Full length article

# Correlates of frequent alcohol consumption among middle-aged and older men and women in Russia: A multilevel analysis of the PrivMort retrospective cohort study

Alexi Gugushvili[a,*], Aytalina Azarova[b], Darja Irdam[b], Whitney Crenna-Jennings[c], Michael Murphy[d], Martin McKee[e], Lawrence King[f]

[a] Department of Social Policy and Intervention and Nuffield College, University of Oxford Barnett House, 32 Wellington Square, Oxford, OX1 2ER, UK
[b] Department of Sociology, University of Cambridge, 16 Mill Lane, Cambridge, CB2 1SB, UK
[c] University College London, Gower Street, London, WC1E 6BT, UK
[d] London School of Economics and Political Science, Houghton Street, London, WC2A 2AE, UK
[e] London School of Hygiene and Tropical Medicine, Keppel Street, London, WC1E 7HT, UK
[f] University of Massachusetts, 300 Massachusetts Ave, Amherst, MA, 01003, USA

## ARTICLE INFO

## ABSTRACT

*Background:* A large proportion of premature deaths in Russia since the early 1990s, following the transition from communism, have been attributed to hazardous drinking. Little is known about the correlates of alcohol consumption. We present new data on the consumption of alcoholic beverages among middle-aged and older Russians and identify socio-demographic, socio-economic, and life-course correlates of frequent drinking.
*Methods:* Within the framework of the PrivMort project, conducted in 30 industrial towns in the European part of Russia, we acquired information on the frequency of drinking among 22,796 respondents and 57,907 of their surviving and deceased relatives. We fit three-level mixed-effects logistic regression models of frequent drinking in which respondents' relatives, aged 40 and over, are nested in their families and towns.
*Results:* Deceased male relatives consumed alcohol significantly more often, while deceased female relatives consumed alcohol significantly less often than the respondents of corresponding gender. In a multivariable analysis, we found that individuals' education, communication with family members, labour market status, history of unemployment, and occupational attainment are all significant correlates of frequent drinking in Russia. These associations are stronger among men rather than among women.
*Conclusion:* There are significant differences between frequency of drinking among surviving and deceased individuals and frequent drinking is associated with a wide array of individual socio-demographic, socio-economic, and life course factors that can partially explain high alcohol consumption in post-communist Russia.

## 1. Introduction

The post-communist transition in Russia in the beginning of the 1990s was associated with the greatest surge in mortality of humanity in recorded history outside of war, famine or pestilence (Gustafson, 1999). There is now extensive evidence that many of these premature deaths were linked directly to hazardous alcohol consumption, resulting from conditions such as alcohol poisoning, heart disease, and cirrhosis (Leon et al., 2009, 2007; McKee, 1999; Stickley et al., 2011), or indirectly, from alcohol-related suicides, homicides, accidents, and risky health behaviours (Cepeda et al., 2013; Nemtsov, 2003; Shkolnikov et al., 2001; Stickley et al., 2013). Nonetheless, our

understanding of patterns and correlates of alcohol consumption in post-Soviet Russia is limited, with many studies using indirect estimates derived from mortality data (Leon et al., 2009; Saburova et al., 2011; Tomkins et al., 2007).

The availability of quality data on alcohol consumption is important to reveal the individual-level correlates of frequent drinking in Russia. The sharp, post-collapse increase in impoverishment and economic marginalization, coupled with the availability of cheap alcohol (Treisman, 2010), appears to be one of the main causes of increased alcoholism (McKee, 1999), but certain individual and family characteristics have also shown a significant association with alcohol consumption. For instance, married men are least likely and divorced and

* Corresponding author.
  *E-mail address:* alexi.gugushvili@spi.ox.ac.uk (A. Gugushvili).

separated men are most likely to have drinking problems (Malyutina et al., 2003; Tomkins et al., 2007). Perceived social support and good family relations have been shown to be negatively related to drinking (Carlson and Vagero, 1998; Peirce et al., 1994). Educational level is associated with alcohol consumption in Russia (Bobrova et al., 2010; Shkolnikov, 2006), with drinking being more prevalent in people with lower levels of education (Carlson and Vagero, 1998; Cockerham, 2007; Cornia and Paniccia, 2004). Material deprivation, financial strain and other income-related problems can contribute to more frequent drinking (Bobak et al., 1999; Bobrova et al., 2010; Luoto, 1998). Lastly, a direct association has also been found between unemployment and drinking, while among employed individuals, low occupational status and work strain are related to frequent alcohol consumption (Bobak et al., 2005; Tomkins et al., 2007). Nonetheless, we are not aware of any studies that simultaneously account for all of these correlates of drinking in Russia.

In this study, using a novel large individual-level dataset collected in 2014–2015, we present the new estimates of the frequency of drinking among middle-aged and older Russian respondents and their surviving and deceased relatives. The latter improves our understanding of the patterns of alcohol consumption in post-transition Russia and of the quality of self-reported accounts of drinking. Since our multivariable analysis of frequency of drinking among relatives also includes individuals who are always or usually omitted in conventional self-reported modes of surveys, such as deceased individuals and typically unreachable heavy drinkers, using three-level mixed-effects logistic regression models, we are able to provide more robust estimates of correlates of frequent drinking than in previously conducted studies. Our dataset not only includes a wide array of individuals' socio-demographic and socio-economic characteristics, but it also allows us to see if individuals' life course trajectories of unemployment, material deprivation, and occupational attainment between the 1980s and 2000s explain their propensities for frequent drinking in post-communist Russia. Indirect estimation of mortality collected through surviving relatives was deployed previously in Russia to explore socio-economic and lifestyle factors and their relationship with mortality. However, this is the first time that this sampling approach has been combined with investigation of correlates of hazardous behaviours.

## 2. Methods

### 2.1. Dataset

To understand the frequency of alcohol consumption in Russia and ascertain which factors are associated with frequent drinking, we use the PrivMort convenience cohort study that was conducted in 30 towns of the European part of Russia in 2014–2015. Only one respondent was selected from each randomly selected household. A respondent had to have at least one family member living in the same settlement for a prolonged period during and after the transitions and who was born before 1972. The latter accounts for reason that the sample includes only those aged 40 and over. In addition to collecting information on respondents, the PrivMort survey collected data on their relatives. This data collection method, which gathers information not directly but through relatives, was originally developed by demographers and is often referred to as the "Brass method". The convenience cohort in this study relies on collecting data for three types of relatives of the respondents: parents, siblings and spouses/partners. Information was collected for a maximum of two siblings who survived to the age of 20. The third group of relatives consists of the first partners (married or long-term cohabiters) of female respondents. Only male spouses were included in the convenience cohort, as the relevant literature suggests that women are more likely to report more reliably on their former partners due to social pressures, cultural perceptions, and other factors (Murphy et al., 2006). 22,796 individuals were interviewed, yielding information on the frequency of drinking among 57,907 relatives. The

overall response rate was 48%, using the Response Rate 1 as defined by the American Association for Public Opinion Research. Full details concerning the selection of towns and other aspects of the PrivMort methodology are given in Online Supplement A and elsewhere (Azarova et al., 2017; Gugushvili et al., 2018a, b; Irdam et al., 2016).

### 2.2. Frequency of drinking

Respondents were asked how often they and their fathers/mothers/siblings/partners consume/consumed alcoholic beverages. This method addresses some important shortcomings of alternative datasets on alcohol consumption based on alcohol sales statistics (Radaev, 2015). Previous research also indicates that people tend to underreport their own alcohol consumption in surveys (see Online Supplement B on self-reported data on alcohol consumption), while information reported by relatives can often be more reliable than self-reported data (Bobrova et al., 2010; Laatikainen et al., 2002; Tomkins et al., 2007). We are able to include in our analytical sample two groups that are typically not captured in conventional surveys of the frequency of drinking; the survey collected information about both surviving and deceased relatives, which means that the proportion of deceased is higher in parents, who are much older on average, and lower in partners and siblings. The overall proportion of deceased relatives is 58%. Our survey also includes those individuals, reported by their relatives, who would be otherwise unreachable or unresponsive in face-to-face interview situations because of alcohol-related problems.

Unsurprisingly, Fig. 1 shows that drinking in Russia is much more prevalent among men than among women. Among respondents, about 40% of men and 4% of women report drinking two to four times a month or more often. Male respondents are significantly less likely to report frequent drinking than the levels reported for their male relatives. For instance, only 2.2% of respondents reported that they drink almost every day and 4.7% several times a week, but the corresponding figures for all relatives are 4.0 and 10.6%, respectively. The disaggregation of the relatives by their vitality status suggests that these differences stem from significantly higher frequencies of drinking among deceased relatives, 19.1% of whom consumed alcohol several times a week or more often. Among women, we also observed significant differences between respondents' and their relatives' frequencies of drinking. In this case, however, female respondents report higher levels of drinking. For instance, 41.3% of them drink up to once a month, only 35.2 and 24.4% of surviving and deceased relatives drink alcohol this often. Female respondents are also less likely to report that they have never drank (32.8%) than their relatives (48.8%).

### 2.3. Analytic strategy

The reported frequencies of drinking among respondents and their relatives suggest that there are non-trivial differences in alcohol consumption patterns between these two groups, with more frequent drinking among deceased men and less frequent drinking among deceased women. Based on the previous research showing a strong link between alcohol consumption and mortality in Russia (Nemtsov, 2002; Norström, 2011; Pridemore, 2013; Pridemore and Chamlin, 2006), it is likely that the sample of surviving relatives does not include individuals who were frequent drinkers but died due to alcohol-related causes. Therefore, to derive more robust estimates of individual-level correlates of frequent drinking, we analyse the sample of both surviving and deceased relatives. To study individual-level correlates of the frequency of alcohol consumption, we created a dummy variable for frequent drinking among male relatives, which takes a value of 1 if they drink alcoholic beverages "almost every day" or "several times a week" and 0 otherwise. For women, the frequent drinking variable also takes a value of 1 if they drink "about 2–4 times a month". This definition is necessary because the share of female relatives consuming alcohol several times a week or more often is about 0.7%, which makes meaningful