mortality rates is a well-documented phenomenon [1]. To date, no single explanation has accounted for discrepancies between male and female mortality rates and many unanswered questions remain. It is obvious that the health inequality between men and women reflects the interplay between sex-related biological and social factors [2]. Therefore, investigations are needed to identify determinants affecting the health of men and women and gender differences in exposure and vulnerability to them. A gender-sensitive approach to health means to distinguish the relative importance of the structural, behavioural and psychosocial determinants of health [3].

In most countries, suicide rates are significantly higher for men compared to women, despite women engaging more frequently in suicide attempts [4]. In the European region, the average male-to-female rate ratio of suicides is 3.5:1 [5]. Among the European countries, the gender gap in suicide mortality is particularly high in the republics of the former Soviet Union [6]. In these republics, male suicide rates exceed those for women by a ratio of more than 5 to 1 [7,8]. The extreme gender imbalance in these countries is due to high suicide rates for men and relatively low suicide rates for women [8,9]. The reasons behind such a drastic gender difference in suicide rates in this region are still poorly understood.

Some researchers attribute the suicide-gender paradox in the former Soviet countries to harmful drinking [10-12]. In these countries, men are more prone to high rates of harmful drinking of distilled spirits, which can contribute to higher suicide rates among them [13-15].



In line with this evidence we assume that combination of high level of alcohol consumption per capita [16] and binge drinking pattern [17] results in a close link between alcohol psychoses incidence rate (as a proxy for harmful drinking) and gender gap in suicide mortality at the aggregate level in the former Soviet republics.

The present study aims to estimate whether harmful drinking is able to explain the dramatic fluctuations in the gender gap in suicide mortality the former Soviet republics in Russia, Ukraine and Belarus from the late Soviet to post-Soviet period. More specifically, this study focuses on a comparative analysis of alcoholic psychoses incidence and gender gap in suicide trends in these countries between 1980 and 2010.

Methods

Data. The data on suicide rates (per 100.000 of the population) and data on alcoholic psychoses incidence rates (per 100.000 of the population) were taken from the WHO mortality database. In this study the alcohol psychoses incidence rate was used as a proxy for harmful drinking. We specified the number of persons admitted to hospital for the first time as incidence of alcoholic psychoses: (ICD-10: F 10). Since alcoholic psychosis is a disease in which patients are usually admitted to hospital, first admission figures are good proxy of the real incidence [17].

Statistical Analysis. To examine the relation between trends in alcohol psychoses incidence rates and gender gap in suicide rates across the study period a time series analysis was performed using the statistical package “Statistica 12. StatSoft.” The dependent variable was the suicide mortality and the independent variable was alcohol psychoses rate. Bivariate correlations between the raw data from two time series can often be spurious due to common sources in the trends and due to autocorrelation. One way to reduce the risk of obtaining a spurious relation between two variables that have common trends is to remove these trends by means of a “differencing” procedure. This is subsequently followed by an inspection of the cross-correlation function in order to estimate the association between the two prewhitened time series. It was Box and Jenkins [18] who first proposed this particular method for undertaking a time series analysis between the time series.

Results

Across the whole period the average gender gap in suicide mortality for Russia, Ukraine and Belarus was 1:5,6; 1:5,7 and 1:6,0, while the average alcoholic psychoses incidence rates was 30.8±15.9, 18.7±8.9 and 16.8±6.1 per 100.000 respectively. Since the early 1980s, the average gender gap in suicide rates in these countries has undergone sharp fluctuations (Figure 1).

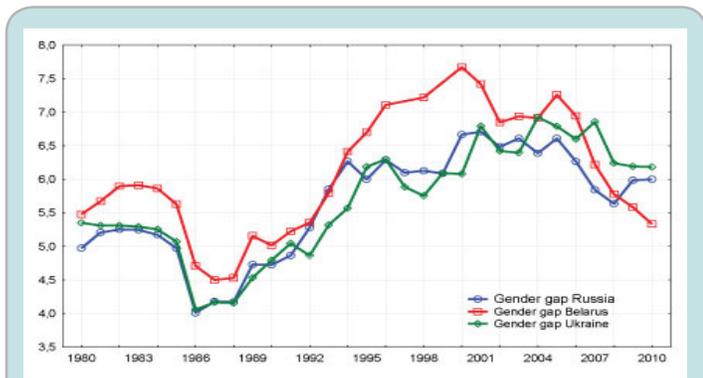


Figure 1: Trends in the gender gap in suicide mortality in Russia, Ukraine and Belarus between 1980 and 2010.

In general, the temporal pattern of gender gap in suicide mortality fluctuations was similar for three countries: sharp decrease in the mid of 1980s, dramatic increase in the 1990s followed by a decline. While the trends in the gender gap have been similar in three countries during the Soviet period, there was significant discrepancy after the collapse of the Soviet Union in 1991. In particular, in Belarus, the gender gap in suicide rates increased steadily up to 2000, reaching an all-time high, and then started to decrease. The graphical evidence suggests that in all countries, the temporal pattern of alcoholic psychoses incidence rate fits closely with the changes in the gender gap in suicide mortality (Figures 2-4).

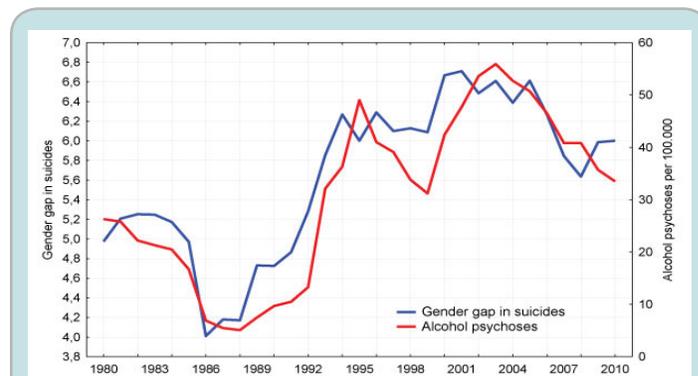


Figure 2: Trends in the gender gap in suicide mortality and alcohol psychoses incidence rates in Russia between 1980 and 2010.

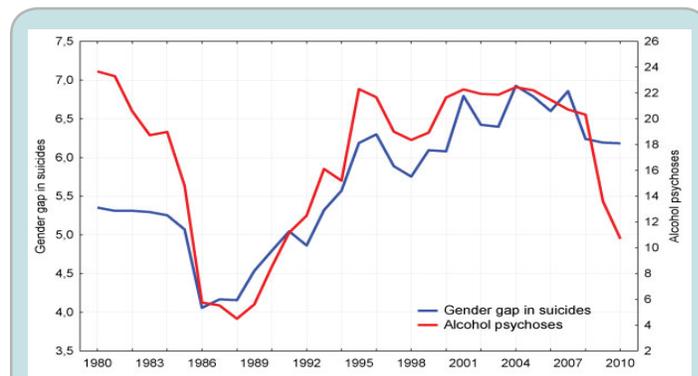


Figure 3: Trends in the gender gap in suicide mortality and alcohol psychoses incidence rates in Ukraine between 1980 and 2010.

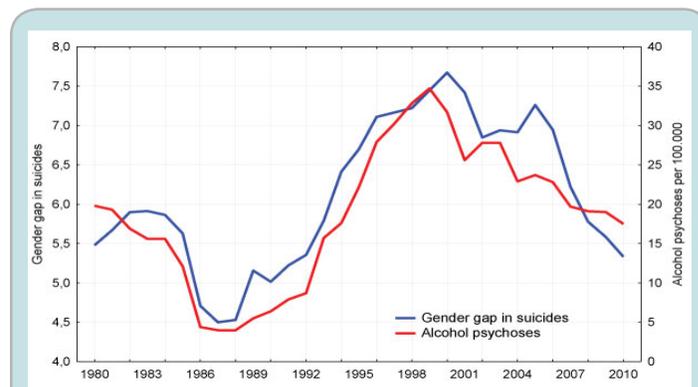


Figure 4: Trends in the gender gap in suicide mortality and alcohol psychoses incidence rates in Belarus between 1980 and 2010.

A Spearman's rank correlation analysis suggests a positive association between alcoholic psychoses incidence and gender gap in suicide mortality rates in Russia ($r=0.91$; $p<0.000$), Ukraine ($r=0.71$; $p<0.000$) and Belarus ($r=0.90$; $p<0.000$). There was a strong trend in the time series across the study period. This trend was removed by means of a first order differencing procedure. After pre-whitening the cross-correlations between alcohol psychoses and gender gap in suicide mortality time series were inspected. The outcome indicates statistically significant cross-correlation between two time series in Russia ($r=0.47$; $SE=0.183$), Ukraine ($r=0.65$; $SE=0.183$) and Belarus ($r=0.60$; $SE=0.183$) at lag zero.

Discussion

According to the results of the time series analysis, there was a positive relation between alcohol psychoses and gender gap in suicide rates at the aggregate level in Russia, Ukraine and Belarus across the study period. The magnitude of this effect was similar in all three countries. The findings of present study, which suggest a positive and statistically significant effect of harmful drinking on gender gap in suicide rates, are in agreement with the empirical evidence suggesting that alcohol is responsible for the gender paradox of suicidal behaviour in the former Soviet republics. It seems plausible that the gender gap in suicide mortality was affected by the restriction of alcohol availability during the anti-alcohol campaign in the 1985-1988 [19]. By contrast, the collapse of the Soviet Union and the ending of the state's alcohol monopoly in the early 1990s were associated with a sharp rise in the gender gap [20].

Before concluding, some potential limitations of this study must be acknowledged. It should be recognized that socio-structural factors also might have contributed to the gender paradox of suicidal behaviour in the former Soviet republics. It was hypothesized, that psychosocial distress may be an important factor behind the widening gender gap in suicide rates during the transition period [21]. Compelling evidence suggests, that men were more prone to respond to stressful situations with maladaptive behaviour, such as harmful drinking that may contribute to the greater gap in suicide mortality in the former Soviet republics during the socioeconomic crisis, when men are faced with the disruption of the traditional male role as a breadwinner [22,23]. In contrast, women are more successful in developing strategies to cope with stress than men [24]. So, psychosocial distress might be a powerful confounder in the alcohol-gender gap in suicide mortality association.

In conclusion, harmful drinking appears to play an important role in the high gender gap in suicide mortality and its dramatic variations in the former Soviet republics during the last few decades. High level of alcohol consumption and detrimental drinking pattern point to the need for public health interventions to reduce the burden of suicide mortality in the former Soviet republics.

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