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Population Drinking and Gender Gap in Cardiovascular Mortality in Europe

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ABSTRACT

Mortality from cardiovascular disease (CVD) remains substantially higher among men than among women across a range of countries that have very different economic, social and cultural background.

Objective: This study aims to test the hypothesis that alcohol plays an important role in explaining the gender gap in CVD mortality in Eastern Europe.

Methods: The male-to-female ratio of CVD mortality and the level of alcohol consumption per capita in Western and Eastern European countries were compared.

Results: The results of the correlation analysis indicate statistically significant relationship between alcohol consumption per capita and gender gap in CVD mortality in Eastern Europe (r=0.84; p=0.001). The relationship between alcohol consumption and gender gap in CVD mortality in Western Europe is also positive, but statistically non-significant (r=0.23; p=0.09).

Conclusion: Alcohol appears to play an important role in the gender gap in CVD mortality in the countries of Eastern Europe.

INTRODUCTION

Cardiovascular disease is the largest contributor to the morbidity and mortality in Europe [1]. The burden of CVD mortality in Europe shows a significant geographical inequality. The highest rates of CVD mortality were found in the Eastern European countries [2].

Mortality from CVD remains substantially higher among men than among women across a range of countries that have very different economic, social and cultural background [3]. The reasons underpinning sex differences in CVD mortality rates are not fully understood. It was suggested, however, that differences in unhealthy behavior, including cigarette smoking and harmful drinking, were more important determinants of the excess male mortality than sex differences in physiology [4,5]. In this context, assessing the contribution of alcohol to the gender gap in CVD mortality may provide insight into the determinants of mortality disparity across Europe.

The level of alcohol-related problems differs substantially across Europe, with Eastern European countries experiencing higher burden of alcohol-attributable morbidity and mortality than Western European countries [6]. Given the fact, that in Eastern Europe mortality from CVD is closely related to harmful drinking [7,8] and that the level of alcohol consumption is significantly higher among men compared with women [9], it is logical to assume that alcohol is one of the main driver of gender gap in CVD mortality in this region.

This study aims to test the hypothesis that alcohol plays an important role in explaining the gender gap in CVD mortality in Eastern Europe.

METHODS

Age-standardized male and female CVD rates per 100.000 for the 45 European countries were taken from the WHO Mortality Database. Data on alcohol consumption (in litres of pure alcohol per person age 15 years and older) were taken from the Global Information System on Alcohol and Health of WHO. The male-to-female ratio of CVD mortality (the five-year average from 2010 to 2014) was calculated. The comparison in the gender gap in CVD mortality was made between Western (n 21) and Eastern (n 24) European countries (t-test). In addition, the male-to-female ratio of CVD mortality and the level of alcohol consumption per capita in Western and Eastern European countries were compared. To examine the relationship between alcohol consumption

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and gender gap in CVD mortality a Pearson two-tailed correlation analysis was performed using the statistical package "Statistica 12. StatSoft."

RESULTS

Table 1 shows the mean male/female ratio of CVD mortality and the mean level of alcohol consumption per capita for Western and Eastern European countries. Across the whole period the average gender gap in CVD mortality for Western and Eastern Europe was 1.52 ± 0.26 and 1.57 ± 0.45, respectively, while the average level of alcohol consumption per capita was 1.8 ± 0.18 and 3.1 ± 0.35 L, respectively. The results of the correlation analysis indicate statistically significant relationship between alcohol consumption per capita and gender gap in CVD mortality in Eastern Europe (r=0.84; p=0.001). The relationship between alcohol consumption and gender gap in CVD mortality in Western Europe is also positive, but statistically non-significant (r=0.23; p=0.09).

Table 1. Comparison of alcohol consumption per capita and indices of gender difference in standardized death rates (male/female per. 100.000) from CVD in the groups of Eastern and Western European countries; t-test.

	Western Europe (n=21)		Eastern Europe (n=24)	
	Mean	**m**	**Mean**	**m**
Alcohol consumption**	1.79	0.18	3.12	0.35
Gender gap in CVD mortality*	1.52	0.26	1.57	0.45

*Note: t-test; * p<0.05; ** p<0.01; m: Std. Error Mean*

DISCUSSION

The results of the analysis indicate that alcohol has a greater impact on the gender gap in CVD mortality in the Eastern European countries than in the Western European countries. This finding is not surprising, since the Eastern European countries have higher overall level of alcohol consumption and more detrimental drinking pattern [9]. It should be also emphasized that there is greater difference between genders in the level of alcohol consumption in Eastern Europe compared with Western Europe. In all regions of Europe the level of alcohol consumption in women is lower than in men, but this difference is more pronounced in Eastern Europe [10].

Before concluding, some potential limitations of this study must be addressed. It should be recognized that other factors also might have contributed to the gender gap in CVD mortality. Smoking continues to be the most important contributor to the gender differences in mortality across Europe, particularly in the western part of the region [4]. According to estimates, smoking-related deaths typically account for around 40% to 60% of the gender gap in all-cause mortality in Western Europe, while alcohol-related mortality account for 10% to 20% of the gender gap [11]. In Eastern Europe alcohol-related deaths account up to 30% of the gender gap in all-cause mortality [11].

CONCLUSION

In conclusion, the findings of this study suggest a positive relationship between population drinking and gender gap in CVD mortality in the countries of Eastern Europe. Alcohol appears to play an important role in the gender gap in CVD mortality in this region. High level of alcohol consumption and detrimental drinking pattern point to the need for public health interventions to reduce the burden of alcohol-related mortality in the countries of Eastern Europe.

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