

## SOCIAL INEQUALITIES IN ALCOHOL CONSUMPTION AND ALCOHOL-RELATED PROBLEMS IN THE STUDY COUNTRIES OF THE EU CONCERTED ACTION ‘GENDER, CULTURE AND ALCOHOL PROBLEMS: A MULTI-NATIONAL STUDY’

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**Abstract — Aims:** We investigated the presence of social inequalities of alcohol use and misuse using educational attainment as an indicator of socio-economic status in 15 countries: Sweden, Norway, Finland, Germany, The Netherlands, Switzerland, Hungary, the Czech Republic, Israel, Brazil, and Mexico. **Methods:** Study surveys were independently conducted and the data centrally analysed. Most samples were national. Survey modes and sample sizes varied. The age range was restricted to between 25 and 59 years of age. Socio-economic status was measured by educational level. Multiple logistic regressions were employed to calculate age-adjusted odds ratios for men and women in each country by educational level for current drinking status, heavy drinking ( $\geq 20$  g ethanol per day for women,  $\geq 30$  g a day for men), heavy episodic (binge) drinking, and alcohol-related problems (using AUDIT). **Results:** Men and women demonstrated similar patterns in inequalities with regard to current drinking status within a country. In Germany, The Netherlands, France, Switzerland, and Austria higher educated women were most likely to drink heavily, while among men the lower educated were more at risk in most countries. For heavy episodic drinking, almost no significant differences were evident among women, but for men a social gradient was observable with lower educated being more at risk in several countries. Among five countries with data from the AUDIT, men of lower education in Finland, Czech Republic, and Hungary had higher risks to report problems. Nordic countries shared a common pattern in social inequalities as did two Latin American countries, while a mixed picture was observed for middle European countries. Social inequalities in the two Latin American countries display a pattern emerging in other research on developing countries: namely that those in the higher educated groups are more likely to consume alcohol in a risky manner. **Conclusions:** Patterns in the distribution of social inequalities are not universal. Social inequalities in alcohol use differ by gender according to alcohol measure used and differ also across groups of countries. These variations should be taken into account when formulating international and cross-cultural alcohol policies.

### INTRODUCTION

Research on social inequalities in health status and mortality continues to be topic of increasing concern in social epidemiology (e.g. Mackenbach *et al.*, 1997, 2003; Berkman and Kawachi, 2000; Marmot, 2005; Dalstra *et al.*, 2006). In alcohol research, the role of socio-economic determinants in alcohol use and misuse as well as alcohol-related mortality and morbidity has also been the subject of numerous studies (e.g. Midanik and Clark, 1994; Hemmingsson *et al.*, 1997; Mäkelä, 1999; Harrison and Gardiner, 1999; van Oers *et al.*, 1999). Although not always referred to as research on ‘social inequalities’, (especially in earlier studies), these studies have examined differences in the prevalence of alcohol consumption and alcohol-related problems or in risks of alcohol-related mortality by socio-economic status (SES) in various populations.

Within the past decade, an extensive literature has grown in examining the extent of social inequalities in alcohol-related mortality. These studies have comprehensively documented a clear and persistent social gradient in alcohol-related mortality (e.g. Mäkelä *et al.*, 1997, 2003; Harrison and Gardiner, 1999; Mäkelä, 1999). Additionally, cohort studies have sought to address how SES contributes to unequal rates of alcoholism-related diagnoses (Hemmingsson *et al.*, 1997), and have found an accumulation of risk factors for alcoholism among the lower classes and unemployed (Hemmingsson

*et al.*, 1998), as well as a downward drift in SES following a hospitalization for alcoholism (Romelsjö *et al.*, 2004).

Normally, in investigating social inequalities in health, the generally observed pattern is that those in lower socio-economic groups have worse health or higher mortality than those in higher socio-economic groups (Dalstra *et al.*, 2006). However, deviations from this traditional pattern are observed with regard to alcohol consumption. For example, earlier survey research in North America found that household income, education, and employment status are positively associated with current drinking status and more frequent drinking, but are negatively correlated with measures of heavier drinking and drinking problems (e.g. Midanik and Clark, 1994; Greenfield *et al.*, 2000). As such, social inequalities in actual alcohol consumption patterns present a modification of the classical social gradient hypothesis that states that those in lower socio-economic groups exhibit a higher prevalence of health risk behaviours (Almeida-Filho *et al.*, 2005).

In developed countries, this general pattern typically holds and reflects the differing lifestyle patterns between SES groups: higher SES groups tend to be drinkers and drink smaller amounts more frequently, whereas those in lower SES groups have a higher proportion of abstainers but those who do drink tend to drink more often in problematic ways (e.g. Marmot, 1997; van Oers *et al.*, 1999; Bloomfield *et al.*, 2000). However, recent research from developing countries, countries in transition and countries with minority populations suggests other patterns. A study in Brazil found that higher SES was associated with higher rates of alcohol consumption and dependence (Almeida-Filho *et al.*, 2005). And research on binge drinking in Israel which examined both young Jews

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Table 1. Survey characteristics of EU Project Alcohol and Gender study countries

Country	Year	Sampling frame	Survey mode	Response rate (%)	Age: 25–59 years <sup>a</sup>		
					Cases	Men	Women
Switzerland	1997	National	Telephone	68.4	8160	3768	4392
Germany	2000	National	Postal	51.4	7001	3203	3798
Italy	2001/2002	Regional (Tuscany)	Postal + telephone	61.0	2092	1041	1051
France	1999	National	Telephone	71.3	8725	3904	4821
UK	2000	National	Face to face and CAPI	Quota	1299	633	666
Israel	2001	National	Face to face	<60	3665	1609	2056
Mexico	1998	National	Face to face	87.5	3988	1633	2355
Sweden	2002	National	Telephone	67.8	3423	1685	1738
Finland	2000	National	Face to face / self admin.	79.4	1339	681	658
Norway	1999	National	Face to face / self admin.	Quota	1407	670	737
The Netherlands	1999	Regional (Limburg)	Postal	71.0	3038	1410	1628
Austria	1993	National	Face to face	Quota	2282	2313	4595
Czech Republic	2002	National	Face to face	72.6	1861	915	946
Hungary	2001	National	Face to face/self admin.	Quota	1758	830	928
Brazil	2001/2002	Regional (Botucatu, all urban area residents)	Face to face	Quota	607	265	342

<sup>a</sup>Sample size was restricted to age 25–59 for better comparability; age range for Israel is 25–40.

and Arabs found two distinct patterns of use with respect to education, income and occupation as indicators of SES: Jews followed the pattern seen in developed countries (on all three measures): a negative correlation of binge drinking with SES. Yet among Arabs a strong positive correlation was found for income and occupation (Neumark *et al.*, 2003). A cross-sectional trend analysis in Russia from 1985 to 1995 using educational attainment as an indicator of SES found among men a consistent negative correlation between four measures of alcohol use and SES over time, but saw the inequalities closing by the last wave of the study due to increased drinking among the higher SES group (Malyutina *et al.*, 2004). Rates of drinking among women were too small to draw definite conclusions. Thus, among these categories of countries, there appears a tendency to see higher socio-economic groups experiencing alcohol-related problems or problem drinking.

To complicate this emerging international picture of varying patterns of social inequalities in alcohol use, is the consideration of gender. Previous research in developed countries has shown that patterns of social inequalities in alcohol use vary between men and women. Studies have shown that well educated professional women in developed countries have an increased risk for heavy drinking and alcohol problems (Marmot, 1997; Bloomfield *et al.*, 2000). In developing countries or countries in transition, it appears that women do not drink at the same levels as women in developed countries, so that specific patterns relating to SES are not yet statistically observable (Malyutina *et al.*, 2004; Almeida-Filho *et al.*, 2005).

To our knowledge the only research that has systematically compared social inequalities in drinking behaviour internationally is that of Kunst *et al.* (1996). Within a broader study of social inequalities in morbidity and mortality in Europe, these authors found differing associations between heavy drinking and educational level among men and women in eight European countries. Heavy drinking episodes (i.e. four glasses or more per day) were more common among men with lower educational levels. Among women, no substantial differences could be found.

‘Gender, Culture and Alcohol Problems: A Multi-national Study’ is a European Union concerted action. The consortium includes study partners with representative general population datasets from 13 EU member or associated states—Austria, Czech Republic, Finland, France, Israel, Italy, The Netherlands, Norway, Sweden, United Kingdom, Switzerland, Germany, and Hungary and 2 non-European countries: Mexico and Brazil. As noted in the introduction to this issue, the original study began with a broader spectrum of countries which was intended for a better investigation of differences in drinking cultures and the social position of women on a cross-national basis. Due to various complications, several non-European study countries had to withdraw as formal partners of the project. Thus, the final count of study partners includes these 13 European countries and 2 Latin American countries.

The purpose of this study is to examine how social inequalities operate with regard to drinking behaviour (measured in various ways) and how such inequalities vary by gender and by culture. Previous research has indicated that the patterning of social inequalities in alcohol use is not universal; therefore, the present systematic examination can help illuminate such variations.

## METHODS

### Data

Table 1 describes the samples used in the comparison. The surveys were independently conducted in the different countries, but the data were centrally archived in a project data bank in Lausanne, Switzerland. The project data centralization coordinator has also standardized as many variables as possible across the datasets (see the introduction to this issue for more information). Most samples were national, with the exceptions of Brazil (Botucatu), The Netherlands (Limburg), and Italy (Tuscany). Survey modes and the sizes of the samples varied between the countries. Response rates for those countries whose data were collected through probability sampling (five countries used quota sampling) were relatively high. The age ranges of respondents

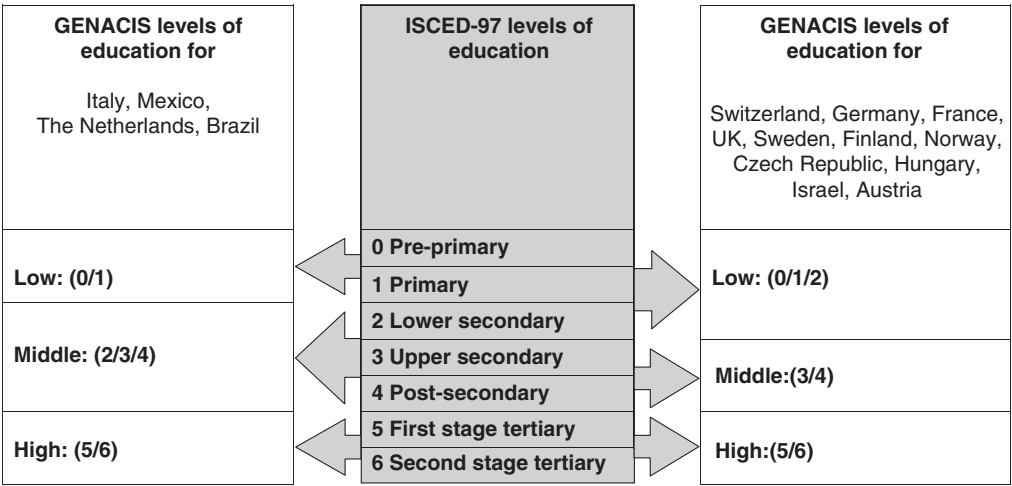


Fig. 1. Explanation of categorization of study countries via ISCED-97 classification.

in the study country samples varied, but for the present analysis we selected only respondents between 25 and 59 years of age (with the exception of Israel where the upper age limit ended at 40 years) in order to increase comparability by selecting the range common to all surveys and also to focus on those of working age who have completed their education.

*Socio-economic status measured through attained educational level*

Various terms, reflecting different traditions and conceptualizations have been used in epidemiological literature to describe the social and economic factors influencing health and illness, including social class, social stratification, social status, and SES (Lynch and Kaplan, 2000). Socio-economic status is typically operationalized using income, education, or occupation (Jöckel *et al.*, 1998). In the present study we chose education as the main indicator of SES. Education has a practical advantage over income insofar as in many study countries income information is sensitive and thus can be difficult to obtain in general population surveys. Indeed, in the surveys from the participating study countries, education was the most widely asked indicator of SES and had the fewest number of missing responses. Also, compared with other indicators such as occupational prestige, education has been said to more accurately convey what it is about social position that may be causally related to increased risk (Marmot, 1996). Finally, as many women do not have direct access to income and are less likely to be employed than men, education has been proposed as a better measure of women's social status (van Oers *et al.*, 1999).

*Measurement of education*

Education is generally measured in one of two ways in comparative analyses: either by years of schooling or by means of a categorization scheme (Bloomfield, 1998). Years of education may appear to be straightforward and easily quantifiable; however, it can be less reliable for international comparisons as countries' educational systems can vary greatly (Braun and Müller, 1997). Moreover, even within the

same country, years of education, which measures only one dimension of education, does not necessarily indicate the credentials obtained or reflect the quality of education. And, even where educational levels may be quite accurately ascertained, the *meaning* of various levels may change over time so that within one country educational status may vary by age cohort.

Nearly all questionnaires used in this study asked about level of education attained rather than years of schooling completed. Thus, it was possible to apply a standardized classification system based on level of education attained. Perhaps the most widely used classification, and the one we chose to use, is the International Standard Classification of Education (ISCED97) (UNESCO Institute for Statistics, 1997). This scheme breaks down education into 7 main categories: 0, pre-primary; 1, primary; 2, lower secondary; 3, upper secondary; 4, post-secondary; 5, first-stage tertiary; and 6, second-stage tertiary. For our analyses we collapsed these seven categories into three main groups (low, middle, and high).

As our study includes 15 EU and non-EU countries, the distribution of educational levels among respondents in the participating countries varied. In a few study countries the vast majority of the population receives only compulsory education while in others the distribution is such that most respondents receive at least some secondary education. Thus, we devised a method to apply the three categories to all project countries while taking into consideration the varying distributions within them. We addressed this by creating two separate sets of countries: each grouping had a low, middle, and high category, but for one group of countries the division between the low and middle educational levels was drawn at primary school while for the other it was drawn between lower and upper secondary school (see Fig. 1). Table 2 shows the frequencies and distributions for all 15 official EU project study countries.

*Alcohol consumption*

For the analysis we used as dependent variables current drinking status, heavy episodic drinking (or binge drinking) and heavy drinking in terms of volume.

Table 2. Categorization of education variable by study country

Age: 25–59 years	Pre/primary/lower secondary education		Upper secondary education		Tertiary education	
	Low (%) <sup>a</sup>	<i>n</i>	Middle (%)	<i>n</i>	High (%)	<i>n</i>
Switzerland	17.6	1354	61.1	5087	21.3	1719
Germany	6.1	445	56.2	3910	37.6	2594
France	16.8	1398	52.7	4540	28.9	2618
United Kingdom	26.3	342	44.0	572	29.6	385
Israel	18.0	591	57.4	2180	24.6	893
Sweden	12.5	427	54.0	1863	30.9	1040
Finland	22.4	300	42.5	569	35.1	470
Norway	22.5	314	42.7	596	34.8	485
Austria	60.0	2759	36.6	1684	3.3	152
Czech Republic	8.4	156	72.0	1339	19.7	366
Hungary	21.3	330	62.6	1071	16.1	356
Italy	14.1	294	71.1	1484	14.8	309
Mexico	45.3	1853	41.0	1583	13.7	552
The Netherlands	11.7	342	71.6	2096	16.7	490
Brazil	57.0	346	31.1 <sup>b</sup>	189	11.9	72

<sup>a</sup>Percentages are weighted; *ns* are unweighted.

<sup>b</sup>This category includes the highest grade of primary level (10.9% of respondents).

*Current drinking status.* Abstainers are defined as those who had not consumed alcohol in the past 12 months. 'Current drinkers' were those who had consumed alcohol at least once during this time.

*Heavy episodic drinking.* The variable for heavy episodic or binge drinking was also dichotomized into respondents who had drunk 'x' glasses (depending on the number of glasses used to define binge drinking in each country) on one occasion more often than once a month and those who had not. The definition of binge drinking varied between countries: three or more glasses in Hungary, five or more glasses on one occasion in Germany, Israel, Sweden, Brazil, Mexico, six or more glasses on one occasion in Finland and The Netherlands, or eight or more glasses in Switzerland. For Brazil the binge variable is constructed using the graduated frequency question on alcohol consumption. The surveys in Norway and the Czech Republic used a beverage-specific binge measure. For these countries an overall binge measure was calculated using the highest reported number of occasions of consuming five or more drinks for a single beverage. The questionnaires from Italy, France, Austria, and the UK did not include a question about heavy episodic drinking.

Because of different drink sizes and differing alcohol content of the beverages, the binge measure represents varying pure alcohol intake. In Hungary, Finland, Israel, The Netherlands, Brazil, and Sweden the cut point for binge drinking is ~60 g of ethanol, in Mexico 65 g, in Germany and Norway at the average 70 g, in Switzerland 80 g, and in the Czech Republic 90 g.

*Heavy volume consumption.* Heavy consumption was defined as an average ethanol intake of >20 g per day for women and >30 g per day for men (British Medical Association, 1995). The volume (per day) measure is defined as the summary of beverage-specific volume measures for Switzerland, Germany, Italy, France, Israel, Sweden, Finland, Norway, Austria, Mexico, the Czech Republic, and Hungary. For Great Britain, The Netherlands, Brazil, and a part of the Swedish sample the volume measure is based on an overall and not a beverage specific question. For a part

of the Finnish sample (where the beverage-specific volumes are missing) and for Mexico the volume measure is based on the graduated frequency measure (see the article by Mäkelä *et al.* in this issue for more information on drinking measures).

### Consequences

Several of the EU project study countries included the AUDIT questionnaire or items from it in their survey questionnaires. The AUDIT, developed and tested internationally through a WHO-supported initiative (Saunders *et al.*, 1993a,b), has proven to be a valid screening tool (e.g. Conigrave *et al.*, 1995) and has been translated into several languages.

Among those study countries which had included the AUDIT, we chose to examine only those questions that ask about consequences and dependence symptoms of alcohol consumption in order to focus on alcohol-related problems, and thus deleted the first three questions measuring alcohol consumption. With this restriction five countries (Switzerland, Sweden, Finland, Czech Republic, and Hungary) were included in this analysis. Among the seven problem items in the AUDIT these five countries shared six in common.

During the past 12 months have you . . .

1. . . . at least one time found that you were not able to stop drinking once you had started?
2. . . . at least one time failed to do what was normally expected from you because of drinking?
3. . . . at least one time needed a first drink in the morning to get yourself going after a heavy drinking session?
4. . . . at least one time had a feeling of guilt or remorse after drinking?
5. . . . at least one time been unable to remember what happened the night before because you had been drinking?
6. . . . or someone else been injured as a result of your drinking?

We constructed dichotomized variables to categorize people who reported these individual consequences at least once over the past 12 months and people who did not and



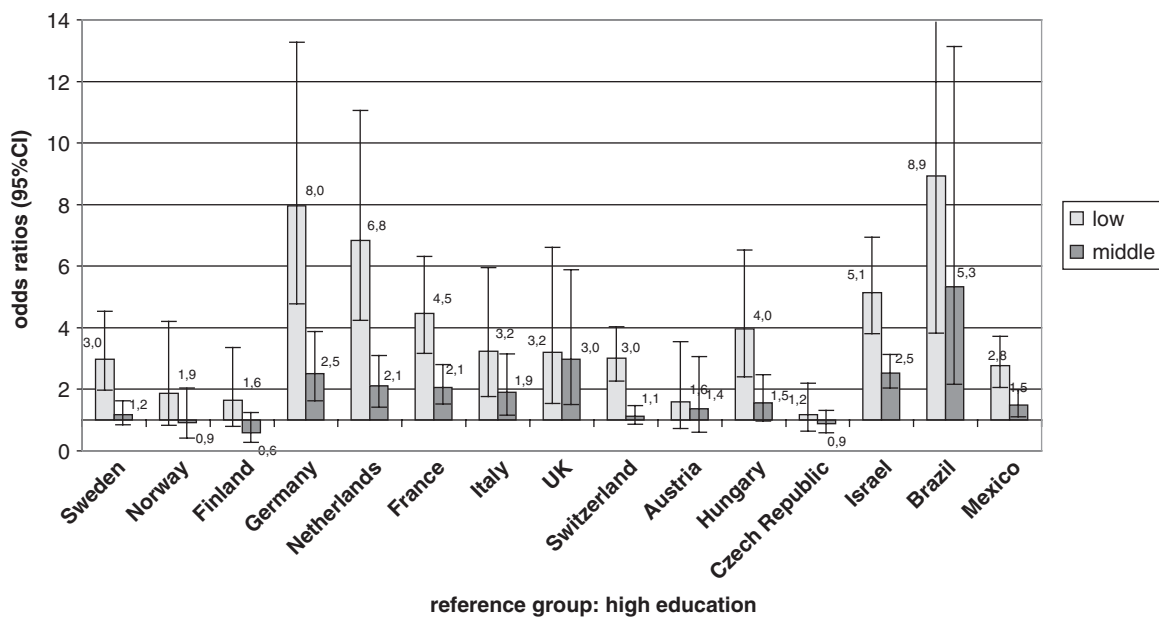


Fig. 2. Odds ratios for abstention by educational level, women.

then examined the prevalence of having two or more positive answers to the six consequence items.

#### Statistical analyses

Basic prevalence (e.g. percentages) was calculated for abstention, heavy drinking, and heavy episodic drinking using the total survey sample as the base (i.e. drinkers and non-drinkers combined). For the drinking-related consequences we have used drinkers only as the population base for calculating the problem rates.

Logistic regression was performed to calculate age adjusted odds ratios for abstention, heavy drinking and heavy episodic drinking. The analyses were conducted separately for men and women and for the different countries. The reference group was the highest educational level and is not shown in the figures. A confidence interval was calculated around each of the odds ratios.

## RESULTS

The countries in the following figures are ordered according to geographical considerations: the Nordic countries (Sweden, Norway, and Finland), middle European countries (Germany, The Netherlands, France, Italy, UK, Switzerland, Austria, Hungary, Czech Republic, and Israel), and the Latin American countries (Brazil and Mexico), with odds ratios and 95% confidence intervals displayed. A table with the basic prevalences for all measures and all countries may be found in the Appendix.

#### Abstention

In general there appear no great differences in rates of abstention by education among women in the Nordic countries (Fig. 2). The only exception is for Sweden where a significant

difference between the lowest and highest educational groups is evident. For the group of middle European countries a clear gradient in inequalities in abstention rates exists for almost all countries: those with lowest educational attainment are most likely to abstain followed by those with middle education. Only for Austria and the Czech Republic is this pattern not distinguishable. This pattern also exists in Brazil and Mexico.

For men, the same general lack of inequalities in abstention in the Nordic countries is apparent, except again between low and high educated Swedish men (Fig. 3). In the middle European countries a gradient is found in most countries. But in Italy, the UK, Austria, and the Czech Republic no significant inequalities in abstention rates are evident. For the two non-European countries only Brazil demonstrates an educational gradient.

#### Heavy drinking

In almost every case the gradient observed with abstinence now reverses itself for heavy drinking among women (Fig. 4). However, in the Nordic countries no significant inequalities in this drinking measure could be found. In Germany, The Netherlands, France, Switzerland, and Austria women of higher educational status are more likely to consume heavily as compared to women of middle or lower educational attainment. For the remaining countries, the differences are insignificant except for the curious exception among Italian women where those of middle educational attainment are more likely to be heavy drinkers than those of high educational status. The very large confidence bands around the values for many countries reflect the small numbers of heavy drinkers in general among women.

The results with regard to heavy drinking among men are quite different: the prevailing pattern is that those of lower educational attainment are more likely to be heavy drinkers than those of higher educational attainment (Fig. 5).

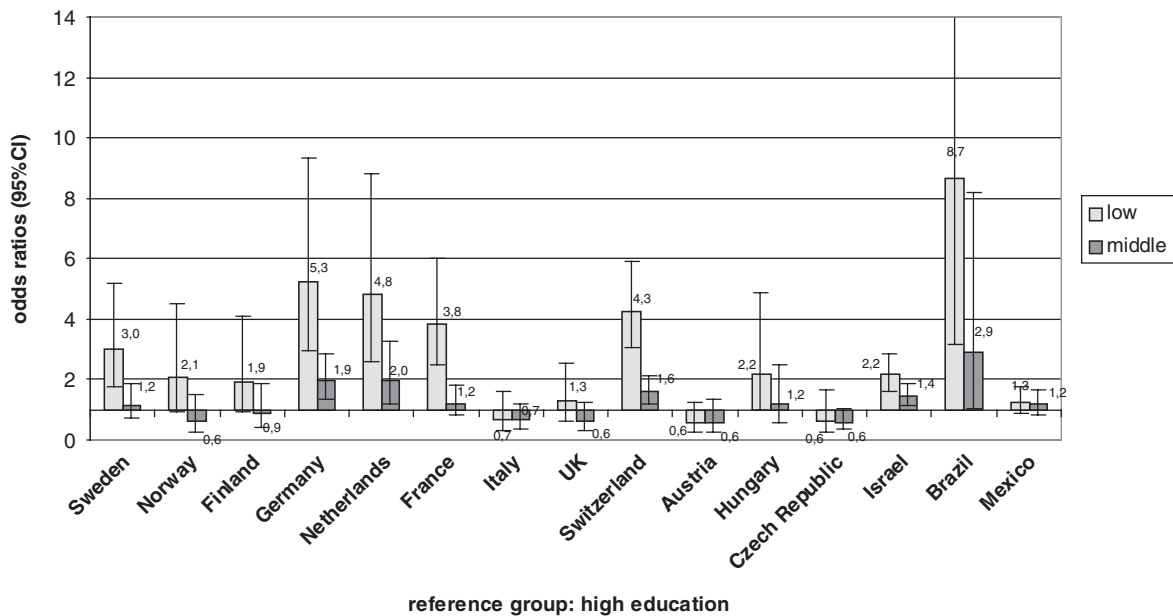


Fig. 3. Odds ratios for abstention by educational level, men.

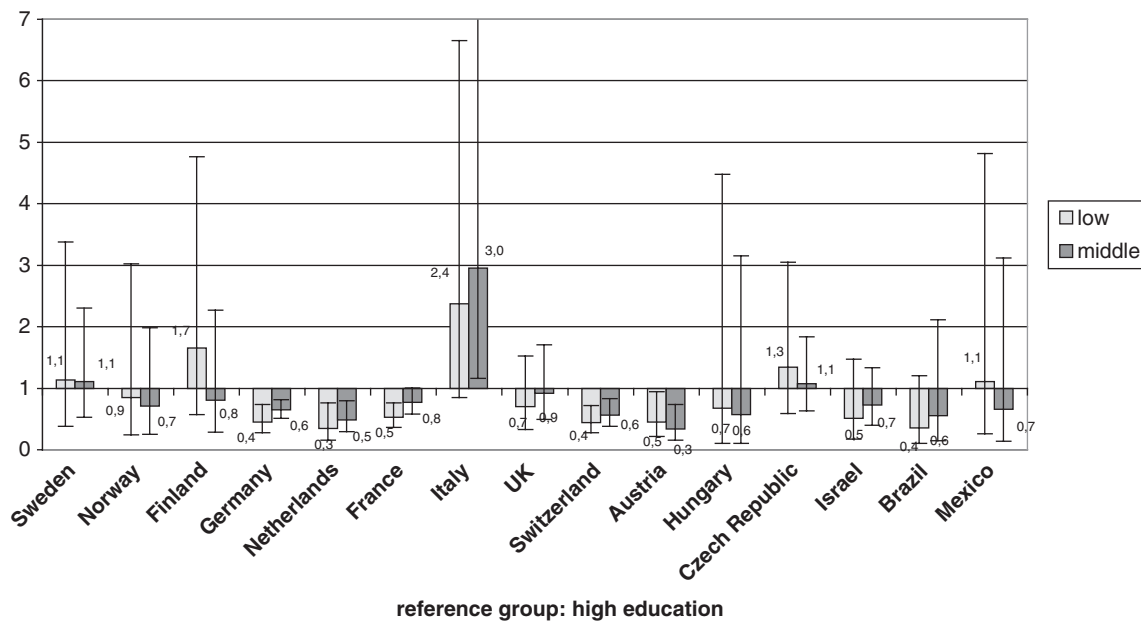


Fig. 4. Odds ratios for heavy drinking by educational level, women.

This pattern is significant only for Norway among the Nordic countries and for Italy, Switzerland, Austria, Hungary, the Czech Republic, and Israel. Also in the UK, Austria, Czech Republic, and Israel men of middle educational attainment were more likely to be heavy drinkers than men of higher attainment.

#### Heavy episodic drinking

Among women no significant social inequalities in binge drinking are evident except between those of middle and

high educational attainment in The Netherlands and in Mexico (opposite directions) (Fig. 6). This is mainly due to the low levels of heavy episodic drinking among women. Although not statistically significant in most cases, the results for men basically demonstrate a clearer gradient with the lower and middle educational groups, respectively, being more likely to be heavy episodic drinkers than the higher educated (only for Hungary, Czech Republic, and Mexico is this pattern significant). Although also not statistically significant, Brazil demonstrates an opposite trend with more men of high education being binge drinkers (Fig. 7).

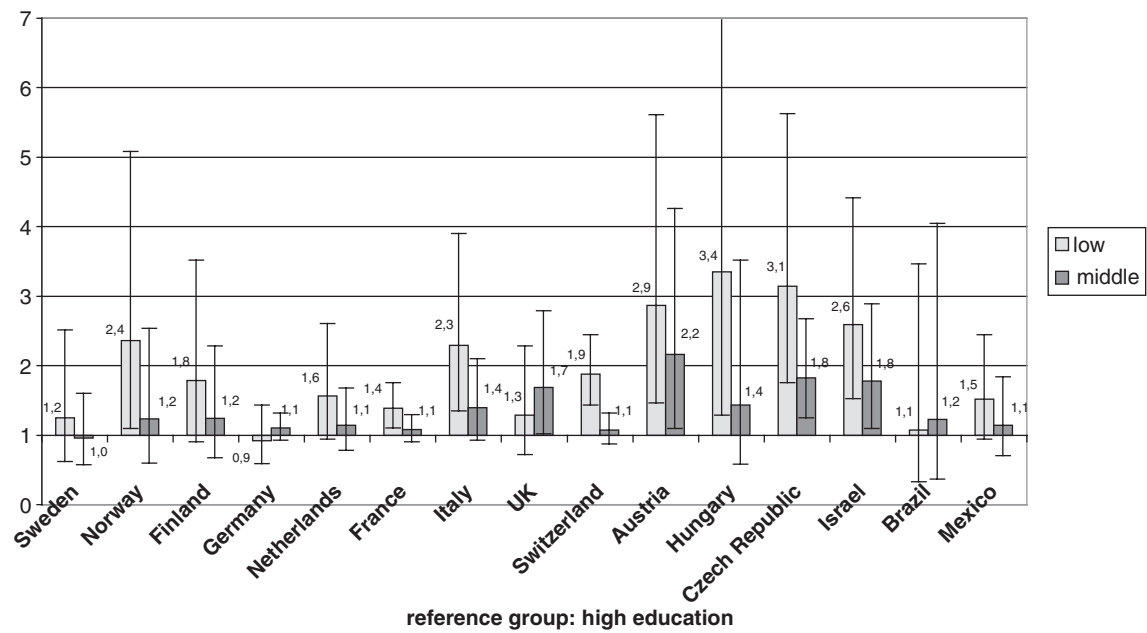


Fig. 5. Odds ratios for heavy drinking by educational level, men.

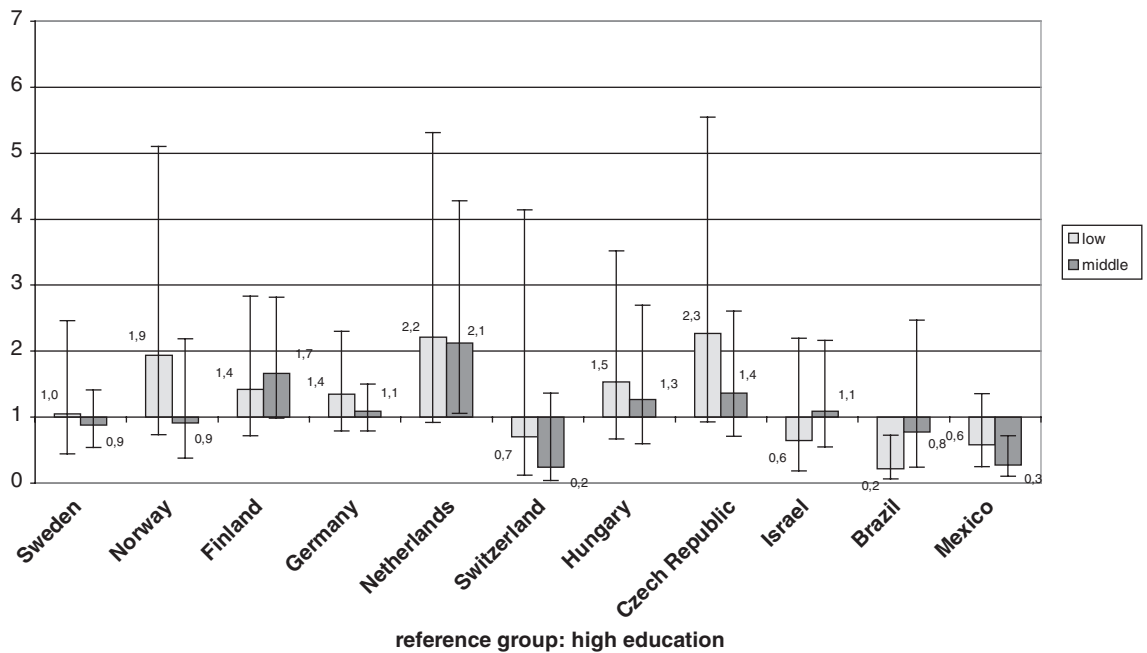


Fig. 6. Odds ratios for heavy episodic drinking (HED) by educational level, women.

*Alcohol-related problems, AUDIT items*

Social inequalities with regard to alcohol-related problems as measured by the AUDIT do not appear to exist in a significant way among women in the five examined countries (Fig. 8). Only among Finnish women of middle educational status was there a significantly increased risk of reporting two or more problems in comparison to women of high education. Although statistically insignificant there

still is an observable trend of women of low SES being more likely to report two or more AUDIT problems than women of high SES. Quite a clear pattern exists for men with lower education having a higher likelihood of reporting problems than men of high education, although this trend is also not significant for all countries (i.e. only in Finland, the Czech Republic, and Hungary) (Fig. 9).

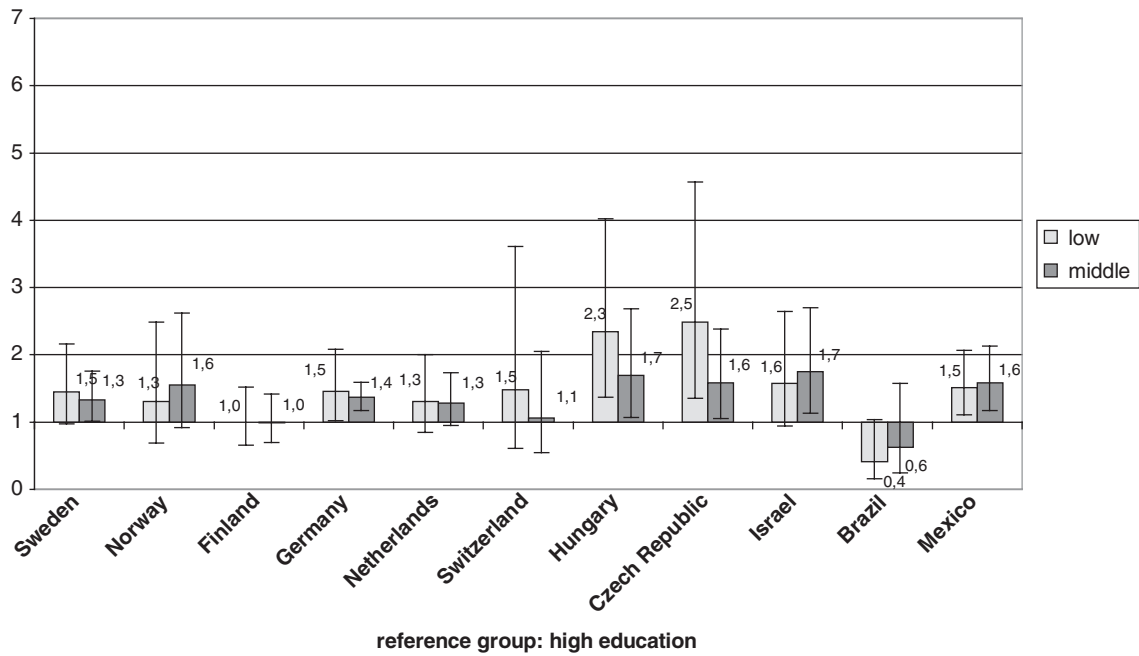


Fig. 7. Odds ratios for heavy episodic drinking (HED) by educational level, men.

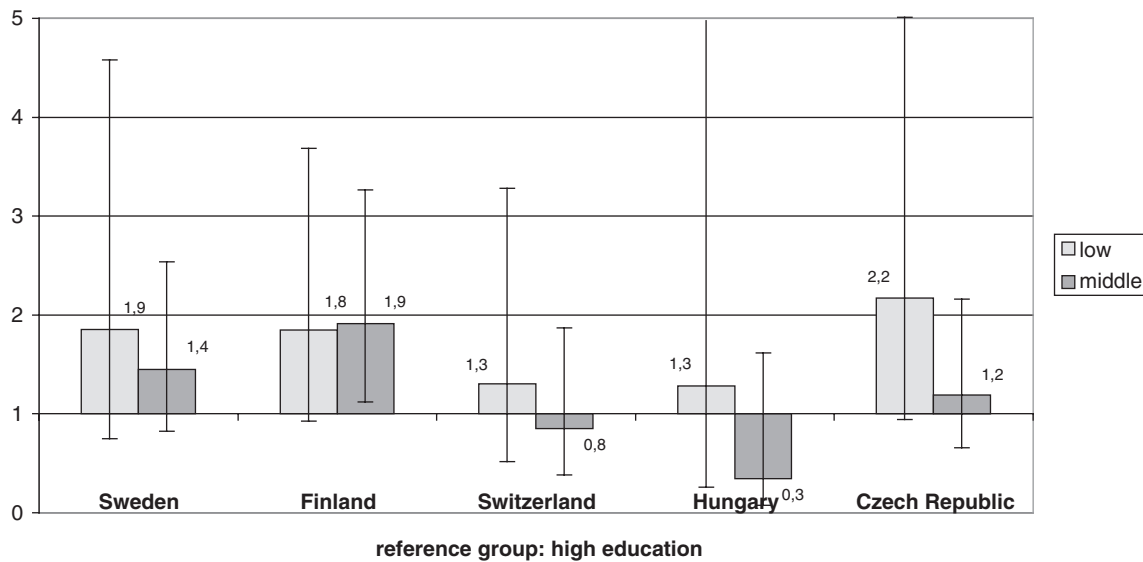


Fig. 8. Odds ratios for 2+ out of 6 AUDIT problem items by educational level, women (drinkers only).

## DISCUSSION

This paper has examined social inequalities in drinking behaviour in the 13 European and two non-European countries of the EU concerted action 'Gender, Culture and Alcohol Problems: A Multi-national Study' in order to broaden our knowledge of how social inequalities in drinking behaviour vary by gender and by culture.

Abstinence was the drinking measure that behaved the most similarly between the genders; that is, the patterning of social inequalities for men in the study countries resembled that for women. The only countries that demonstrated discordant patterns between the genders are Italy, UK, and Mexico where there were no significant differences among men, but indeed among women (there are no study countries in which there are significant inequalities among men but not among women).



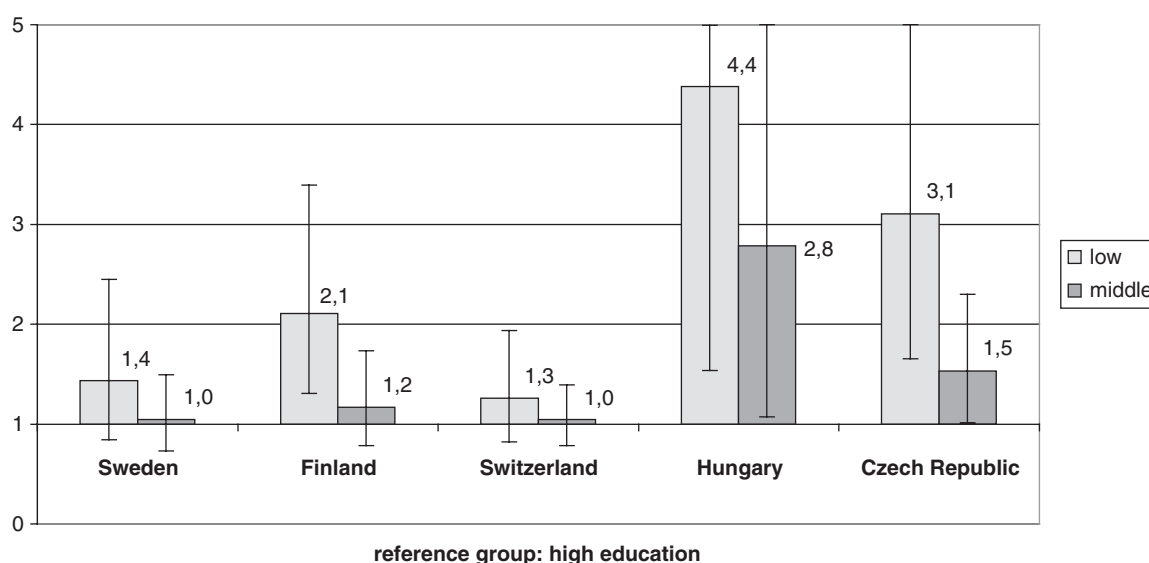


Fig. 9. Odds ratios for 2+ out of 6 AUDIT problem items by educational level, men (drinkers only).

With regard to heavy drinking behaviour, the genders show little similarity. Among women, the major pattern was in those countries where women of high education are the more likely to drink heavily. This is clearly the case for the five middle European countries of Germany, The Netherlands, France, Switzerland, and Austria. In contrast, the only significant findings with regard to heavy drinking among men are found in those countries where the pattern is the opposite: men of lower education are more likely to be heavy drinkers. This is true for Norway, France, Italy, Switzerland, Austria, Hungary, the Czech Republic, and Israel.

For heavy episodic drinking there is also little similarity between the genders. No real pattern is discernable for women as the levels for binge drinking are quite low. For men, there appears a trend, though insignificant in most countries of a negative social gradient in which those of low and middle educational attainment are more likely to binge drink than those of high educational attainment.

Finally, for those five countries with comparable items from the AUDIT test, little in the way of social differences in reporting could be found among women. But inequalities were more evident among men with lower educated men in Finland, the Czech Republic, and Hungary reporting more problems than higher educated men. This is also true to a lesser degree for men of middle education in the Czech Republic and Hungary. As a general tendency, odds increased across countries in about the same way for men and women (with the exception of Hungary), and low SES groups of both sexes had odds ratios  $>1$  in all countries, though not significantly so in most countries.

With regard to our regional groupings, the Nordic countries which we studied demonstrate few social inequalities in drinking behaviour. This is not surprising given their high level of gender equality as well as strongly developed welfare states (Siaroff, 1994) which could contribute to both social and gender equality in patterns of drinking habits. The countries grouped as middle Europe demonstrate more heterogeneity

which may also represent the various drinking styles that the 10 countries spanning the UK to Israel possess (see the article by Mäkelä *et al.* in this issue for more on differing drinking patterns). But Brazil and Mexico add an interesting dimension to the analysis and show some indication of similarity with patterns already found in studies of social inequalities in countries in transition. For example, women of high education in these countries are more likely to engage in heavy episodic drinking than less educated women and the same tendency was found among Brazilian men. These findings are similar to those of Neumark *et al.* (2003) who found the same for higher educated Arab women in Israel and what Almedia-Filho *et al.* (2005) found for higher educated and higher social class men and women in Brazil. Thus, our findings contribute to a young but growing collection of research that could indicate that those of higher SES in developing countries may be at higher risk for binge drinking. This could well be linked to an increasing access and availability of alcohol to the rising upper classes in such countries (Room *et al.*, 2002).

### Limitations

The present analysis has several obvious methodological limitations. These are inherent in such a comparative study. As well as coming from various countries in various years, the survey data were collected by varying methods and with varying response rates. Also the original questions for measuring drinking behaviour varied, although in most countries the format was often the quantity-frequency measure. However, care was taken to make the drinking summary measures as comparable as possible as well as to develop a valid yet comparable scheme for comparing educational status. These limitations can introduce a certain amount of imprecision into our analyses. Yet, it is hoped that when the data produce similar results across countries, this can help confirm some main trends. For example, the very clear inequalities in

drinking status across many countries as well as across gender could help bolster the conclusion that those of lower educational status are more likely to be abstainers than the higher educated. With this particular observation, the results of previous research also lend support that such a result is most likely to be valid.

#### *What do social inequalities mean for drinking behaviour?*

The question could be raised as to what do social inequalities in drinking behaviour signify. In epidemiological and public health research the tradition is to examine inequalities in health or health status. When we look at alcohol consumption we are combining elements of lifestyle along with indicators of health and health risk factors. Thus, social inequalities in abstinence or current drinking status do not necessarily indicate differences in health status, but perhaps lifestyle choices or they could simply be correlates of social status. When we look at heavy drinking or heavy episodic drinking, we are then exploring social inequalities in health risk behaviour. This is more relevant for public health research and can give us information as to who is more at risk for certain possible diseases or problems. When we examine inequalities in reporting alcohol-related problems, we come closest to studying inequalities in actual health status, since the problems (if consisting of a full screening schedule) can serve as indicators of alcohol dependence or abuse. However, this is a more problematic area than when studying 'clear cut' diseases. Since alcohol and drug abuse can carry stigma (Conrad and Schneider, 1980; Room, 2004), and because the lower classes may be more susceptible to deviant labelling (Conrad and Schneider, 1980), the results we find must be considered within this context in addition to taking into account the potential for underreporting alcohol-related problems. Thus, social status is not only a determinant of health or disease, but also affects how we collect and analyse our data in this field. It is important to keep such facts in mind when addressing social inequalities and the effect of social status on alcohol use and misuse.

In sum, this analysis reveals that social inequalities in alcohol use vary across gender and cultures—depending upon the drinking measure examined. It also discloses the complexity of studying health risk behaviours which are closely connected to lifestyle choices. Such information is critical to consider when formulating alcohol prevention or intervention policies at the international and cross-cultural level. Future research should undertake more detailed analyses which include a broader range of countries and with more information on alcohol-related problems in order to describe more clearly where and how SES contributes to differential risk for alcohol misuse and problems.

**Acknowledgements** — This study was carried out with the cooperation of Irmgard Eisenbach-Stangl, Austria; Florence Kerr-Correa, Brazil; Ladislav Csemy, Czech Republic; Pia Mäkelä, Finland; Francois Beck, France; Ludwig Kraus, Germany; Zsuzsanna Elekes, Hungary; Giora Rahav, Israel; Allaman Allamani, Italy; Martha Romero Mendoz, Mexico; Ronald Knibbe, The Netherlands; Ingeborg Rossow, Norway; Karin Helmersson-Bergmark, Sweden; and Moira Plant, UK. This research was conducted within the framework of a Concerted Action (QLG4-CT-2001-0196) funded by the Quality of Life and Management of Living Resources Programme of the European Commission. The data are also a part of the broader project, 'Gender, Alcohol and Culture: An International Study' (GENACIS). GENACIS is a collaborative

international project affiliated with the Kettil Bruun Society for Social and Epidemiological Research on Alcohol and coordinated by GENACIS partners from the University of North Dakota, the University of Southern Denmark, Charité—University Medicine Berlin, Germany, the World Health Organization, and the Swiss Institute for the Prevention of Alcohol and Drug Problems. Support for other aspects of the project comes from the US National Institute on Alcohol Abuse and Alcoholism/National Institutes of Health (Grant Numbers R01AA04610 and R21AA12941, Sharon C. Wilsnack, principal investigator), the World Health Organization (Maristela Monteiro and Isidore Obot, coordinators), the German Federal Ministry of Health and Social Security, and Swiss national funds. Support for individual country surveys was provided by government agencies and other national sources. Data coordinator for the GENACIS project is Gerhard Gmel, Swiss Institute for the Prevention of Alcohol and Drug Problems, Lausanne, Switzerland. The authors thank Mr Jürgen Eckloff for his assistance in producing the graphs for this article.

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## APPENDIX

Prevalence (percentages) of abstaining, heavy drinking, and heavy episodic drinking by country, gender, and educational level<sup>a</sup> (age: 25–59 years).

	Current abstaining						Heavy drinking						Heavy episodic drinking					
	Men			Women			Men			Women			Men			Women		
Switzerland	8.8			21.3			14.3			4.9			1.2			0.2		
By SES (lo   mi   hi)	19.2	8.3	5.3	35.2	17.6	16.2	22.1	13.4	12.8	4.1	4.7	7.9	1.5	1.2	1.0	0.3	0.1	0.4
Germany	4.2			5.8			18.5			10.9			28.4			6.1		
By SES (lo   mi   hi)	12.3	4.8	2.6	17.2	6.0	2.5	16.2	18.9	18.2	7.1	9.7	14.2	32.5	31.3	24.8	7.5	6.2	5.7
Italy	8.4			21.5			32.0			8.6			X			X		
By SES (lo   mi   hi)	7.3	8.0	11.3	29.2	21.6	12.7	52.8	30.0	25.2	12.3	8.9	3.2						
France	4.4			8.5			23.0			7.2			X			X		
By SES (lo   mi   hi)	10.0	3.5	3.0	14.9	8.6	4.7	32.3	22.3	19.2	6.5	6.8	7.7						
UK	8.4			14.1			17.4			9.0			X			X		
By SES (lo   mi   hi)	10.6	6.3	9.2	19.2	15.8	6.2	16.5	21.1	13.5	7.0	9.5	10.1						
Israel	26.4			45.7			6.5			2.3			7.2			1.9		
By SES (lo   mi   hi)	35.6	25.9	19.7	65.2	48.6	27.5	9.0	6.7	3.8	1.5	2.1	3.0	7.1	8.3	4.8	0.9	2.1	2.1
Mexico	21.2			55.3			10.1			0.9			32.0			1.7		
By SES (lo   mi   hi)	24.0	20.1	18.2	63.1	49.4	39.7	9.2	8.2	10.1	1.1	0.6	0.9	31.3	35.9	25.4	2.0	0.9	3.5
Sweden	7.7			14.0			5.2			2.2			23.0			4.9		
By SES (lo   mi   hi)	15.4	6.3	5.5	25.6	12.5	10.8	5.7	4.7	4.9	2.5	2.2	2.0	21.9	25.4	19.1	3.4	5.1	5.4
Finland	7.0			7.6			10.3			3.5			47.3			12.8		
By SES (lo   mi   hi)	12.4	5.0	6.0	14.4	4.5	7.1	13.0	10.3	8.3	5.8	2.6	3.2	43.5	49.0	47.7	11.5	15.7	10.3
Norway	5.6			5.8			7.5			2.6			13.5			4.1		
By SES (lo   mi   hi)	10.6	3.2	5.2	9.8	4.5	4.7	11.3	7.1	5.6	2.5	2.2	3.2	12.6	16.3	10.8	5.5	3.5	4.0
The Netherlands	12.6			29.1			16.3			6.8			31.0			7.5		
By SES (lo   mi   hi)	24.1	12.4	6.6	54.4	27.7	15.6	22.2	15.8	14.3	5.6	6.2	11.0	32.1	32.0	26.8	7.8	8.2	4.1
Austria	5.2			14.4			25.7			6.1			X			X		
By SES (lo   mi   hi)	4.9	5.3	8.4	15.3	13.4	10.1	28.2	22.8	12.0	6.5	4.9	13.0						

<sup>a</sup>lo = low educational level, mi = middle educational level, hi = high educational level.