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Gender differences in hazardous drinking among middle-aged in Europe: the role of social context and women's empowerment

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Background: The aim of this study was to estimate the magnitude of gender differences in hazardous drinking among middle-aged people and to analyse whether these differences are associated with contextual factors, such as public policies or socioeconomic factors. **Methods:** Cross-sectional design. The study population included 50- to 64-year-old residents of 16 European countries who participated in the Survey of Health, Ageing and Retirement in Europe project conducted in 2010–12 ($n=26\,017$). We estimated gender differences in hazardous drinking in each country. To determine whether different social context or women's empowerment variables were associated with gender differences in hazardous drinking, we fitted multilevel Poisson regression models adjusted for various individual and country-level variables, which yielded prevalence ratios and their 95% confidence intervals (95% CI). **Results:** Prevalence of hazardous drinking was significantly higher in men than women [30.2% (95% CI: 29.1–31.4%) and 18.6% (95% CI: 17.7–19.4%), respectively] in most countries, although the extent of these differences varied between countries. Among individuals aged 50–64 years in Europe, risk of becoming a hazardous drinker was 1.69 times higher (95% CI: 1.45–1.97) in men, after controlling for individual and country-level variables. We also found that lower values of the gender empowerment measure and higher unemployment rates were associated with higher gender differences in hazardous drinking. **Conclusion:** Countries with the greatest gender differences in hazardous drinking were those with the most restrictions on women's behaviour, and the greatest gender inequalities in daily life. Lower gender differences in hazardous drinking seem to be related to higher consumption among women.

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Introduction

Worldwide, men consume alcohol more frequently and in larger amounts than women, and consequently have more alcohol-related problems.¹ These universal gender differences in alcohol consumption have led to the suggestion that biological differences, such as differences in alcohol metabolism, may influence how men and women drink.² However, the extent of these differences varies between societies, which implies that social and cultural factors play an important role in modulating the magnitude of these

differences in different countries.³ An adapted conceptual framework,^{4,5} which shows how social determinants could affect gender differences in alcohol consumption, is shown in Supplementary figure S1.

Although more than two-thirds of all alcohol-attributed deaths among people aged 20–64 years occur in the 45–64 years group,⁶ most studies on alcohol consumption and related problems focus on adolescents and young adults. Moreover, higher mortality has been observed among people with alcohol dependence than among age-matched people in the general population.⁷ Alcohol

problems may be more entrenched among middle-aged people, after years of established hazardous drinking or dependence.⁸ In this respect, few studies have analysed hazardous drinking in middle-aged people and fewer still have studied gender differences in hazardous drinking. A better understanding of the factors that drive these differences would facilitate the development of policies aimed at reducing hazardous drinking that take into account the differential characteristics of both men and women.

In this sense, several country-level factors could have a role in the relationship between gender and alcohol consumption. First, the political tradition of the government and the culture of a country determine which policies are developed (macroeconomic, social, etc.).⁹ Country-level policies may have an indirect effect on alcohol consumption through their effects on different axes of inequality and intermediate determinants of alcohol consumption (e.g. poverty, social networks, drug prevention and treatment systems, etc.). Moreover, countries can also develop effective policies directly aimed at preventing or reducing alcohol consumption in the general population (i.e. alcohol control policies). These policies include regulation of alcohol prices and taxes, distribution, availability and advertising, among others,¹⁰ and are influenced by the alcohol industry.

Women's empowerment increases gender equality and may contribute to changes in gender-based norms in a society. Although an increase in gender equality may improve the health of both men and women, it may also lead women to adopt riskier health behaviours that traditionally were more common among men,¹¹ such as substance use.¹² Regarding alcohol consumption, gender differences in drinking patterns and related problems seem to be narrowing in younger generations in many countries,¹³ as drinking has become more common among women and has decreased or stabilized in men. For this reason, smaller gender differences may lead to greater alcohol-related problems among women.¹⁴ In addition to these changing social conditions, the alcohol industry may be an important modulator of alcohol-related norms among men and women. Alcohol advertising may drive changes in gender-based drinking norms and in the social acceptability of drinking among women, as it contributes to a normalization of alcohol and promotes an increase in consumption.¹⁵

Thus, the aims of this study are to estimate the magnitude of gender differences in hazardous drinking among middle-aged people and to analyse whether these differences could be associated to country-level factors such as public policies or socioeconomic factors in people aged 50–64 years from Europe.

Methods

This study uses a cross-sectional design based on data from surveys conducted between 2010 and 2012 as part of the SHARE project (Survey of Health, Ageing and Retirement in Europe).¹⁶ The study population consisted of 26 017 people aged 50–64 years living in 16 European countries (Austria, Belgium, Czech Republic, Denmark, Estonia, France, Germany, Hungary, Italy, the Netherlands, Poland, Portugal, Slovenia, Spain, Sweden and Switzerland). Each country selected its own probability sample, such that while the type and size of samples was different in each country, the data were comparable.¹⁷ Calibrated individual weights, which depended on the household design weight and the respondent's calibration variables, were established to deal with problems of unit non-response and sample attrition. Response rates varied from 39% in Belgium to 63% in Hungary. The fraction of subjects excluded from the study due to lack of data for any of the individual variables was 5.5%.

The dependent variable, hazardous drinking, was calculated using an adaptation of the Alcohol Use Disorders Identification Test Consumption (AUDIT-C), which has been validated and used elsewhere.^{18,19} Its construction was based on three questions: two

assessing hazardous drinking in terms of frequency and quantity ('During the last three months, how often did you drink any alcoholic beverages, like beer, cider, wine, spirits or cocktails?'; 'In the last three months, on the days you drank, about how many drinks do you have?'), and one assessing binge drinking ('In the last three months, how often did you have six or more drinks on one occasion?'). Each question had five possible answers, which were ranked from 0 to 4 points. A final score was calculated as the sum of scores from each question. Hazardous drinking was constructed as a dichotomous variable: drinking was considered to be hazardous when the score was ≥ 5 in men, and ≥ 4 in women.²⁰ The psychometric properties of AUDIT-C as a dichotomous hazardous drinking screening tool have been reported and are well established.²¹

The main individual independent variable was gender. We also included the following individual variables in the analysis: (i) educational level (none, primary-, secondary- or third-level education), as a proxy of socioeconomic position, (ii) age, (iii) migration status (native or immigrant), (iv) employment status (employed, unemployed or other) and (v) self-perceived health (dichotomous: good, very good or excellent; fair or poor).

In addition, we used the following contextual country-level variables, as these may be associated with gender inequalities in a society or to hazardous drinking, according to previous studies^{19,22–25}:

- (1) 'Standardized gross domestic product per capita' (GDP) for 2008, as a proxy for the country's standard of living [official data from the Organization for Economic Co-operation and Development Programme (OECD)].²⁶
- (2) 'Standardized gender empowerment measure' (GEM) for 2009, as a proxy for gender equality in the society. This variable comes from official data from the United Nations Development Programme, and measures gender inequality in three basic dimensions of empowerment (economic participation, political participation and power over economic resources).²⁷
- (3) 'Standardized unemployment rate' for 2010 (all people aged 55–64 years), official data from the OECD.²⁸
- (4) 'Standardized degree of alcohol advertising restrictions' for 2008. This index (continuous variable) is based on data reported by each country on alcohol advertising restrictions in nine media (national and cable television, national and local radio, print media, billboards, cinema, internet and point-of-sale) for different types of alcoholic beverages (beer, wine and spirits), available from the WHO alcohol database.²⁹ A score from 1 to 4 was assigned to every media and type of alcoholic beverage (1 point: no restrictions; 2 points: voluntary restrictions; 3 points: partial restrictions; 4 points: ban), and the final score was computed as the sum of all scores.
- (5) 'Other standardized alcohol control policies' for 2006. This index (continuous variable) included data on various alcohol policies and is self-reported by every country (control over alcohol production, distribution and availability of alcoholic beverages, permitted blood alcohol levels and alcohol taxes), available from the Bridging the Gap project.³⁰
- (6) 'Drinking patterns score' for 2005, based on the scale of risk of drinking patterns in each country, available from the WHO database.²⁹ We divided participating countries into two groups, those with low-risk drinking patterns (pattern 1 on the WHO scale) and those with risky drinking patterns (patterns 2 and 3 on the WHO scale).
- (7) 'Percentage of immigrants', based on self-reported data from the SHARE survey 2010–12 for people aged 50–64 years.

Analysis

The prevalence of hazardous drinking and gender differences therein, plus 95% confidence intervals (95% CIs), were estimated for each country. We computed the Pearson coefficient of linear correlation between country-level variables and the prevalence of hazardous

Table 1 Distribution of the prevalence of hazardous drinking for the independent variables studied, by sex. European countries included in the SHARE project 2010–12

	Men			Women			Total		
	N	% HD ^a	95% CI	N	% HD ^a	95% CI	N	% HD ^a	95% CI
Individual-level variables	11 457	30.2	(29.1–31.4)	14 560	18.6	(17.7–19.4)	26 017	24.1	(23.4–24.9)
Age									
50–54 years	2751	31.3	(29.1–33.6)	3739	18.7	(17.1–20.5)	6490	24.7	(23.3–26.1)
55–59 years	4213	30.5	(28.6–32.6)	5210	18.6	(17.2–20.1)	9423	24.5	(23.3–25.8)
60–64 years	4493	29.1	(27.3–31.0)	5611	18.4	(17.1–19.8)	10 104	23.3	(22.2–24.5)
Educational level									
None	124	27.4	(18.2–38.9)	229	9.3	(5.6–15.0)	353	16.8	(12.3–22.6)
Primary studies	1114	32.4	(28.8–36.1)	1898	15.0	(13.0–17.4)	3012	22.0	(20.0–24.1)
Secondary studies	7236	30.1	(28.7–31.6)	8697	17.9	(16.8–19.0)	15 933	24.0	(23.1–24.9)
Tertiary studies	2983	29.8	(27.5–32.3)	3736	22.2	(20.4–24.1)	6719	25.8	(24.3–27.3)
Migration status									
Native	1046	23.0	(20.1–26.2)	1363	14.6	(12.6–16.9)	2409	18.5	(16.7–20.4)
Immigrant	10 411	31.0	(29.7–32.2)	13 197	19.0	(18.1–19.9)	23 608	24.7	(24.0–25.5)
Employment status									
Employed	6494	31.1	(29.6–32.7)	6750	20.7	(19.4–22.0)	13 244	26.2	(25.2–27.3)
Unemployed	881	35.3	(31.3–39.4)	843	19.1	(15.8–23.0)	1724	28.1	(25.4–31.0)
Other	4082	27.3	(25.4–29.2)	6967	16.2	(15.0–17.4)	11 049	20.6	(19.6–21.6)
Self-perceived health									
Fair or poor	3711	28.1	(26.3–30.1)	4965	12.5	(11.3–13.7)	8676	19.7	(18.6–20.9)
Good, very good or excellent	7746	31.2	(29.8–32.7)	9595	21.7	(20.6–22.8)	17 341	26.3	(25.4–27.3)
Country									
Austria	1047	27.6	(24.7–30.7)	1342	18.0	(15.7–20.5)	2389	22.7	(20.8–24.6)
Belgium	1206	38.8	(34.8–43.0)	1404	31.8	(28.2–35.6)	2610	35.2	(32.5–38.1)
Czech Republic	1208	39.7	(35.7–43.7)	1573	18.5	(15.6–21.7)	2781	28.6	(26.1–31.1)
Denmark	522	42.6	(38.0–47.3)	604	36.6	(32.5–40.9)	1126	39.5	(36.4–42.7)
Estonia	1231	26.0	(23.4–28.8)	1624	6.1	(5.0–7.4)	2855	14.9	(13.5–16.4)
France	1213	32.6	(28.7–36.8)	1436	18.5	(15.9–21.5)	2649	25.3	(22.9–27.9)
Germany	223	34.3	(26.5–43.1)	333	16.9	(12.6–22.2)	556	25.4	(20.8–30.7)
Hungary	713	22.5	(17.9–27.9)	877	6.0	(4.4–8.1)	1590	13.4	(11.2–15.9)
Italy	624	24.6	(19.3–30.7)	869	23.6	(19.2–28.7)	1493	24.1	(20.6–27.9)
Netherlands	529	42.2	(36.3–48.3)	739	36.1	(31.8–40.5)	1268	39.1	(35.4–42.9)
Poland	273	24.1	(18.5–30.6)	403	7.0	(4.3–11.1)	676	15.1	(11.9–18.9)
Portugal	417	30.6	(22.3–40.5)	549	17.5	(12–24.8)	966	23.5	(18.5–29.5)
Slovenia	622	16.4	(13.5–19.8)	763	9.5	(7.5–11.9)	1385	13.0	(11.2–15.1)
Spain	605	26.0	(21.4–31.1)	755	16.9	(13.7–20.8)	1360	21.3	(18.4–24.5)
Sweden	238	14.1	(9.3–20.7)	330	13.2	(9.8–17.7)	568	13.6	(10.6–17.4)
Switzerland	786	28.7	(25.4–32.2)	959	27.7	(24.7–30.8)	1745	28.2	(26.0–30.5)

a: % HD, prevalence of hazardous drinkers calculated using the AUDIT-C test.

drinking among men and women. To estimate the association between country-level variables and gender differences in hazardous drinking, we fitted multilevel Poisson regression models with robust variance,^{31,32} which yielded prevalence ratios (PRs) and their 95% CIs. The intercept and the 'sex' coefficient were considered as random effects in all models. The final adjusted model included all individual variables as well as the country-level variables that were statistically significant in the multivariate analysis. Statistical analyses were conducted using STATA 11.0 and HLM6.

Results

Gender differences in hazardous drinking

Table 1 shows the prevalence of hazardous drinking for each individual-level variable, country and sex. The prevalence of hazardous drinking in our sample was significantly higher among men than women [30.2% (95% CI = 29.1–31.4%) vs. 18.6% (95% CI = 17.7–19.4%), respectively]. Gender differences in hazardous drinking were observed in most countries. Figure 1 shows the extent of gender differences in hazardous drinking for each country, which were higher in Eastern European countries. No gender differences in hazardous drinking were observed in Italy, the Netherlands, Sweden and Switzerland, after controlling for other variables.

Associations between gender differences in hazardous drinking and contextual factors

As shown in figure 2, the correlation between hazardous drinking and GDP was statistically significant in women ($r = 0.74$; $P < 0.05$) but not in men ($r = 0.33$; $P = 0.22$). We also observed a significant correlation between GEM and the prevalence of hazardous drinking among women ($r = 0.73$; $P < 0.05$) but not among men ($r = 0.39$; $P = 0.14$). A significant linear correlation between the degree of regulation of alcohol advertising and the prevalence of hazardous drinking was found among men ($r = -0.68$; $P < 0.05$) but not among women ($r = -0.45$; $P = 0.08$). No statistically significant linear correlations were found between unemployment rate, other alcohol control policies or percentage of immigrants and hazardous drinking. GDP and GEM were highly correlated ($r = 0.81$; $P < 0.05$).

Overall, risk of becoming a hazardous drinker in people aged 50–64 years was 1.69 times higher in men than women (95% CI = 1.45–1.97) after controlling for individual and country-level variables (table 2). In the multilevel adjusted analysis, the prevalence of hazardous drinking was influenced by the degree of restriction on alcohol advertising in the country (PR = 0.78; 95% CI = 0.69–0.88). Furthermore, gender differences in hazardous drinking were affected by GEM and unemployment rate. Countries with greater gender equality (i.e. higher GEM values) had lower gender differences in hazardous drinking (PR = 0.27; 95% CI = 0.11–0.65), mainly due to the higher prevalence of hazardous drinking among women, and

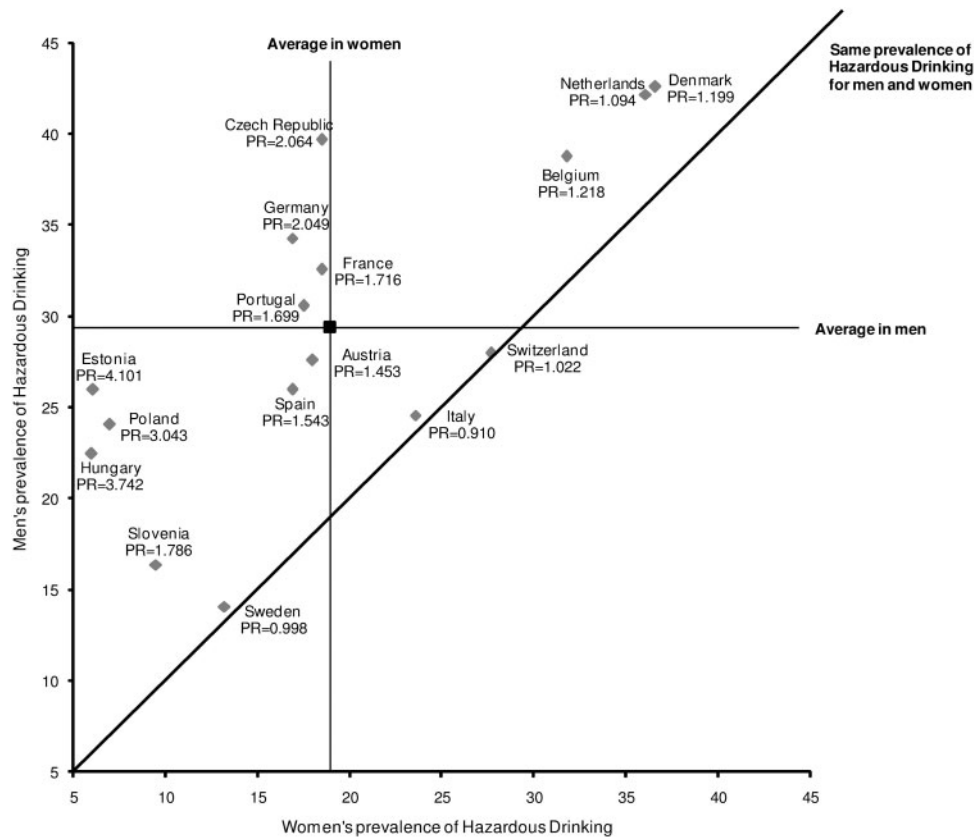


Figure 1 Scatter plot of prevalence of hazardous drinking among men and women from 50 to 64 years. Adjusted PR of hazardous drinking in men compared to women, by country (50- to 64-year-olds). European countries included in the SHARE project, 2010–12

countries with higher unemployment rates had higher gender differences in hazardous drinking ($PR = 1.15$; 95% $CI = 1.04–1.27$). We found no association between gender differences in hazardous drinking and other contextual variables (GDP, other alcohol control policies and percentage of immigrants). Thus, the final model did not include these variables. The final model explained 64% of the variance in gender differences between countries (table 2).

Discussion

Higher gender equality was associated with lower gender differences in hazardous drinking, mainly due to higher consumption among women. Higher unemployment rates were related to lower prevalence of hazardous drinking in women, and consequently to higher gender differences in hazardous drinking. Restrictions on alcohol advertising have an effect on hazardous drinking, but not by modifying gender differences in alcohol consumption.

Strengths and limitations

The SHARE survey contains questions that allowed us to use an adaptation of the AUDIT-C test^{18,19} which has been validated and is widely used to detect hazardous drinking. As far as we are aware, ours is the first study that uses multilevel statistical methods to assess the association between gender differences in hazardous drinking and individual and contextual-level variables, which is a more robust approach than that used by a previous descriptive study of 18- to 34-year-olds.²³ However, our study also has the following limitations. First, we cannot assume that this population sample reflects the distribution of the full range of alcohol consumers in each country. As samples were selected independently in each country, their size differed, and thus, while the prevalence of hazardous drinking in each country comes from a representative

sample of its inhabitants, the overall sample is not representative of the whole European population. In addition, response rates were low in some countries, although individual sample weights were used. Data on advertising restrictions were self-reported, and, as alcohol advertising is not systematically monitored in each country, the degree of compliance with regulations could not be accounted for.³³ Gender differences in hazardous drinking among middle-aged people could have been affected to some extent by different mortality rates among younger hazardous drinkers in each sex in some countries, although we were unable to test this hypothesis. The study consisted of only 16 samples in the second level of our analyses, which may limit our ability to detect statistically significant differences between groups.

Gender differences in hazardous drinking

In line with other studies,^{1,2} we found that hazardous drinking was more common among men in almost all participating countries. A moderate to high prevalence of hazardous drinking was observed among men in most countries, while the prevalence in women was more variable (e.g. up to six times higher in some countries than others). Consequently, the extent of gender differences in hazardous drinking varied widely among countries. These country-level differences could be associated with some contextual factors, such as the degree of gender equality in a country or the national unemployment rate, as discussed below.

Associations between gender differences in hazardous drinking and contextual factors

Gender inequalities in a society

Our findings suggest a strong association between GEM and gender differences in hazardous drinking. Greater gender equality in a

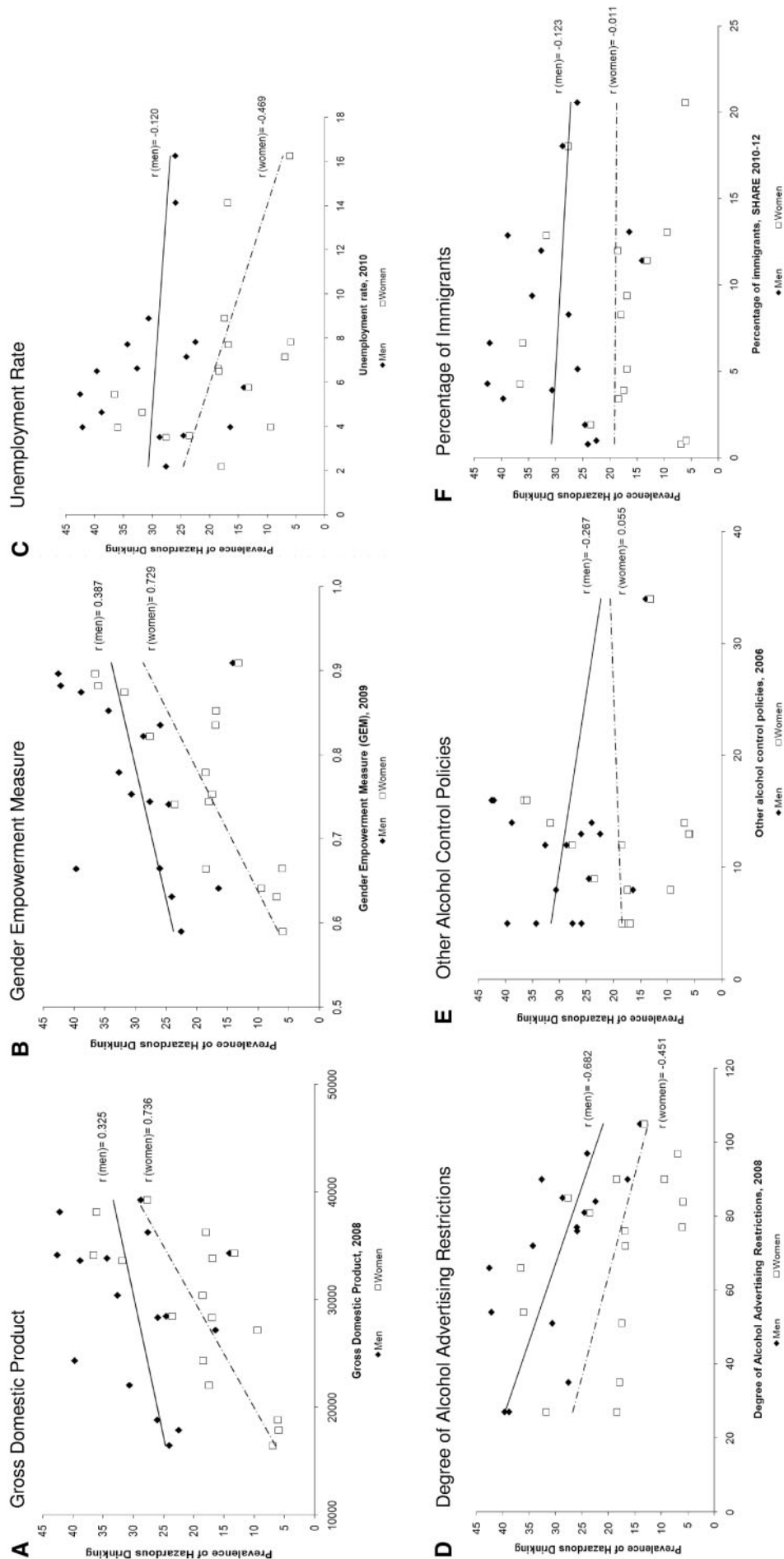


Figure 2 Correlation between country-level continuous variables and prevalence of hazardous drinking in men and women aged 50–64 years. Countries from the SHARE Project, 2010–12

Table 2 PR of hazardous drinking, estimated using multilevel Poisson regression models. A sample of 50- to 64-year-old European residents from 16 countries participating in the SHARE project, 2010–12

	Model 0			Model 1			Model 2		
	PR	95% CI	P-value	PR	95% CI	P-value	PR	95% CI	P-value
Individual variables									
Sex									
Men	1.682	(1.324–2.137)	<0.001				1.691	(1.454–1.968)	<0.001
Women	1						1		
Contextual variables (intercept)									
GDP				1.153	(1.009–1.317)	0.038			
GEM				2.622	(0.355–19.357)	0.319			
Unemployment rate				1.005	(0.922–1.096)	0.899			
Degree of alcohol advertising restrictions				0.804	(0.709–0.913)	0.003	0.778	(0.692–0.875)	<0.001
Other alcohol control policies				0.865	(0.742–1.008)	0.062			
Patterns of drinking score				0.728	(0.527–1.005)	0.053			
Percentage of immigrants				0.993	(0.973–1.014)	0.509			
Contextual variables (interaction with sex)									
GDP				0.817	(0.745–0.896)	<0.001			
GEM				0.271	(0.081–0.906)	0.036	0.267	(0.110–0.651)	0.008
Unemployment rate				1.115	(1.000–1.242)	0.049	1.148	(1.040–1.268)	0.010
Degree of alcohol advertising restrictions				0.847	(0.746–0.961)	0.014			
Other alcohol control policies				0.881	(0.773–1.005)	0.057			
Patterns of drinking score				0.961	(0.709–1.303)	0.785			
Percentage of immigrants				0.995	(0.972–1.019)	0.670			
Variability									
Intercept variability (% of change) ^a	0.310						0.240 (22.5%)		
Interaction with sex (% of change) ^a	0.192						0.069 (64.1%)		

a: % of change in variability was calculated using this formula: [(initial variability – final variability)/initial variability] × 100. Model 0: it included hazardous drinking by sex, controlling for all individual variables (age, migration status, educational level, employment status and self-perceived health). Formula: $\log[\lambda] = \eta_{ij} = \beta_{0j} + \beta_{1j}\text{SEX}_{ij} + \beta_2 X_{ij} + \dots + \beta_n X_{ij} + \varepsilon_{ij}$. Model 1: level 1 was the same as in model 0*, and in level 2 a contextual variable was included separately in each model. Fourteen models were fitted: seven for each contextual factor adjusting the random intercept (formula: [level 2 $\beta_{0j} = \gamma_{00} + \gamma_{01} D_{mj} + \mu_{0j}$]; $\beta_{1j} = \gamma_{10} + \mu_{1j}$), and seven adjusting the random slope for sex (formula: [level 2 $\beta_{0j} = \gamma_{00} + \mu_{0j}$]; $\beta_{1j} = \gamma_{10} + \gamma_{11} D_{mj} + \mu_{1j}$]). Model 2: (final model) it included level 1 mentioned above* and the degree of alcohol advertising restrictions adjusting the variability of intercept among countries ($\beta_{0j} = \gamma_{00} + \gamma_{01}$ Degree of Alcohol advertising Restrictions_j + μ_{0j}) and GEM and the national unemployment rate adjusting the SEX slope coefficient variability among countries ($\beta_{1j} = \gamma_{10} + \gamma_{11}$ Gender Empowerment Measure_j + γ_{11} Unemployment Rate_j + μ_{1j}) at level 2; where i =individuals=1, ..., 26 017; j =countries=1, ..., 16; X =individual variables and D contextual variables. Statistically significant variables ($P<0.05$) are highlighted in bold type.

country appears to be related to higher alcohol consumption in women. Similar results for GEM were found in people aged 18–34 years.²³ In fact, gender differences in alcohol consumption may be related to the degree of women's empowerment, and to the drinking culture in each country, especially among women.¹ Gender differences in alcohol consumption may be more acute in societies in which gender roles are more polarized (e.g. societies where women are largely confined to the home and to domestic work, while their husbands spend a lot of time working outside the home).^{3,34} Traditionally, drinking has been more socially restricted among women than men worldwide, due to the belief that women's social behaviour and responsibilities may be more adversely affected by drinking. However, relatively high gender equality is expected in societies where drinking is well integrated into social life.³ These hypotheses are consistent with our results. However, the relationship between prevalence of hazardous drinking and GEM was stronger in women than in men, which suggests that improvement in women's social conditions might be accompanied by the adoption of risky and unhealthy lifestyles that were traditionally more common in men.¹⁴

Although we observed a strong correlation between GEM and GDP, this does not necessarily mean that women's empowerment depends only on national wealth, as suggested by Varkey et al.³⁵ In fact, our results indicate that GEM had a greater influence than GDP on gender differences in hazardous drinking.

The interaction between drinking culture and women's position in society may also play an important role in the extent of gender differences in hazardous drinking, although we were not able to investigate this. Differences in drinking culture and their interaction

with GEM may partly explain the differences in the prevalence and the gender differences in alcohol consumption and hazardous drinking between countries. Moreover, the interests of the alcohol industry could play a role in the relationship between GEM and the drinking culture. A society in which the economic and social position of women is increasing provides a new potential source of customers for the industry. Advertising may reflect the power of industry by allowing it to influence the values of society. However, we have only analysed the degree of advertising restrictions because data on the advertising content were not available. These data may have shown that advertising campaigns that aim to normalize drinking among women could have produced an increase in consumption.

Unemployment rate

In recent years, Europe has been affected by a serious economic recession, in which unemployment increased rapidly and substantially. Economic difficulties have been reported to affect health and health behaviours.³⁶ In general, alcohol consumption decreases when economic resources decline,³⁷ but risky-drinking patterns, such as binge drinking, may increase at the same time (i.e. people drink less frequently but drink more on each occasion).³⁸ In our study, we found an association between higher national unemployment rates and lower prevalence of hazardous drinking among women aged 50–64 years, but not in men. The unemployment rate could partly explain gender differences in hazardous drinking. However, the relationship between unemployment rate and hazardous drinking is complex,²⁵ and further studies are needed

to corroborate the observed association and to verify if national unemployment rates affect men and women differently, as our results suggest.

Other contextual factors

Preventive policies (e.g. alcohol advertising regulations) may help to limit alcohol consumption. Indeed, we found that alcohol advertising regulations are associated to lower prevalence of hazardous drinking in both men and women. But there was not an association with gender differences in hazardous drinking, after adjustment for various country-level variables. A previous study in adolescents hypothesized that the effects of alcohol advertising on girls were greater than on boys.²⁴ However, the results of our study are not consistent with this hypothesis in middle-aged people. One possible explanation is that women who were not used to consuming alcohol as young adults do not increase their alcohol consumption when they got older, especially those living in Eastern European countries.³⁹ For this reason, the association between the degree of alcohol advertising restrictions and gender differences could be masked in older adults by the fact that the effects of advertising regulations during adolescence may last into adulthood.⁴⁰ Although no statistically significant associations were observed for the other contextual variables analysed, our results could also be explained by other factors that could not be included in the analyses, such as differences between countries in risk behaviour linked to period or cohort effects.

Conclusions

Countries with highest relative gender differences in hazardous drinking were those with the greatest restrictions on women's behaviour or the greatest gender inequality. For this reason, policies aimed at improving gender equality should be accompanied by specific alcohol control policies to reduce the probability of engaging in alcohol consumption, especially policies with proven effectiveness (e.g. alcohol taxation, reduction of alcohol availability or alcohol advertising regulations). Otherwise gender differences would be reduced but the adverse effects attributable to alcohol consumption would increase in women.

Supplementary data

Supplementary data are available at *EURPUB* online.

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Conflicts of interest: None declared.

Key points

- This study suggests that greater gender equality is associated with lower extent of gender differences in alcohol consumption, mainly due to an increase in women's consumption.
- National unemployment rate seems to be related to the prevalence of hazardous drinking in women, but not in men.
- Countries with higher alcohol advertising regulations have lower prevalence of hazardous drinking, but these results do not seem to affect differently men and women.

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