Social Factors Associated with Alcohol Consumption in the Former Soviet Union: A Systematic Review

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Original Article

INTRODUCTION

Understanding the determinants of heavy alcohol consumption is especially critical in the countries of the former Soviet Union (fSU), where total alcohol consumption (recorded plus unrecorded) is higher than in any other region of the world (WHO, 2011), with widespread episodic heavy ‘binge’ drinking among working-age men (ages 18–59) (Pomerleau et al., 2008), among whom alcohol is the leading cause of premature mortality (McKee, 1999; Shkolnikov et al., 2001; Malyutina et al., 2002; WHO, 2002; Stickley et al., 2007). There is growing recognition of the need to look beyond traditional demographic correlates of ‘hazardous’ drinking to understand the role of social factors (Room et al., 2002; Galea et al., 2004), especially given the scale of social and economic turmoil that accompanied the fall of the Soviet Union (Bobak and Marmot, 1996; Shkolnikov et al., 1998; Bobak et al., 2000). These factors include levels of social support (Thundal et al., 1999), drinking within social networks and with family members (Thundal et al., 1999; Dawson, 2000) and features of the built environment (Bernstein et al., 2007). Others include contextual variables such as alcohol availability, advertising and price (Kuo et al., 2003; Kwait and Meyer, 2009).

The collapse of the Soviet regime saw the effortless transformation of the nomenklatura into a powerful oligarchy, leaving a population of ‘citizens with an “uncivic” objective’, who had little or no connection to, or trust in, state organizations (Kennedy and Kawachi, 1998). Many successors formally rejected socialism (Rose, 1995), replacing collective values with individualistic, capitalist ones (Rhodes et al., 1999). This created environments where it was difficult to establish ‘social capital’, i.e. features of social organization—such as density of civic associations, levels of interpersonal trust and trust in government institutions and norms of reciprocity—that act as resources for individuals, and facilitate collective action (Kennedy and Kawachi, 1998). This absence of social capital has been linked to the mortality crisis in the fSU (Kennedy and Kawachi, 1998), but its specific association with alcohol consumption is still unclear. Other social factors linked to health outcomes in the fSU, such as household economic status (Nicholson et al., 2005) and fear of crime (Roberts et al., 2012), may also be important in understanding alcohol consumption in this region.

Despite its importance, we found no previous systematic review of social determinants of heavy alcohol consumption in this region. To fill this gap, we have conducted a systematic review of published literature on factors associated with alcohol consumption in fSU countries, to identify populations most at risk of hazardous alcohol consumption and to understand better the social factors that might play a role.

METHODS

Search strategy

We searched MEDLINE, EMBASE and Global Health for papers in any language, published between 1991 (the year of the collapse of the Soviet Union) and 16 December 2011 (date of last search) on factors associated with alcohol consumption in fSU countries, to identify populations most at risk of hazardous alcohol consumption and to understand better the social factors that might play a role.
Table 1. Search terms used in MEDLINE, EMBASE and Global Health

1. < Russi: > or < Georgi: > or < Ukrain: > or < Moldov: > or < Belarus: >
or < Azerbajia: > or < Kazakhst: > or < Uzbekist: > or < Turkmenist: > or < Kyrgyzst: > or < Tajikist: > or < Estoni: > or < Latv: > or < Lithuan: > or < USSR: > or < Soviet: > or < Post-Soviet: >
2. < alcohol: > or < ethanol: > or < drink: >
3. < factor: > or < prevalence: >

Table 2. Inclusion criteria

<table>
<thead>
<tr>
<th>Type of study</th>
<th>Published cross-sectional, longitudinal and qualitative studies</th>
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<tbody>
<tr>
<td>Outcome measure</td>
<td>Alcohol consumption</td>
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<td>Independent variables</td>
<td>Demographic factors</td>
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<td></td>
<td>Social factors</td>
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<td>Demographic characteristics: statistical characteristics</td>
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<td>of an individual such as age, gender, marital status and</td>
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<td>religion</td>
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<td>Social factors</td>
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<td>Socio-economic characteristics: related to one’s social and</td>
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<td>economic status such as education, employment and income</td>
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<td>Psychosocial and health-related characteristics:</td>
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<td>characteristics related to one’s psychological and physical</td>
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<td>well-being such as stress, work satisfaction, conflicts</td>
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<td>with family/friends and smoking status</td>
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<td>Contextual characteristics</td>
<td>Extrinsic factors that make up the physical, social and</td>
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<td>attitudinal context in which individuals live and over which</td>
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<td></td>
<td>they have little or no control; including, but not limited to:</td>
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<td></td>
<td>place of residence, price and availability of alcohol, alcohol</td>
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<td>advertisements, community-level poverty, social capital,</td>
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<td>attitudes and perceptions of the alcohol environment</td>
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<tr>
<td>Population</td>
<td>Men and women aged 18+ living in any former Soviet republic</td>
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<td>[Papers that described analyses of sample populations that</td>
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<td>were not exclusively from the FSU (i.e. they were combined with</td>
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<td>participants from other countries) were not included in this</td>
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<td>Year</td>
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<td>Language</td>
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Study selection

All abstracts identified were reviewed for relevance. Relevant full papers were reviewed against our inclusion criteria (Table 2). We included literature on demographic, socio-economic, psycho-social and contextual characteristics, while omitting literature on individual-level genetic factors and macro-level factors such as national alcohol policy and legislation. Citations were searched, and regional experts on alcohol research were consulted to locate studies otherwise missed. The quality of all the quantitative papers was assessed using the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) quality checklist (Version 3) (von Elm et al., 2007); qualitative papers were assessed using the Consolidated criteria for reporting qualitative research (COREQ) checklist (Tong et al., 2007).

Data extraction

For each included paper, the following information was extracted: location, study type, sample details, outcome measure, significant independent variables and related parameters [odds ratio (OR), regression coefficient, correlation coefficient and proportion]. In the case of qualitative papers, we reported findings relevant to our inclusion criteria. Only statistically significant associations were included (i.e., \( P < 0.05 \)). If no \( P \)-values were given, estimates of association were assumed to be significant if their confidence interval did not cross 1.00 (in the case of ORs) or 0 (in the case of regression coefficients). If several models were presented, results were extracted from the one that adjusted for most possible confounders. When any two or more papers reported the same data, only the data set with the most detailed information on correlates of alcohol consumption was included. We did not report on factors associated with beverage preference. Our reporting follows PRISMA guidelines (Liberati et al., 2009).

RESULTS

Study selection

Our initial search of the databases uncovered 2313 records, which was reduced to 1890 after discarding duplicates. All the abstracts were evaluated against our inclusion criteria, resulting in 61 relevant abstracts (8 in Russian, 1 in Lithuanian). The full articles for all but 3 abstracts were evaluated (these were Russian language papers unable to be accessed) and 40 were excluded. Two additional papers were identified from cited references and eight from expert suggestions; of these, five were excluded, resulting in 45 excluded papers. Papers were excluded for the following reasons: the outcome measure (e.g. alcohol-related mortality), independent variables (e.g. parents’ drinking behaviour) or population (e.g. younger than 18 years) did not meet the inclusion criteria (\( n = 35 \)); results were based on analyses of the same data published in another paper and did not provide new findings relevant to this review (\( n = 3 \)); an editorial (\( n = 4 \)); a letter to the editor (\( n = 1 \)); an abstract for which no full paper could be retrieved (\( n = 2 \)). No papers were excluded for failing to meet the STROBE quality criteria. Our final review included 26 published articles (Carlson and Vägerö, 1998; Pakriev et al., 1998; Bobak et al., 1999; McKee et al., 2000; Palosuo, 2000; Cockerham et al., 2002, 2004, 2006a,b, Perlman et al., 2003; Puska et al., 2003; Malyutina et al., 2004; Bromet et al., 2005; Van Gundy et al., 2005; Webb et al., 2005; Helsasja et al., 2007; Tomkins et al., 2007; Jukkala et al., 2008; Pomerleau et al., 2008; Rojas et al., 2008; Hinote et al., 2009; Pärna et al., 2010; Perlman, 2010; Treisman, 2010; Cook et al., 2011, Saburova et al., 2011), all in English (Fig. 1).

Quality of the evidence

The included studies fulfilled most of the items on the STROBE or COREQ checklists for reporting studies. However, some studies had low response rates (Palosuo, 2000), over represented groups such as the highly educated (Jukkala et al., 2008), or sampled only regional vs. national populations (Carlson and Vägerö, 1998; Pakriev et al., 1998; Palosuo, 2000; Malyutina et al., 2004; Van Gundy et al., 2005; Tomkins et al., 2007; Jukkala et al., 2008; Rojas et al., 2008; Cook et al., 2011; Saburova et al., 2011).
**Type of study**
All the included papers used cross-sectional surveys (or cross-sectional data from longitudinal surveys as in the case of the Russia Longitudinal Monitoring Survey), except for one using qualitative interviews. Several used the same survey data (Cockerham et al., 2002, 2004, 2006a,b; Malyutina et al., 2004; Bromet et al., 2005; Webb et al., 2005; Pomerleau et al., 2008; Treisman, 2010; Cook et al., 2011; Saburova et al., 2011). All but seven focused solely on Russia or the Baltic Republics, and of these only two included Armenia, Belarus, Georgia and Moldova (both from the same survey data) and none included Tajikistan, Turkmenistan or Uzbekistan, highlighting the paucity of evidence from outside of Russia and the Baltic States.

**Definition of outcome measure**
Alcohol consumption was defined in various ways: 13 papers measured frequency of intake, 8 measured amount drunk, 9 combined frequency and amount (e.g. episodic heavy/’binge’ drinking), 4 measured alcohol disorders or problem drinking and 1 investigated factors associated with ‘alcohol dependence’ as defined by the Composite International Diagnostic Interview. One study looked at the particular cases of ‘consumption of surrogates’ and ‘zapoi’ (a prolonged period of intoxication where the participant withdraws from normal life) in Russia (Tomkins et al., 2007). The one qualitative study interviewed proxy respondents of men whose ‘heavy alcohol consumption had contributed to their death’ (Saburova et al., 2011). The outcome measures in each study are described in Supplementary Data, Table S1.

**Significant factors associated with alcohol consumption**
The results are categorized into four sets of factors: demographic, socio-economic, psychosocial and health-related and contextual (Supplementary Data, Table S3). Studies with multiple exposures are included in more than one category where appropriate. Results are presented descriptively rather than in a meta-analysis as exposure and the outcome variables were inconsistent. The data were analysed in various ways, and thus, the results are presented in a range of formats—odds ratios (ORs), regression coefficients and prevalence estimates. *P*-values are presented where available [The results from those papers that did not report any measures of association but did report prevalence estimates among different groups (e.g. between different age categories) were not reported here but are in Supplementary Data, Table S2.].

**Demographic factors**
Sixteen studies found a statistically significant association between one or more demographic characteristics and consumption.
Those that combined men and women all found that men had higher odds of exhibiting all types of alcohol consumption measured.

Almost all studies finding a significant association between age and alcohol consumption reported that those most likely to engage in hazardous consumption were between ages 18 and 34, with odds declining as age increased (McKee et al., 2000; Cockerham et al., 2004, 2006a,b; Bromet et al., 2005; Webb et al., 2005; Helasoja et al., 2007; Hinote et al., 2009; Cook et al., 2011). There were four exceptions: Pärna et al. (2010) found that men and women in Finland aged 35–44 exhibited the highest odds of consuming alcohol at least once a week; Pomerleau et al. (2008) found that, in their multi-country study of (Armenia, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia and Belarus), men aged 40–45 were most likely to participate in episodic heavy drinking (all countries combined); Puska et al. (2003) found that men aged 35–49 in Estonia and Lithuania were the most likely to consume strong alcohol frequently and Cockerham et al. (2002) found that with each 1 year increase in age among men and women in Russia, the odds of frequent drinking increased by 1.02.

Associations between marital status and alcohol consumption (all age-adjusted unless stated) were mixed. In Estonia, widowed men and women had reduced odds of consuming any type of alcohol at least once a week (men: OR = 0.41; women: OR = 0.65) (Pärna et al., 2010), and in Russia these odds were even lower (widowed men: OR = 0.35; widowed women: OR = 0.12) (Bobak et al., 1999). On the other hand, one study that analysed data from Estonia, Latvia and Lithuania found that ‘divorced or widowed’ men in Lithuania were 1.41 times more likely to engage in ‘heavy drinking’ (>15 alcohol portions per week) and ‘single, divorced or widowed’ men in Estonia were 1.77 times more likely to ‘binge drink’ (>6 portions per occasion at least once a week) compared with ‘Married or co-habiting’ men (Helasoja et al., 2007), while the prevalence of drinking at least twice per week was found to be highest among widowed men in Russia (Malyutina et al., 2004). In their multi-country survey, Pomerleau et al. (2008) found that ‘separated, divorced, widowed’ women had 1.73 times the odds of participating in ‘heavy episodic drinking’, and another analysis of the same data reported that being ‘married’ was a protective factor for both frequent drinking in general (OR = 0.84) and frequent beer drinking (OR = 0.81) among women (Hinote et al., 2009). However, because these studies present the odds of binge drinking among all non-married (i.e. single, divorced and widowed) men and separated, divorced and widowed women together, it is impossible to tell whether there is a significant difference among the groups. Findings from the analysis by Bromet et al. (2005) indicate that there may be significant differences between ‘no longer married<55 years’ (i.e. more likely divorced) men and women and ‘no longer married 55 + years’ (i.e. more likely widowed) men and women—the odds that these groups would have an alcohol use disorder were 1.94 and 0.17, respectively. However, age was not adjusted for. Married men were found to have both increased and decreased odds of alcohol consumption: In cross-sectional surveys in Belarus, Russia and Ukraine, married men (and women) were less likely to drink frequently (OR = 0.67) as were married men in Kazakhstan (OR = 0.67) (Cockerham et al., 2006a,b), whereas another study in these and other fSU countries found that never married men were less likely to engage in episodic heavy drinking (OR = 0.78) (Pomerleau et al., 2008). Two studies that analysed women separately found that those who were married were less likely to engage in hazardous alcohol consumption (Jukkala et al., 2008; Pomerleau et al., 2008). Three studies that included marital status found no statistically significant association with any measure of alcohol consumption once other demographic variables were adjusted for (Cockerham et al., 2004; Van Gundy et al., 2005; Webb et al., 2005). Among men in Ukraine, odds of heavy alcohol use were higher for those who were a parent of a child compared with those with no children (Webb et al., 2005).

A study of 4000 men and women living in Kazakhstan or Kyrgyzstan found that Muslim men and women were less likely to drink frequently than non-Muslims (OR = 0.48), as were people of Russian ethnicity compared with native Kazakh and Kyrgyz people (OR = 0.60) (Cockerham et al., 2004). However, Russian-speaking respondents in Ukraine were more likely to be classified as having an alcohol use disorder (OR = 1.38) compared with Ukrainian-speaking respondents (Bromet et al., 2005). Men and women of ‘Russian’ or ‘other’ nationality were less likely to drink alcohol frequently compared with native Estonians in Estonia, whereas in Lithuania, both of them were more likely to drink than native Lithuanians (McKee et al., 2000). ‘Ethnic minorities’ in Estonia were also found to be more likely to consume alcohol at least once per week (Pärna et al., 2010).

Socio-economic factors

Eighteen papers found statistically significant relationships between at least one socio-economic characteristic and alcohol consumption.

Studies of the association with educational level were inconclusive. Better educated men were more likely to drink (Cockerham et al., 2002) and to drink more than once a week (McKee et al., 2000), but less likely to be heavy alcohol users or have alcohol-related problems (Carlson and Vägerö, 1998; Helasoja et al., 2007; Tomkins et al., 2007; Jukkala et al., 2008). Bromet et al. (2005) found that, relative to those with higher education, men in Ukraine with primary education were at lower risk of alcohol disorders, while men with secondary education were at higher risk. Women with secondary education were less likely to drink frequently compared with women with primary education (Cockerham et al., 2006a, Hinote et al., 2009) and higher education (Pärna et al., 2010) in some studies, but more likely than women with higher education (Jukkala et al., 2008) in others. Helasoja et al.'s (2007) study from Estonia, Latvia and Lithuania found mixed associations between women’s education and heavy drinking in the three countries. Four studies analysed education but found no statistically significant association with alcohol consumption, once other demographic variables were adjusted for (Bobak et al., 1999; Cockerham et al., 2004, 2006b; Pomerleau et al., 2008).

Most studies detecting a significant association between employment status and alcohol consumption among men found that those who are unemployed are more likely to consume alcohol frequently, consume large amounts of
alcohol, be diagnosed with alcohol disorders, consume surrogates, go on zapoi, have frequent hangovers, drink spirits daily and exhibit symptoms of alcohol dependence (Pakriev et al., 1998; Bobak et al., 1999; Bromet et al., 2005; Tomkins et al., 2007). One found that unemployed men who were ‘seeking work’ had higher levels of both hazardous alcohol consumption and alcohol-related problems [as measured by the Alcohol Use Disorders Identification Test questionnaire (Saunders et al., 1993)], compared with men in regular paid employment (Cook et al., 2011). The qualitative study by Saburova et al. (2011) also found that ‘unstable employment’ was commonly identified as the cause of heavy drinking by wives of men who had died from alcohol-related causes. However, others found that episodic heavy drinking was less likely among men who were ‘unemployed and cannot find work’ (OR = 0.79) compared with employed men (Pomerleau et al., 2008), and that both unemployed and employed men were at higher odds of heavy alcohol use (OR = 1.9; 1.7) than men who were out of the labour force altogether and this association was similar for women (OR = 2.2; 1.6) (Webb et al., 2005). A few studies also showed that type of employment might play an important role. Cockerham et al. (2006b) found that men and women in ‘manager/professional’ type jobs were less likely to drink heavily (OR = 0.58), while Hinote et al. (2009) found that women in ‘agricultural/unskilled’ or ‘manager/professional’ positions were less likely than ‘skilled workers’ to drink beer frequently and Pakriev et al. (1998) reported that the prevalence of alcohol dependence varied among women with different types of employment in Udmurtia, Russia: ‘worker’ women (9.3%); ‘employee’ women (0%); ‘retired’ women (1.8%); ‘unemployed’ women (4.0%). In the qualitative study described earlier, the researchers found that heavy alcohol consumption by some deceased men had begun in the workplace, as they were in industries with alcohol-supportive cultures where remuneration was at times provided in the form of alcohol (Saburova et al., 2011). Four studies found no significant relationship between employment and alcohol consumption after adjustment for other factors (Carlson and Vägerö, 1998; Cockerham et al., 2004, 2006a,b). These findings imply that, in addition to whether one is employed or unemployed, the type of employment/unemployment they hold may be an important factor in alcohol consumption and dependence.

With the exception of the study by Carlson and Vägerö (1998), which showed that the poorest men in Taganrog were least likely to drink, findings from all other studies that detected a significant relationship between income and drinking among men showed that low economic status is positively associated with various measures of alcohol consumption. Men who had ‘2–4 economic problems’ (Jukkala et al., 2008) or ‘3 economic problems (Rojas et al., 2008) on measures that included being unable to afford meat or fish more than once or twice per week, being unable to purchase necessary clothing, abstaining from social or cultural events or having to borrow money were more likely to binge drink. Those men that had ‘neither car nor central heating’ were more likely to consume surrogates, experience zapoi and have frequent hangovers (Tomkins et al., 2007). The picture for women was different. McKee et al. (2000) found that women in Estonia, Latvia and Lithuania with ‘high income’ were 2.33, 5.33 and 3.07 times more likely to consume alcohol at least once per week compared with women with very low incomes, and Hinote et al. (2009) showed that frequent drinking increased with higher disposable income. Among studies looking at measures of alcohol consumption among women beyond frequency, one found that women with ‘average’ economic situations were less likely to engage in episodic heavy drinking compared with those with ‘bad/very bad’ situations, but the P-value for trend was not statistically significant (Pomerleau et al., 2005). Others found varying associations between economic status and heavy or ‘binge’ drinking but these were not statistically significant once other demographic factors were controlled (Webb et al., 2005; Jukkala et al., 2008). Two studies that analysed men and women together found that higher income was associated with higher odds of drinking generally (Cockerham et al., 2002) and of being diagnosed with an alcohol use disorder (Bromet et al., 2005), while three others found that economic status was not significant once other factors were adjusted for (Cockerham et al., 2004, 2006b; Van Gundy et al., 2005).

Psychosocial and health-related factors

Ten studies found a significant association between psychosocial or health-related factors and alcohol consumption.

In a cross-sectional study of men and women from Belarus, Ukraine and Russia, participants who expressed a ‘pro-communist ideology’ were more likely to be heavy vodka drinkers (OR = 1.65) (Cockerham et al., 2006b), and in another study of these countries, as well as Armenia, Georgia, Kazakhstan, Kyrgyzstan and Moldova, men who felt that ‘life would be better under a Communist system’ were also more likely to engage in episodic heavy drinking (Pomerleau et al., 2008). A study of men in Russia alone also showed that men who expressed a ‘pro-socialist’ ideology were more likely to be frequent drinkers (Cockerham et al., 2002). On the other hand, women who disagreed that life would be better under a communist system were more likely to drink frequently (OR = 1.41) (Hinote et al., 2009). Men in Kazakhstan, Belarus, Ukraine and Russia who displayed symptoms of ‘distress’ were more likely to be frequent drinkers than those who did not (OR = 1.09) (Cockerham et al., 2006a), as were distressed women in these countries as well as in Armenia, Georgia and Kyrgyzstan (OR = 1.23) (Hinote et al., 2009). Men in Russia who agreed with the statement that one can control one’s health were less likely to be ‘regular drinkers’ (i.e. several times a week) (Perlman et al., 2003), while men in Russia and other FSU countries with ‘quite good’ perceived health were more likely to be heavy episodic drinkers than men with ‘bad’ perceived health (Pomerleau et al., 2008). Men in Taganrog, Russia, who had poor family relations were more likely to drink heavily (Carlson and Vägerö, 1998). Finally, women in Moscow who had ‘regular contact with friends’ were more likely to binge drink (Jukkala et al., 2008), and those who were identified with masculine traits were more likely to score higher on an alcohol use index (Van Gundy et al., 2005). Feelings of hopelessness and powerlessness have also been investigated but were not statistically associated with alcohol consumption (Palosuo, 2000).
Contextual characteristics

Seven studies reported significant associations between place of residence and alcohol consumption. No other contextual factors were explored in any study included.

Men in urban areas in Latvia and women in urban areas in Latvia, Lithuania, and Estonia were more likely to be heavy drinkers than those in small towns or villages (Puska et al., 2003; Helasoja et al., 2007). In contrast, another study found that urban/rural differences in these countries were not significantly associated with alcohol consumption (McKee et al., 2000), while a study in Ukraine found that neither region of residence in Ukraine, nor ‘urbanicity’, were significantly associated with alcohol disorders (Bromet et al., 2005). Urban/rural differences were also found to be non-significant in one multi-country study (Pomerleau et al., 2008).

**DISCUSSION**

Our review highlighted a shortage of conclusive evidence for social factors associated with alcohol consumption in the fSU. More research is needed to understand the roles of age, marital status, education, employment, economic status, religion, ethnicity, place of residence and psycho-social factors. Inconsistent findings may be a result of variation in the definition of independent variables among studies. For example, contradictory findings regarding the association between employment status and alcohol consumption may be due to the definition of ‘employment’ used, as previous research in Russia has found that even among those who report being ‘employed’, the experience of wage arrears, payment in consumer goods or compulsory unpaid leave is common and may be linked to health outcomes (Perlman and Bobak, 2009). Future research should account for such nuances when measuring independent variables. The fact that some studies were specific to one location within our countries of interest, rather than nationally representative, may have also influenced the findings; however, it was necessary to include all such studies in a comprehensive review. Contradictory findings may also be explained by variation among studies in the number of confounders controlled or in the definition of the outcome measure.

The inconsistency in outcomes also presents a challenge for interpreting findings, and makes it impossible to differentiate between individuals that engage in moderate drinking and those that engage in more hazardous types of consumption (McKee and Britton, 1998; Rehm et al., 2010). In light of evidence pointing to the variation in health effects of alcohol at different levels of intake, future research on factors associated with alcohol consumption should use clearly defined and standardized measures of alcohol consumed at one time as well as frequency of consumption, albeit recognizing the challenges in accurately specifying exposure among the heaviest drinkers. Ideally, it would also take advantage of a range of novel biomarkers to capture recent levels of consumption (Ringmets et al., 2012).

Another important gap uncovered by this review is the absence of studies investigating the role of contextual factors in alcohol consumption in the fSU. For example, lower sale prices for alcohol, alcohol promotions, higher prevalence of alcohol advertisements and features of the built environment such as dilapidated buildings and homes with non-working water and heating systems have all been linked to increased hazardous alcohol consumption in other contexts (Kuo et al., 2003; Bernstein et al., 2007; Kwate and Meyer, 2009), but have thus far been ignored in studies in this region. Future research should also account for social factors that have been linked to health outcomes in the fSU such as elements of social capital (d’Hombres et al., 2011).

Lastly, our review also identified a gap in terms of the type of study conducted. All studies included involved cross-sectional surveys (except for one qualitative study), and all but one used basic regression modelling. This highlights the need for longitudinal studies of factors associated with alcohol consumption in the fSU, as well as the use of a wider range of methods to capture complex relationships between social factors and alcohol consumption, such as multi-level modelling, path analysis and qualitative research methods. Moreover, all the papers included in this review (except for the qualitative study) relied on self-reported alcohol consumption; under self-reporting of alcohol consumption is well documented, including in the fSU (Begalehole and Jackson, 1992; Laatikainen et al., 2002; Leifman, 2002; Nemtsov, 2003). If biochemical markers or collateral informant reports are not feasible, researchers should pay special attention to those factors that might interact to bias self-reports of alcohol consumption, namely social context, respondent attributes and task attributes (e.g., wording, response format) (Del Boca and Darkes, 2003). There is also a shortage of studies in countries of the fSU outside of Russia and the Baltic States, all of which also have severe alcohol problems.

**Limitations**

Some studies of interest may not have been captured by our search criteria because of language differences or because they are not indexed in our chosen databases. Although we are confident that our chosen databases provided comprehensive coverage of English-language articles on the topic of alcohol consumption in the fSU, the small number of non-English language records retrieved highlights the need to include more non-English language articles in English-language databases. Our efforts to search the references of included papers and to consult regional experts in the field of alcohol research sought to account for this limitation. Furthermore, because there are an indeterminate number of social factors that could have been examined for their role in alcohol consumption, it is possible that our search terms did not retrieve all. Again, we believe that our reference checks and expert consultations sufficiently offset the potential impact of this limitation.

We omitted studies among people younger than 18 in the fSU. This restriction was set because we felt that the factors influencing health behaviour among adolescent and adult populations are quite different and should be analysed separately.

It is also important to note that for some groups in the fSU, such as women and Muslims, alcohol consumption may be under-reported due to social stigma (Malyutina et al., 2001; Michalak and Trocki, 2006; Kemppainen et al., 2008). As such, the social factors associated with alcohol consumption among these groups may not be represented. In
addition, the studies included in this review may not have sufficiently captured social factors associated with surrogate alcohol consumption among individuals in the fSU. Surrogate alcohols—legally manufactured products that contain alcohol but are not intended for consumption (e.g. medical tinctures, *eau de cologne*)—have been shown to be a significant cause of mortality among men in the fSU (Lachenmeier et al., 2007; Pärna et al., 2007; Leon et al., 2009; Pärna and Leon, 2011). The extent of consumption of surrogate alcohols is difficult to measure because of the stigma attached to their consumption and non-response rates among surrogate drinkers (Pärna and Leon, 2011).

Conclusions
There is a substantial body of evidence for the catastrophic impact of heavy alcohol use on health in the fSU. However, this review has highlighted the extremely limited amount of evidence for the factors associated with this behaviour. Evidence regarding factors such as employment and education is inconclusive and there is almost no research to date on the role of contextual factors in alcohol consumption in this region. Given the unique social environment of countries of the fSU, future research should take these factors into account in order to better inform policies and interventions that can effectively address the high levels of alcohol-related mortality in this region.

SUPPLEMENTARY DATA
Supplementary data are available at Alcohol and Alcoholism online.

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