



Binge Drinking And Gender Gap In All-Cause Mortality In Russia

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Abstract

Background: There is considerable variability in the magnitude of gender gap in all-cause mortality across Europe. Russia has one of the highest gender differences in all-cause mortality among European countries.

Objective: This study examines the aggregate level effect of binge drinking on the gender gap in all-cause mortality in Russian.

Method: Trends in male fatal alcohol poisonings rate (as a proxy for binge drinking) and gender gap in all-cause mortality from 1956 to 2015 were analyzed employing a distributed lags analysis in order to assess bivariate relationship between the two time series.

Results: The results indicated that there is a statistically significant relationship between the variables at lag zero ($r = 0.88$; $SE = 0.13$).

Conclusions: This study highlights the key role of binge drinking in extremely high gender gap in all-cause mortality and its dramatic fluctuations in Russia during the last few decades.

Keywords: Fatal Alcohol Poisonings; Gender Gap; All-Cause Mortality; Russia; 1956-2015

Introduction

Epidemiological evidence suggests that women report poorer health but live longer than men in nearly all countries of the world [1-4]. Different explanations have been proposed for the so-called male-female health survival paradox, including biological, social and behavioral hypotheses [11-13].

There is considerable variability in the magnitude of gender gap in all-cause mortality across Europe [11]. Russia has one of the highest gender differences in all-cause mortality among European countries [13]. A strong male-female health survival paradox in Russia is attributed to the excess male cardiovascular, alcohol-related and violent mortality [5-10]. There is general agreement that behavioral risk factors (binge drinking and smoking) along account for extremely high male mortality in this country [4-6]. This suggests that binge drinking may play an important role in explaining the high gender gap in all-cause mortality in the Russian Federation.

This study examines the aggregate level effect of binge drinking on the gender gap in all-cause mortality in Russian.

Methods

Data on age-adjusted sex-specific all-cause mortality and male alcohol poisonings mortality rates (per 1000,000 of the population) between 1956 and 2015 are taken from the Russian State Statistical Committee (Rosstat). To examine the relation between trends in alcohol poisonings mortality rate (as an indicator of binge drinking) and gender gap in all-cause mortality across the study period a time series analysis was performed using the statistical package "Statistical 12. Stat Soft". I used an unconstrained polynomial distributed lags analysis to evaluate the relationship between the time series of fatal alcohol poisonings (independent variable) and gender gap in all-cause mortality (dependent variable) in this paper.

Results

The time trend of gender gap in all-cause mortality is displayed in figures 1. The trend fluctuated substantially over time: it in-

creased from 1965 to 1980, decreased markedly between 1980-1982, dropped sharply between 1984-1988, then jumped dramatically between 1992 and 1994. From 1994-1998 there was a fall in the gender gap of before it again rose between 1998 and 2003, and then finally started to decrease. The time trend of fatal alcohol poisonings showed parallel fluctuations over time (Figures 1).

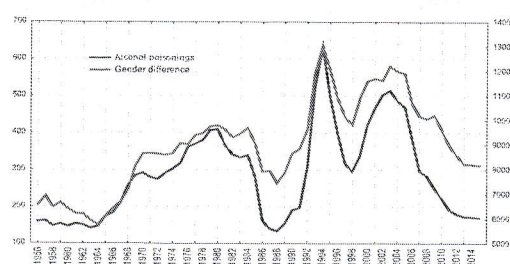


Figure 1: Trends in the gender gap in all-cause mortality (right scale) and alcohol poisonings mortality (left scale) in Russia between 1956 and 2015.

The Spearman's correlation analysis suggests a strong association between the gender gap in all-cause mortality and fatal alcohol poisonings ($r = 0.89$; $p < 0.000$). There were sharp trends in the time series data across the entire study period. These systematic variations were well accounted for by the application of first-order differencing (Figure 2). After pre-whitening the cross-correlations between fatal alcohol poisonings and gender gap in all-cause mortality rates, time series were inspected. The results indicated that there is a statistically significant relationship between the variables at lag zero ($r = 0.88$; $SE = 0.13$). The results of the distributed lags analysis suggest that only contemporaneous correlation (lag 0) is statistically significant ($r = 0.93$; $p = 0.000$).

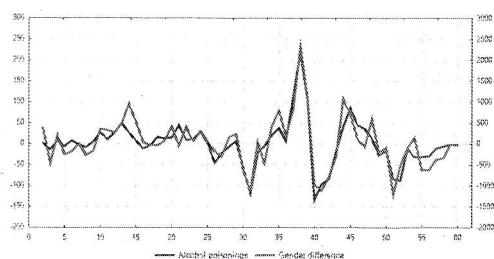


Figure 2: Trends in the gender gap in all-cause mortality (right scale) and alcohol poisonings mortality (left scale) in Russia between 1956 and 2015 after differencing procedure.

Discussion and Conclusion

This study provides direct empirical evidence that temporary changes in binge drinking are likely to underlie the variations in the gender gap in all-cause mortality in Russia. The results of the time series analysis also support binge drinking hypothesis. This hypothesis suggests that binge drinking accounts for a substantial part of the gender difference in all-cause mortality in the Russian Federation.

Before concluding, some potential limitations of this study must be mentioned. It was suggested that other factors account for a large proportion of the gender gap in all-cause mortality in Russia. In particular, previous research indicated that higher prevalence of smoking among men was a major cause of gender difference in all-cause mortality in this country [3]. However, taking into account the fact that smoking has a long term effect on mortality, this factor alone cannot explain the trajectories in the gender gap in Russian mortality during the last decades.

In conclusion, this study highlights the key role of binge drinking in extremely high gender gap in all-cause mortality and its dramatic fluctuations in Russia during the last few decades. In relation to this, the Russian government needs to develop the effective alcohol control policy to address the high gender gap in all-cause mortality.

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