



**World Health
Organization**

REGIONAL OFFICE FOR

Europe

By: Marge Reinap
Mariliis Tael
Maris Jesse

**Case study
on socially determined
inequities in alcohol
consumption patterns
in Estonia**



Tervise Arengu Instituut
National Institute for Health Development



**World Health
Organization**

REGIONAL OFFICE FOR **Europe**

Case study on socially determined inequities in alcohol consumption patterns in Estonia

By: Marge Reinap, Mariliis Tael, Maris Jesse



Tervise Arengu Instituut
National Institute for Health Development

KEYWORDS

ADOLESCENT

ALCOHOL DRINKING

ALCOHOLISM AND DRUG ABUSE

HARM REDUCTION

HEALTH BEHAVIOR

SOCIOECONOMIC FACTORS

Address requests about publications of the WHO Regional Office for Europe to:

Publications

WHO Regional Office for Europe

UN City

Marmorvej 51

DK-2100 Copenhagen Ø

Alternatively, complete an online request form for documentation, health information, or for permission to quote or translate, on the Regional Office web site (<http://www.euro.who.int/pubrequest>).

© World Health Organization 2013

All rights reserved. The Regional Office for Europe of the World Health Organization welcomes requests for permission to reproduce or translate its publications, in part or in full.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers' products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted, the names of proprietary products are distinguished by initial capital letters.

All reasonable precautions have been taken by the World Health Organization to verify the information contained in this publication. However, the published material is being distributed without warranty of any kind, either express or implied. The responsibility for the interpretation and use of the material lies with the reader. In no event shall the World Health Organization be liable for damages arising from its use. The views expressed by authors, editors, or expert groups do not necessarily represent the decisions or the stated policy of the World Health Organization.

Contents

Glossary of key terms	iii
Acronyms and abbreviations	v
List of tables and figures	vi
Introduction.....	1
1. Differential distribution of alcohol use and patterns in Estonia	3
1.1 Differential alcohol use by gender.....	4
1.2 Differential alcohol use by age	10
1.3 Differential alcohol use by ethnicity.....	17
1.4 Differential alcohol use by socioeconomic determinants among adults.....	25
1.5 Differential alcohol use by other socio-demographic, socioeconomic and risk behaviour determinants.....	35
2. The health outcomes and socioeconomic consequences of alcohol use	46
2.1 Differential health outcomes of alcohol use	46
2.2 Differential socioeconomic consequences of alcohol use	50
3. Causal pathways and possible interventions	51
3.1 Socioeconomic context and position	51
3.2 Differential vulnerability	56
3.3 Differential exposure	60
3.4 Addressing health outcomes of alcohol use.....	62
3.5 Addressing differential socioeconomic consequences of alcohol use	63
Conclusions.....	65
References.....	68
Annex	74

Acknowledgements

The WHO Regional Office for Europe's European Office for Investment for Health and Development - which coordinated the activities leading to this publication - wishes to thank the Department of Health (England, United Kingdom) for the financial support provided for this publication, and the Italian Ministry of Health and the Veneto Region for their long-standing support to the work of the office. Through the Biennial Collaborative Agreement 2012/2013 between the WHO Regional Office for Europe and the Estonian Ministry of Social Affairs, further financial contribution was received to support developing the response to public health challenges and overall strengthening of the health system.

The authors wish to thank Triinu Täht and Taavi Lai from the Ministry of Social Affairs and Jarno Habicht from the WHO Regional Office for Europe for their advice in preparing the study, as well as Katrin Aasvee, Gleb Denissov, Mare Tekkel and Tatjana Veideman from the National Institute for Health Development for their timely support.

The authors are grateful for the supervision and comments of Johanna Hanefeldt and Sarah Simpson from the WHO European Office for Investment for Health and Development (Venice Office), as well as to the anonymous peer reviewer for the excellent feedback and comments that helped to improve the report.

The case study also benefited from significant administrative support from Gerli Sirk, Simone Tetz and Bianca Bortot from the WHO Regional Office for Europe, along with language editing by Nicole Satterley.

Glossary of key terms

Absolute (pure) alcohol – alcohol content (as 100% ethanol) of alcoholic beverages (WHO, 1994).

Abstinence – refraining from drug use or (particularly) from drinking alcoholic beverages, whether as a matter of principle or for other reasons (WHO, 1994).

Binge drinking – drinking at least 6 or more drinks of alcoholic beverages at 1 occasion (DHS, 2008).

Drink – a portion of alcohol is 1 bottle of beer (0.5 litres), 1 glass of wine (100 g) or 1 shot of strong liquor (30 g) (Tekkel & Veideman, 2011).

Gender – refers to the socially constructed roles, behaviours, activities, and attributes that a given society considers appropriate for men and women (WHO, 2012).

Health equity (and equity in health) – equity is the absence of avoidable, unfair, or remediable differences among groups of people, whether those groups are defined socially, economically, demographically or geographically.¹ The term health equity (or equity in health) implies that ideally everyone should have a fair opportunity to attain their full health potential and, more pragmatically, that no one should be disadvantaged from achieving this potential. Therefore, health equity is the absence of health inequalities (applying the aforementioned definition) (Spanish Ministry of Health and Social Policy, 2010).

Health inequalities (and inequalities in health) – taken literally, the term health inequalities means differences in health status between individuals or groups, as measured by (for example) life expectancy, mortality or disease. This report focuses on differences in health that arise not from chance or from the decision of the individual but from avoidable differences in social, economic and environmental variables (such as living and working conditions, education, occupation, income, access to quality health care, disease prevention and health promotion services) that are largely beyond individual control and that can be addressed by public policy. Therefore, health inequalities in this context refer to avoidable and unfair differences in health that are strongly influenced by the actions of governments, stakeholders and communities (and that can be addressed directly by policy-makers) (Spanish Ministry of Health and Social Policy, 2010; European Commission, 2009).

Heavy drinking – drinking more than 16 units (bottle/can/dose/cup) per week for men and 8 units of alcohol for women (see Chapter 1).

Sex – refers to the biological and physiological characteristics that define men and women (WHO, 2012).

¹ WHO Equity Team working definition.

Social determinants of health (including the social and economic determinants of health) – these are the conditions in which people are born, grow, live, work and age, including the health system. The circumstances involved are shaped by the distribution of money, power and resources at global, national and local levels, which are themselves influenced by policy choices (Spanish Ministry of Health and Social Policy, 2010).

Socioeconomic status – describes an individual's or a family's relative position in society. It is defined by indicators such as educational attainment, occupation, income and house or car ownership (EuroHealthNet, 2012).

Surrogate alcohol – refers to liquids usually containing ethanol – and not intended for consumption as beverages – that are consumed orally as substitutes for alcoholic beverages with the objective of producing intoxication or other effects associated with alcohol consumption (WHO, 2010).

Total adult per capita alcohol consumption – the adult (population of 15 years and over) per capita amount of alcohol consumed in litres of pure alcohol in a given population (WHO, 2011).

Unrecorded alcohol – refers to alcohol that is not taxed and is outside the usual system of governmental control, because it is produced, distributed and sold outside formal channels (WHO, 2011).

Weekly alcohol consumption – consuming alcoholic drinks at least once a week (Currie et al., 2008).

Acronyms and abbreviations

BAC	blood–alcohol concentration
CI	confidence interval
DALY	disability-adjusted life-year(s)
DOTS	directly observed treatment, short-course
EEK	Estonian kroon (currency)
EU	European Union
FAS	family affluence scale
HBSC	Health Behaviour in School-aged Children
MDR-TB	multidrug-resistant tuberculosis
NIHD	National Institute for Health Development
OOP (payment)	out-of-pocket
OR	odds ratio
TB	tuberculosis
TLE	temporary life expectancy
TV	television
VAT	value-added tax

List of tables and figures

Tables

- Table 1.1.** Harmful alcohol consumption by family income level, 2010
- Table 1.2.** Harmful alcohol consumption in women by family income level, 2010
- Table 1.3.** Harmful alcohol consumption in men by employment status, 2010
- Table 1.4.** Harmful alcohol consumption in women by employment status, 2010
- Table 1.5.** Harmful alcohol consumption in men by education level, 2010
- Table 1.6.** Harmful alcohol consumption in women by education level, 2010
- Table A1.** Distribution of socio-demographic, socioeconomic and risk behaviour determinants among 11-, 13- and 15-year-old schoolchildren (based on alcohol consumption), 2010
- Table A2.** Distribution of socio-demographic and socioeconomic determinants among adults, 2010

Figures

- Fig. 1.1.** Alcohol consumption distribution by gender among 15-year-old schoolchildren
- Fig. 1.2.** Prevalence of being drunk by gender among 15-year-old schoolchildren
- Fig. 1.3.** Alcohol consumption distribution by gender, 2010
- Fig. 1.4.** Consumption distribution of preferred alcoholic products by gender, 2010
- Fig. 1.5.** Consumption distribution of 6 or more portions of alcohol at one occasion by gender, 2010
- Fig. 1.6.** Weekly alcohol consumption among 11-, 13- and 15-year-old schoolchildren, 2002–2010
- Fig. 1.7.** Alcohol consumption distribution among adolescents by different alcoholic beverages according to age, 2010
- Fig. 1.8.** At least 4 episodes of drunkenness among 11-, 13- and 15-year-old schoolchildren, 2002–2010
- Fig. 1.9.** Alcohol consumption distribution by age, 2010
- Fig. 1.10.** Alcohol consumption distribution by different alcoholic beverages according to age, 2010
- Fig. 1.11.** Consumption distribution of 6 or more portions of alcohol at one occasion by age, 2010
- Fig. 1.12.** Alcohol consumption distribution among 11-, 13- and 15-year-old adolescents by ethnicity, 2010
- Fig. 1.13.** Alcohol consumption distribution among 11-, 13- and 15-year-old adolescents according to different alcoholic beverages by ethnicity, 2010

- Fig. 1.14.** Drunkenness distribution among 11-, 13- and 15-year-old adolescents by ethnicity, 2010
- Fig. 1.15.** Alcohol consumption distribution by ethnicity, 2010
- Fig. 1.16.** Alcohol consumption according to different alcoholic beverages by ethnicity, 2010
- Fig. 1.17.** Consumption distribution of 6 or more portions of alcohol at one occasion by ethnicity, 2010
- Fig. 1.18.** Relationships between socioeconomic factors and hazardous drinking behaviour
- Fig. 1.19.** Alcohol consumption distribution by family income level (monthly average), 2010
- Fig. 1.20.** Alcohol consumption distribution by employment status, 2010
- Fig. 1.21.** Alcohol consumption distribution by education level, 2010
- Fig. 1.22.** Alcohol consumption distribution among 11-, 13- and 15-year-old adolescents by place of residence, 2010
- Fig. 1.23.** Drunkenness distribution among 11-, 13- and 15-year-old adolescents by place of residence, 2010
- Fig. 1.24.** Alcohol consumption distribution among 11-, 13- and 15-year-old adolescents by family structure, 2010
- Fig. 1.25.** Drunkenness distribution among 11-, 13- and 15-year-old adolescents by family structure, 2010
- Fig. 1.26.** Alcohol consumption distribution among 11-, 13- and 15-year-old adolescents by FAS, 2010
- Fig. 1.27.** Drunkenness distribution among 11-, 13- and 15-year-old adolescents by FAS, 2010
- Fig. 1.28.** Alcohol consumption distribution among 11-, 13- and 15-year-old adolescents by smoking status, 2010
- Fig. 1.29.** Drunkenness distribution among 11-, 13- and 15-year-old adolescents by smoking status, 2010
- Fig. 3.1.** Analytical framework to analyse the relationship between social determinants and alcohol-related harm

Introduction

Estonia is a country with a high level of alcohol consumption and in which alcohol dependence and other alcohol-related harm constitute one of the main public health and social concerns. Per capita consumption in Estonia was estimated to be 9.7 litres (measured in absolute alcohol per capita) in 2010 and it has been decreasing from 12.6 litres per capita since 2007 (EKI, 2010b).

Alcohol consumption plays a significant role in contributing to the development of the disease burden. The study on burden of disease carried out in 2003 (Lai, Vals & Kiivet, 2003) confirmed that almost 400 000 life-years in perfect health (disability-adjusted life-years, DALYs) are lost in Estonia annually, and the majority of this burden (60%) affects the working-age population. The largest share of disease burden is attributable to cardiovascular diseases, cancers and various external causes. Alcohol consumption is considered to be an important risk factor for all these major disease groups, causing in total 6.7% of the burden of disease in Estonia (Lai, Vals & Kiivet, 2005).

Population-wide rates of alcohol consumption are considerably lower in poorer societies and groups than in affluent ones. On the other hand, evidence shows that in groups of low socioeconomic status the burden of alcohol-attributable disease is higher. Not only the amount of alcohol consumed, but also the pattern of consumption and the quality of the alcoholic products consumed determine the adverse consequences of alcohol consumption. At the same time they are influenced by the wider social determinants related to socioeconomic context and position, exposure and vulnerability. Previous research on socioeconomic determinants of alcohol use and drinking patterns has emphasized several factors, among them gender, ethnicity, education and socioeconomic status (Schmidt et al., 2010). Alongside adult alcohol consumption, adolescent alcohol use should be also researched, because usually people start to drink alcohol while in adolescence. It has been found that the earlier a child starts to consume alcohol, the greater the chance of developing alcohol dependency and of using other drugs in the future (McNeely & Blanchard, 2010). There are several reasons why young people consume alcohol, such as socio-demographic, socioeconomic and psychological factors, cultural differences and the tendency towards risk behaviour. On the one hand, there is a general physiological vulnerability that all adolescents face due to their age, and on the other hand socioeconomic vulnerability comes into play, whereby some adolescents are additionally vulnerable because of their socioeconomic circumstances and therefore would benefit from specially targeted policies and interventions.

The *Global strategy to reduce the harmful use of alcohol* stresses the need to focus also on equity in national initiatives or programmes (WHO, 2010):

[T]here is a great need to develop and implement effective policies and programmes that reduce such social disparities both inside a country and between countries. Such policies are also needed

in order to generate and disseminate new knowledge about the complex relationship between harmful consumption of alcohol and social and health inequity, particularly among indigenous populations, minority or marginalized groups and in developing countries.

This alcohol and equity case study uses the framework from the report *Equity, social determinants and public health programmes* (Blas & Kurup, 2010) and focuses on examining socially determined inequities in alcohol consumption patterns in Estonia. That is, it focuses on analysis of differences or differentials in social determinants that are considered to be avoidable, unfair and remediable – namely inequities. The case study seeks to combine analysis of the most recent data from 2 surveys – “Health Behavior among Estonian Adult Population” and “Health Behavior in School-aged Children in Estonia” – and different alcohol control policies that have been implemented in Estonia. The study identifies differentials in the patterns of alcohol consumption according to different social and socio-demographic determinants – sex, age, place of residence, income, nationality, family structure, level of education and economic activity (family affluence scale among adolescents) – and risk behaviour, such as smoking among adolescents. In addition, it analyses to what extent these are socially determined. The analysis will provide an overview not only of the patterns of alcohol consumption and its impact, but also what alcohol interventions have been implemented in Estonia in the past and to what extent policy responses and structures in the country have reduced or increased inequities.

1. Differential distribution of alcohol use and patterns in Estonia

For analysis of the adolescence alcohol consumption patterns this case study uses data derived from the 2010 international study of health behaviour in school-aged children (HBSC) in Estonia (NIHD, 2010c). Alcohol consumption among Estonian 11-, 13- and 15-year old schoolchildren was described according to the factors listed here.

- The frequency of alcohol consumption of 1 alcoholic drink – never; seldom; every month; every week; every day. Every-week and every-day drinking were both taken into account when measuring weekly alcohol consumption.
- The proportion of those who claimed to have been drunk – never; at least once; 2–3 times; 4–10 times; over 10 times.
- Types of alcoholic drinks – beer, wine, spirits, light alcoholic beverages, liquor and alcopops.

The associations between weekly alcohol consumption, at least 4 episodes of drunkenness and socio-demographic (gender, age, ethnicity, place of residence, family structure), socioeconomic (family affluence scale, FAS) and risk behaviour (smoking) were evaluated. The distribution of aforementioned determinants is shown in the Annex in Table A1.1. The age distribution of these factors (except smoking) is quite similar, so results are not influenced by age confounding. Although the age distribution for smoking is different, the association is so strong that age confounding does not influence it.

Analysis of the adult alcohol consumption patterns and differential alcohol use is based on the data from the survey “Health Behavior among Estonian Adult Population, 2010” (NIHD, 2010b) using cross-sectional analysis to obtain prevalence rates across categories of the different demographic and socioeconomic variables. The distribution of age groups across some determinants (education, income, economic activity) is in some cases not identical and for those cases the results adjusted for age are also presented, to avoid age confounding. The distribution of variables by age is presented in the Annex, in Table A1.2. Differentials in alcohol use for the Estonian adult population were described by using following alcohol consumption patterns.

- The share of current abstention – the respondents who declared not having drunk alcohol during the last 12 months.
- The frequency of alcohol consumption (never drink alcoholic beverages; drink a few times a year; a few times a month; a few times a week; daily drinking) during the past 12 months. Daily drinking was considered to be harmful drinking practice.
- The frequency of binge drinking, which was measured by how often the respondents

drank at least 6 or more drinks² of alcoholic beverages at one occasion (never; less than once a month; at least once a month; at least once a week; almost daily). Binge drinking is usually regarded as a risky drinking pattern and associated with the elevated short-term risk of harm, especially injury or death.

- The share of heavy drinking, which was defined as drinking more than 16 units (bottle/can/dose/cup of alcohol) per week for men and 8 units per week for women. As Estonia does not have nationally determined explicit limits for weekly alcohol consumption, the daily limits and alcohol-free days³ were used to derive the cut-off points for this analysis. Heavy drinking category covers on the one hand the moderate but frequent drinking, and on the other hand heavy occasional drinking.
- The type of alcoholic beverage consumed – beer, long drinks (cider, alcopops, and so on), strong alcohol (for example, liquor) or wine.

The strongest associations between different alcohol use patterns – abstention, frequent alcohol consumption (at least weekly/at least daily), binge drinking or heavy drinking – and independent variables were selected by logistic regression models, whereby sex, age group, ethnicity, employment status, education and income level, as well as marital status and occupation type served as explanatory variables.

1.1 Differential alcohol use by gender

Adolescents

The large gender differentials in alcohol consumption and alcohol abuse are universally observed across countries and widely explored in the relevant literature (Curran et al., 1999; Dawson & Archer, 1992). In general the consistent finding is that men are less likely to abstain from drinking alcohol; they drink more frequently and more heavily than women and therefore problems and harm attributable to alcohol occur more frequently among males (Schmidt et al., 2010). Alcohol consumption is less differentiated by gender during adolescence and occasionally girls consume more alcohol (by volume and frequency) than boys (Ahlström, Bloomfield & Knibbe, 2001). The lower level of alcohol consumption among women compared to men can be attributed to cultural factors, such as social undesirability of female drinking (Nolen-Hoeksema, 2004).

Compared to 15-year-old schoolchildren, alcohol consumption is considerably lower among 11- and 13-year-old boys and girls. This difference will affect gender variable results when collating together. However, this effect is not true of other variables. Due to age confounding, results for 11- and 13-year-old students are not presented in Fig. 1.1

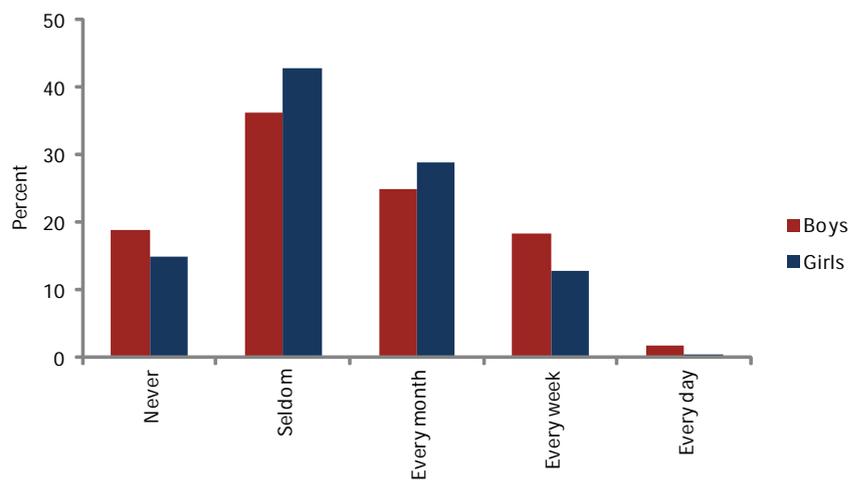
² For definitions, refer to the Glossary of key terms in the preliminary pages of this report.

³ According to the NIHD, Men shouldn't drink more than 4 and women 2 portions of alcohol beverages in a day, and there should be at least 3 alcohol-free days in a week (see the Alkoinfo.ee web site for more information (NIHD, 2010a)).

together with those for 15-year-old students. According to HBSC 2010 survey results (NIHD, 010c), about 17% of 15-year-old schoolchildren have not consumed alcohol at all (Fig. 1.1). Alcohol consumption prevalence rates are rather similar among boys and girls: drinking seldom and every month is slightly more prevalent among girls (42.7% and 28.9%, respectively) and drinking every week and every day is slightly more prevalent among boys (18.4% and 1.8%, respectively). 15-year-old boys are 1.6 times more likely than girls of the same age to consume alcohol at least once a week.

Approximately 32% of 11-year-old boys and 25% of girls of the same age have consumed alcohol. The alcohol consumption prevalence among 13-year-old schoolchildren is respectively 55% among boys and 65% among girls. About 35% of 13-year-old boys and 42% of girls of the same age consumed alcohol seldom.

Fig. 1.1. Alcohol consumption distribution by gender among 15-year-old schoolchildren^a

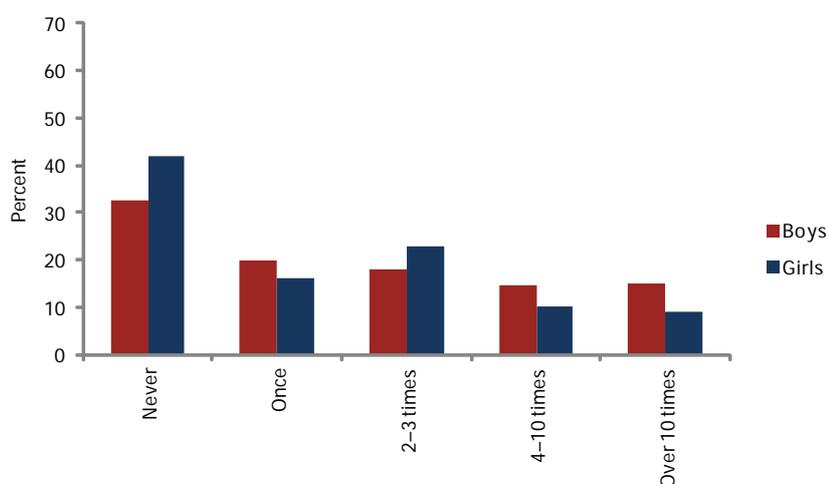


^a659 boys and 737 girls
 Source: HBSC survey (NIHD, 2010c).

About 42% of 15-year-old girls and 32% of 15-year-old boys have never been drunk (Fig. 1.2). The prevalence of being drunk once is slightly more prevalent among boys than girls (19.8% versus 16.2%), but being drunk 2–3 times is more prevalent among girls (22.7% versus 18.1%). About 15% of 15-year-old boys and 9% of girls of the same age have been drunk more than 10 times. Boys are 1.8 times more likely than girls to have had at least 4 episodes of drunkenness.

Drunkenness prevalence rates are considerably lower among 11- and 13-year-old schoolchildren. 66% of 13-year-old boys and 69% of girls of the same age have never been drunk. Among 11-year-old schoolchildren the rates are 92% for boys and 93% for girls, respectively

Fig. 1.2. Prevalence of being drunk by gender among 15-year-old schoolchildren^a



^a1998 boys and 2185 girls

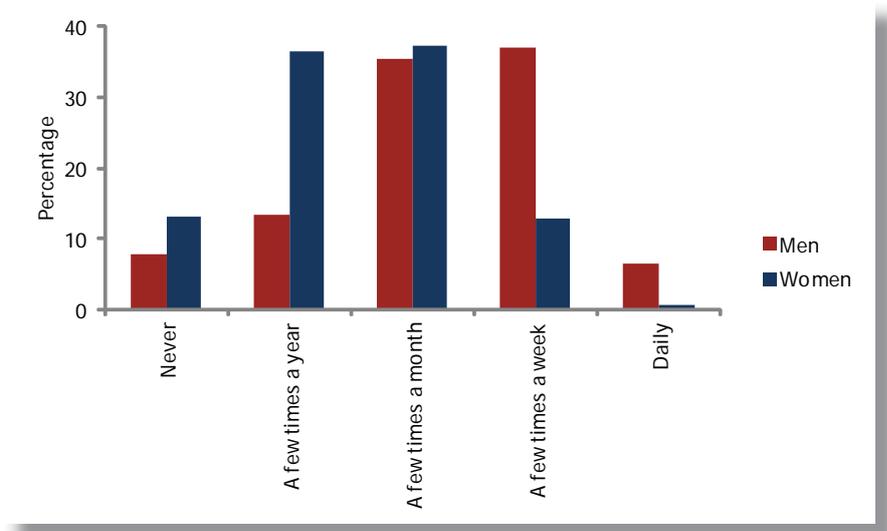
Source: HBSC survey (NIHD, 2010c).

Alcohol consumption prevalence rates are quite similar among boys and girls. The prevalence of being drunk is slightly higher among boys than girls.

Adults

In general the adult alcohol consumption pattern described at the beginning of this chapter is also valid for Estonia. The recent Estonian survey entitled “Health Behavior among Estonian Adult Population” (NIHD, 2010b) shows that in 2010 only 7.8% of men were current abstainers, whereas among females the share of those abstaining in the population was 12.8% (Fig. 1.3). Interestingly, the share of women that do not drink alcohol has significantly increased from 8.6% (2008), but for males the share of those currently abstaining has remained constant (Tekkel, Veideman & Rahu, 2009).

Fig. 1.3. Alcohol consumption distribution by gender, 2010

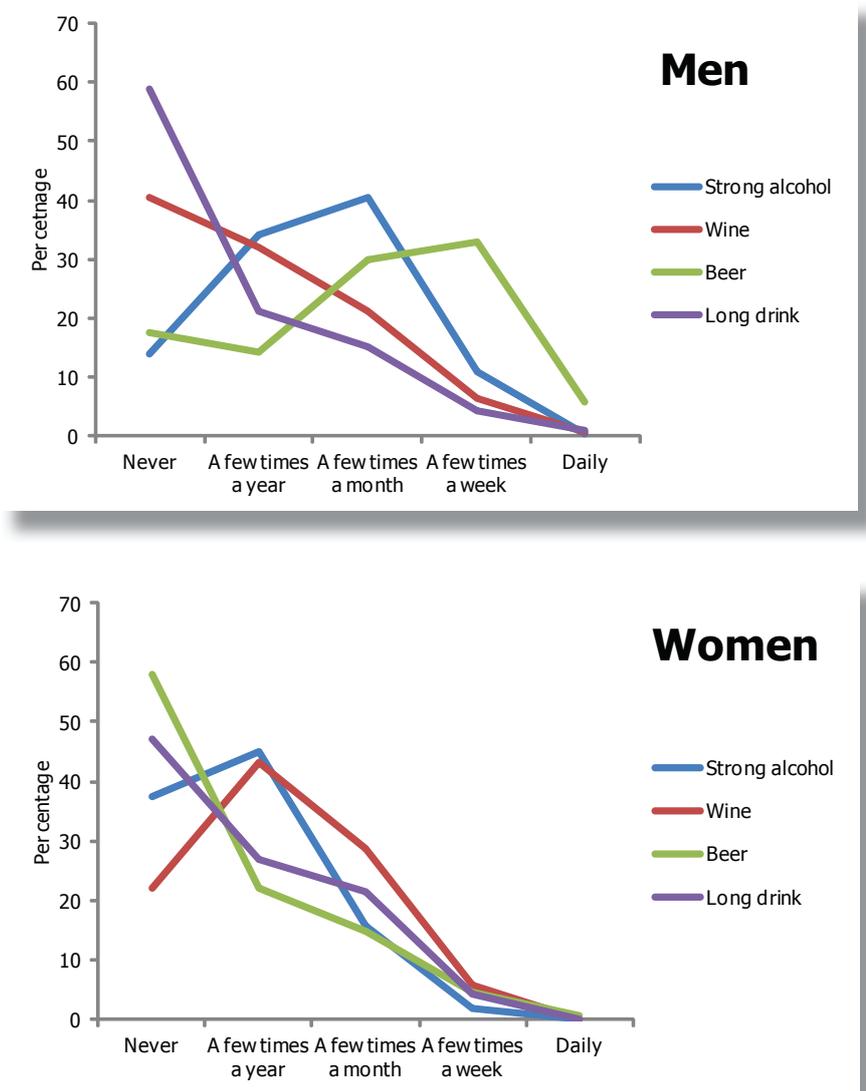


Source: Health Behavior among Estonian Adult Population survey (NIHD, 2010b).

In Estonia men consume alcohol substantially more frequently than women. Most women drink alcohol no more than once a month, but the majority of men do so at least once a month. 43% of men and 13.5% of women drink alcohol at least once a week. When looking at harmful drinking practices (for example, drinking on a daily basis), the difference becomes even larger – 6.4% of men versus 0.7% of women – so that the probability of drinking daily is 10 times higher for men than for women.

Men and women have different preferences towards alcoholic beverages. Fig. 1.4 shows the frequency of drinking different types of alcoholic drinks. The most popular drink for men is predominantly beer. Approximately 70% of men drink it at least a few times a month, and nearly 40% of men (38.6%) drink it at least a few times per week. For weekly drinkers, beer is followed by strong alcohol (11.5%). Wine and other light alcoholic drinks are less popular. Women prefer mainly wine and long drinks. 34.8% of women drink wine at least at a few occasions per month, while 6% of them drink it at least weekly.

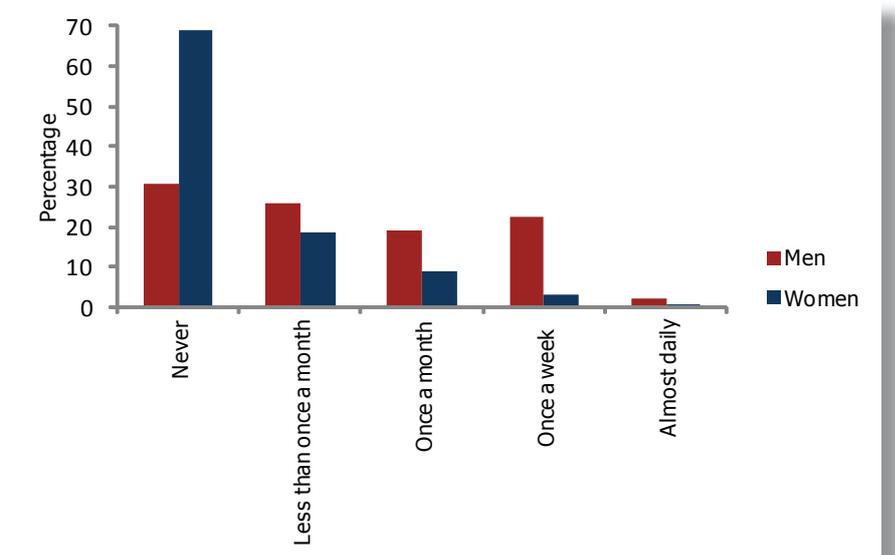
Fig. 1.4. Consumption distribution of preferred alcoholic products by gender, 2010



Source: Health Behavior among Estonian Adult Population survey (NIHD, 2010b).

In Estonia binge drinking is very prevalent among males (Fig. 1.5). According to the “Health Behavior among Estonian Adult Population” survey (NIHD, 2010b), men drank more often than women in amounts that are considered hazardous to their health; that is, more than 6 portions in one sitting. Almost 70% of men and 31% of women drank occasionally more than 6 portions in one sitting. Every 4th man compared to every 30th woman had engaged in binge drinking regularly (on a weekly basis) over the previous 12 months.

Fig. 1.5. Consumption distribution of 6 or more portions of alcohol at one occasion by gender, 2010



Source: Health Behavior among Estonian Adult Population survey (NIHD, 2010b).

Men also overtake women in terms of heavy alcohol use. Among men, 14.6% exceed the weekly high-intake level and drink more than 16 units of alcohol in a week, whereas only 6.6% of women consume more than 8 alcohol units.

Men choose more often to buy alcohol illegally than women. Among men, 12% of alcohol consumers bought illegal alcohol products, whereas this was the case only for 3% of women. Men are also more aware compared to women of the places at which or sellers from whom illegal alcohol can be bought (17% and 10%, respectively) (EKI, 2010c).

Surrogate drinking (legal manufactured ethanol-containing liquids not intended for consumption) is also more prevalent among men. Among people who had consumed alcohol during the previous 4 weeks ($N=3525$), the age-standardized prevalence rate of surrogate drinking was 1.4% (2.3% men, 0.3% women) (Pärna & Leon, 2011). The figures for illegal alcohol consumption are most likely underestimated, as population surveys do not reach the marginalized groups who might be more likely to consume illegal alcohol. More frequent and harmful drinking patterns among men compared to women result in significantly higher adverse effects in their health and social outcomes, as discussed in detail in the subsections that follow.

In Estonia men consume alcohol substantially more frequently than women and they also exceed women in terms of binge drinking and illegal alcohol use. Binge drinking is very prevalent among Estonian men. The most popular drink for men was predominantly beer and for women it was wine.

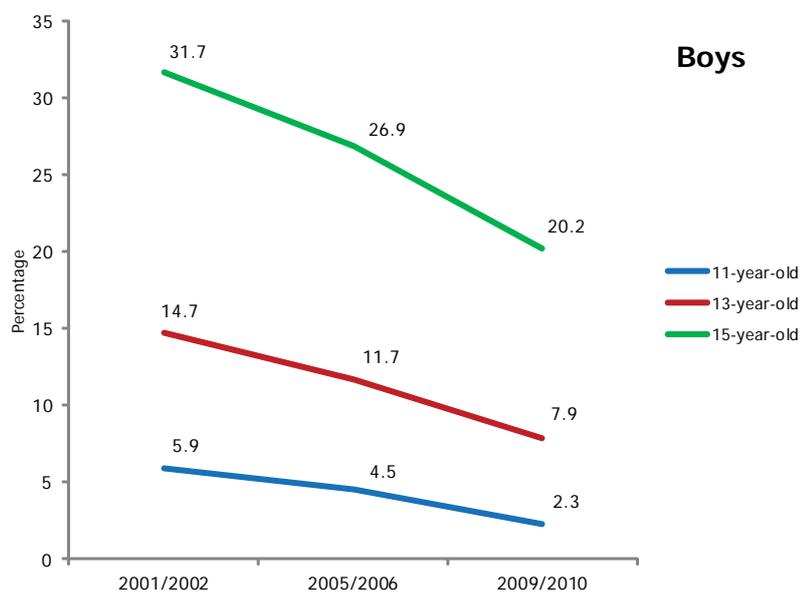
1.2 Differential alcohol use by age

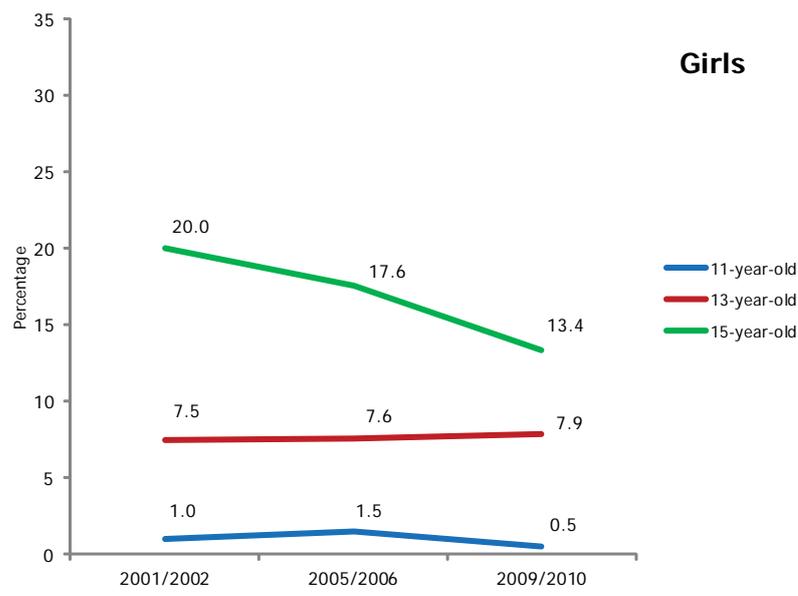
Adolescents

Early adolescence is a critical time at which behavioural habits are developed, including those related to alcohol consumption (Lintonen et al., 2000). Starting to drink at an early age is associated with alcohol dependence and related problems during adult life (Hingson, Heeren & Winter, 2006).

Alcohol consumption prevalence rates are higher among older adolescents and lower among younger ones. Since 2002 the prevalence of weekly alcohol consumption has decreased among boys and girls (Fig. 1.6), with a more significant decrease rate more among boys. The prevalence rate has dropped by almost twice among 13-year-old boys and approximately 2.6 times among 11-year-old boys in 2002–2010. Among girls the biggest decrease compared to the year 2002 has been among 15-year-old girls, respectively 20.0% in 2002 and 13.4% in 2010. Among 13-year-old girls the prevalence rate of weekly alcohol consumption has increased by approximately 0.4% in 2002–2010.

Fig. 1.6. Weekly alcohol consumption among 11-, 13- and 15-year-old schoolchildren,^a 2002–2010



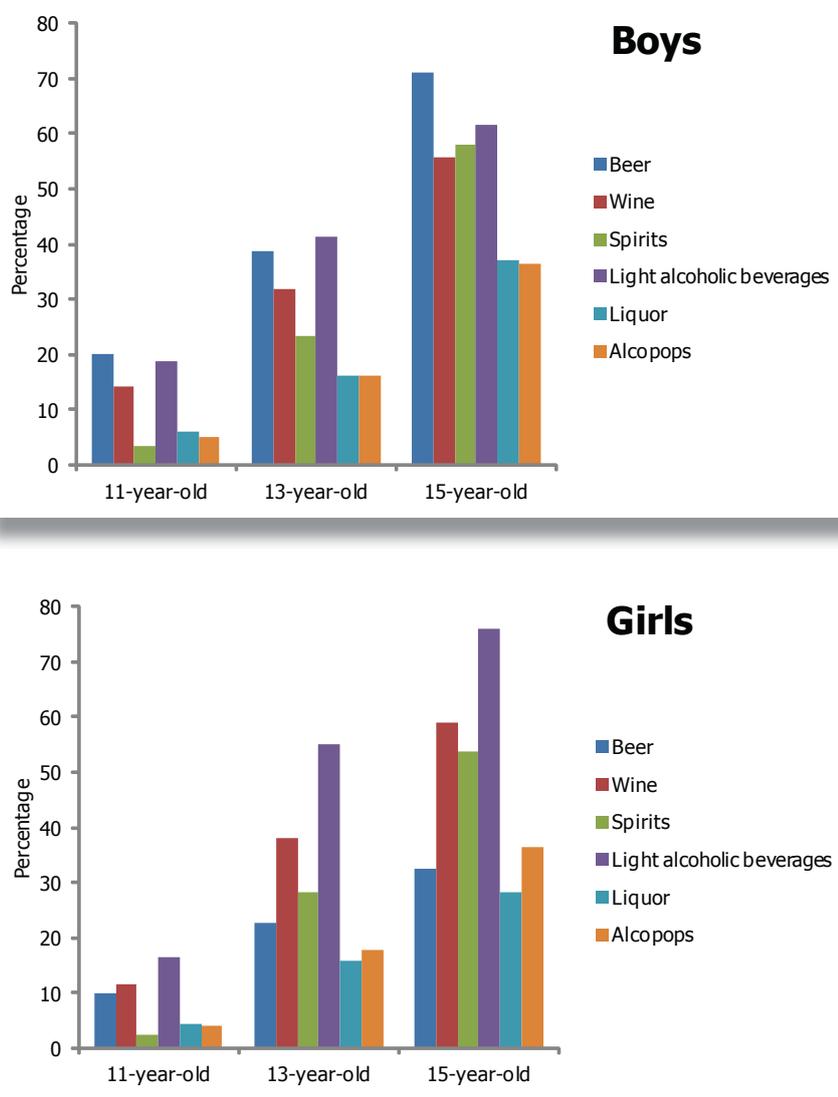


^a337 boys and 190 girls in 2002; 313 boys and 204 girls in 2006; 202 boys and 160 girls in 2010
 Sources: HBSC surveys and (NIHD, 2002, 2006, 2010c).

The respondents were also asked the age at which they first drank alcohol. 33.1% of 11-year-old boys and 26.4% of girls of the same age had drunk alcohol at 11 years old or younger. 52.5% of 13-year-old boys had drunk alcohol at 12 years old or younger. 51.5% of 13-year-old girls had consumed alcohol at 12 years old or younger. Among 15-year old boys, 56.5% had drunk alcohol at age 12–14 years and 26.8% had drunk alcohol at 11 years old or younger. The rate among girls was respectively 65.3% and 14.4% for the same age groups.

The 2 preferred drinks among boys are beer and light alcoholic beverages (Fig. 1.7). 70.9% of 15-year-old boys, 38.8% of 13-year-old boys and 19.9% of 11-year-old boys consume beer. The preferred drinks among girls are light alcoholic beverages and wine. 76.0% of 15-year-old girls, 55.2% of 13-year-old girls and 16.3% of 11-year-old girls consume light alcoholic beverages. Over 50% of 15-year-old boys and girls have drunk spirits. The rates were lower for other alcoholic drinks.

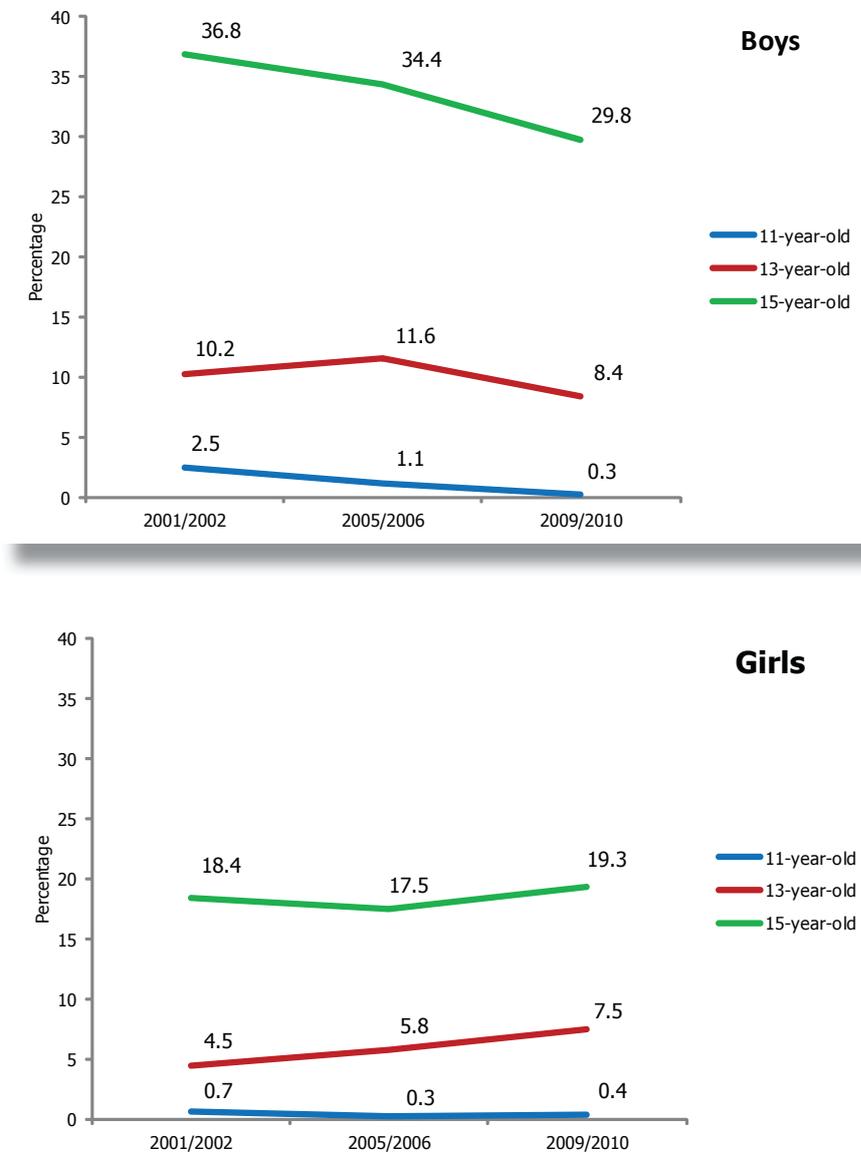
Fig. 1.7. Alcohol consumption distribution^a among adolescents by different alcoholic beverages according to age, 2010



^aSeldom, every month, every week, every day
 Source: HBSC survey (NIHD, 2010c).

Among boys the prevalence rate of at least 4 episodes of drunkenness decreased in 2002–2010, whereas among girls the rate has increased (Fig. 1.8). In 2002 the prevalence rate among 15-year-old boys was 36.8% and in 2010 it had decreased by 7%. The rate among girls of the same age increased from 18.4% in 2002 to 19.3% in 2010; the biggest increase was among 13-year-old girls (4.5% in 2002 and 7.5% in 2010). Among 11-year-old students the rates in 2010 were very low: 0.3% among boys and 0.4% among girls.

Fig. 1.8. At least 4 episodes of drunkenness among 11-, 13- and 15-year-old schoolchildren,^a 2002–2010



^a315 boys and 156 girls in 2002; 364 boys and 182 girls in 2006; 255 boys and 198 girls in 2010
 Sources: HBSC surveys (NIHD, 2002, 2006, 2010c).

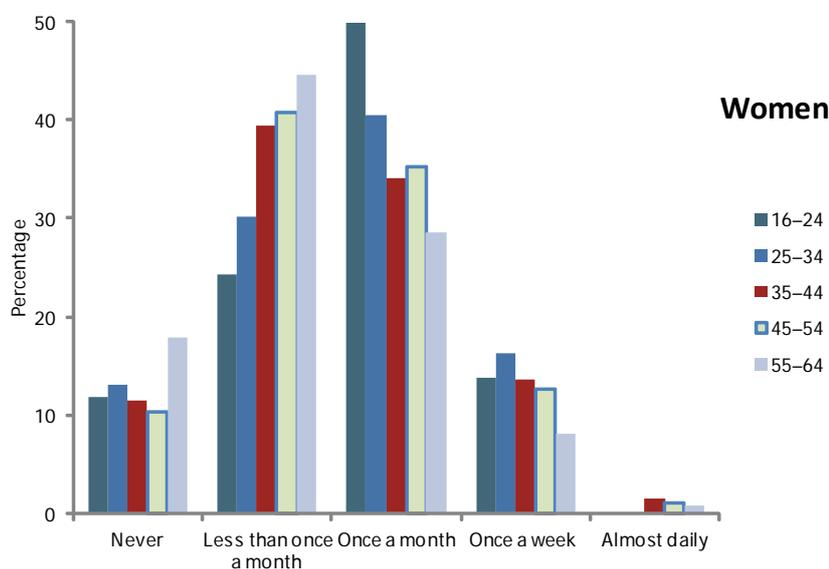
Students were asked at what age they got drunk for the first time. 6.1% of boys and 4.8% of girls had been drunk at age 11 or younger. Among 13-year-olds, 16.2% of boys and 11.8% of girls had been drunk aged 12 years or younger. 40.5% of 15-year-old boys and 29.5% of girls of the same age had been drunk aged 12–14 years. 4.4% of 15-year-old boys and 1.9% of girls of the same age had been drunk at 11 years old or younger.

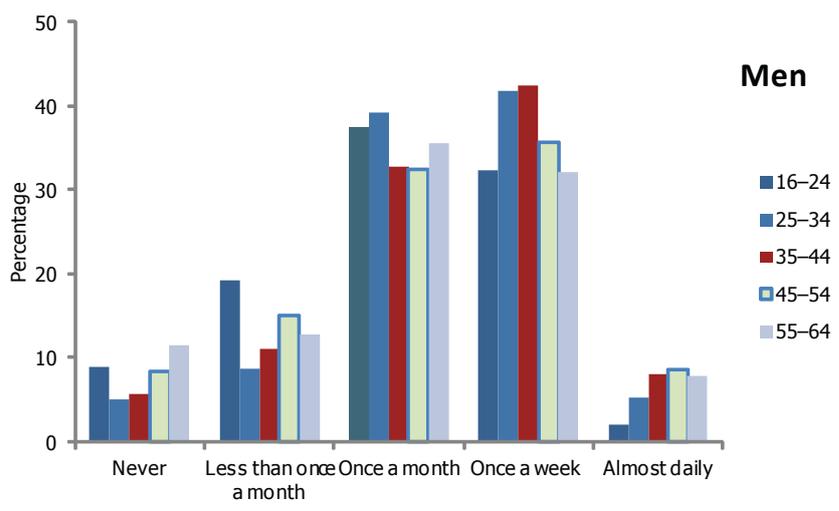
Alcohol consumption and drunkenness are more frequent among older boys and girls than younger ones. Since 2001/2002 the weekly alcohol consumption has been decreasing, except not among 13-year-old girls. The most popular beverages for boys are beer and light alcoholic beverages; for girls, wine and light alcoholic beverages. Among boys the prevalence rates of frequent drunkenness decreased during the period 2002–2010, but among girls the rates have mostly increased.

Adults

Among adults the lowest proportion of individuals abstaining is among men aged 25–34 years (5%) and women aged 45–55 years (10.4%), whereas the highest share of those abstaining is in the oldest age group (11.6% among men and 18.0% among females in the age group 55–64 years) (Fig. 1.9). The men and women that drink most frequently are in the most productive years of life; namely, between 25 and 44 years of age. Half of the men in the upper segment of this age group (35–44 years) drink on a weekly basis, compared to 35% of men aged 16–24 years and 40% of the oldest men. With age the share of men that drink daily increases and peaks at age 45–55 years. One possible explanation for the increased daily alcohol consumption in this age group is the dependency effect of alcohol, which increases with time.

Fig. 1.9. Alcohol consumption distribution by age, 2010

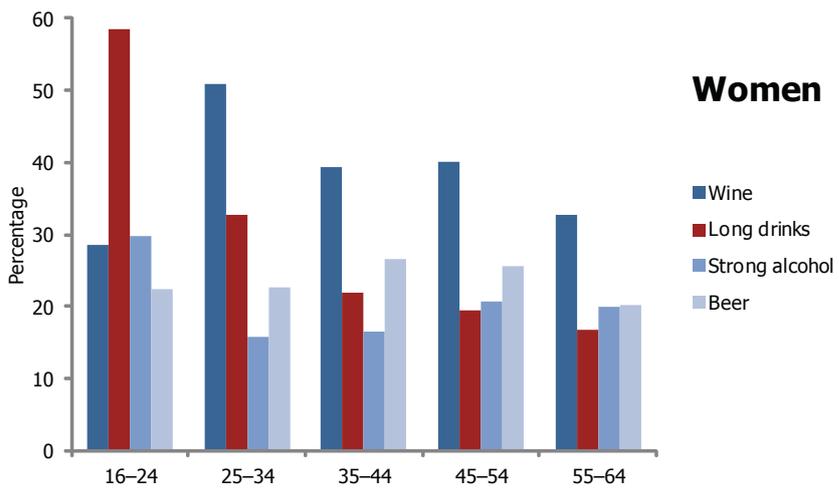


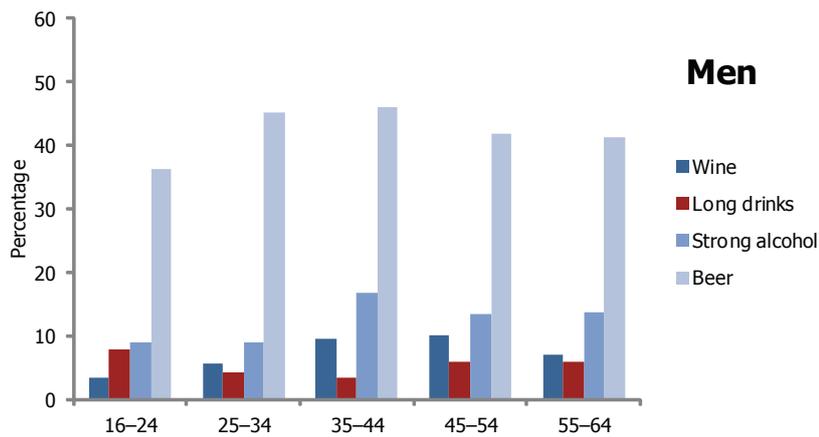


Source: Health Behavior among Estonian Adult Population survey (NIHD, 2010b).

Fig. 1.10 shows how the alcohol consumption frequency of different types of beverage changes with age. As the majority of men drink at least few times a week and women at least few times a month, the frequency of different beverages is presented accordingly as a share of the non-abstaining respondents. Among men there are not many differences in terms of the consumption of different products. Beer is the predominant alcoholic beverage of choice, consumed at least weekly across the age groups, followed by strong alcohol, the consumption level of which increases with age.

Fig. 1.10. Alcohol consumption distribution^a by different alcoholic beverages according to age, 2010



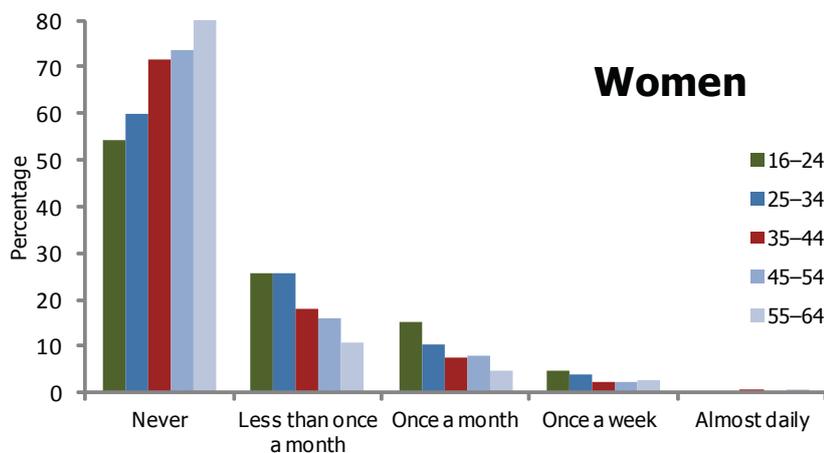


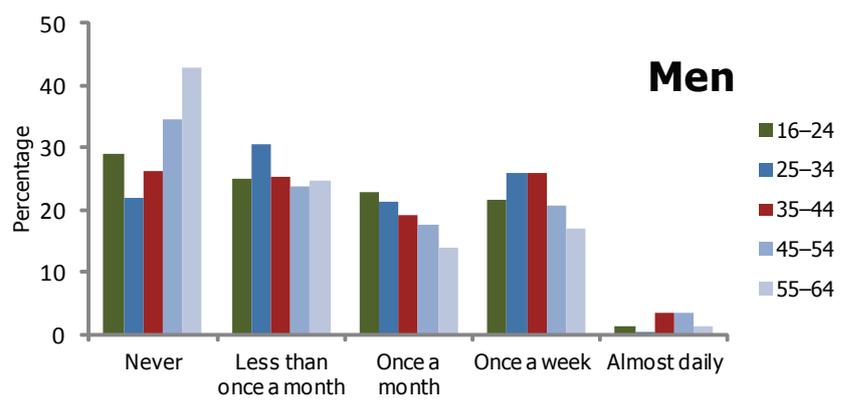
^aMen at least weekly and women at least monthly
 Source: Health Behavior among Estonian Adult Population survey (NIHD, 2010b).

For women it is interesting that although in general wine is the preferred drink, light alcohol is the most prevalent drink only for the youngest age group. This is consistent with the findings of the analysis into adolescent drinking, in which the preference of girls towards light alcohol is demonstrated.

An alarming indication is the frequent risky drinking among young women (Fig. 1.11). Almost half of the women in the youngest age group (46%) drink more than 6 portions in one sitting and 20% of women in that age group do so at least once a month. They are also twice as likely as other age groups to exceed weekly limits.

Fig. 1.11. Consumption distribution of 6 or more portions of alcohol at one occasion by age, 2010





Source: Health Behavior among Estonian Adult Population survey (NIHD, 2010b).

In contrast, among men it is those aged 25–44 years that drink riskily compared with other age groups. Almost 30% of men in the age group 35–44 years and 26% aged 25–34 years drink 6 shots at a time at least once a week. Those in the younger age group (25–34 years) are also more likely than those in other age groups to exceed weekly drinking limits: 18.9% drink more than 16 portions of alcohol in a week. However, among women it is those in the youngest age group (16–24 years) that are almost twice as likely to exceed risk limits, at 11.6%, versus 5.0% for those aged 25–34 years and 5.8% for the 35–44 years age range.

There are relatively fewer differentials in illegal alcohol purchases according to age – the smallest share of illegal alcohol buyers is in the oldest age-group (65–74 years; 5%) and the largest share among those aged 50–64 years (10%) (EKI, 2010c). Among men, surrogate alcohol consumption is more prevalent at an older age and it is rare under the age of 35 years (0.3%) (Pärna & Leon, 2011).

The men and women that drink alcohol most frequently are in the most productive years of life, namely between 25 and 44 years of age. The share of men that drink daily increases with age. Beer dominates as the main alcoholic beverage to be consumed at least weekly. For women, in general wine is the preferred drink, with light alcohol as the most prevalent drink only for the youngest age group. Most frequent binge drinkers are young women (aged 16–24 years) and men aged between 25 and 44 years.

1.3 Differential alcohol use by ethnicity

Alcohol consumption might be influenced by ethnicity. Ethnicity is also one of the recommended social markers to measure health inequities in the final report of the Commission on Social Determinants of Health (CSDH, 2008).

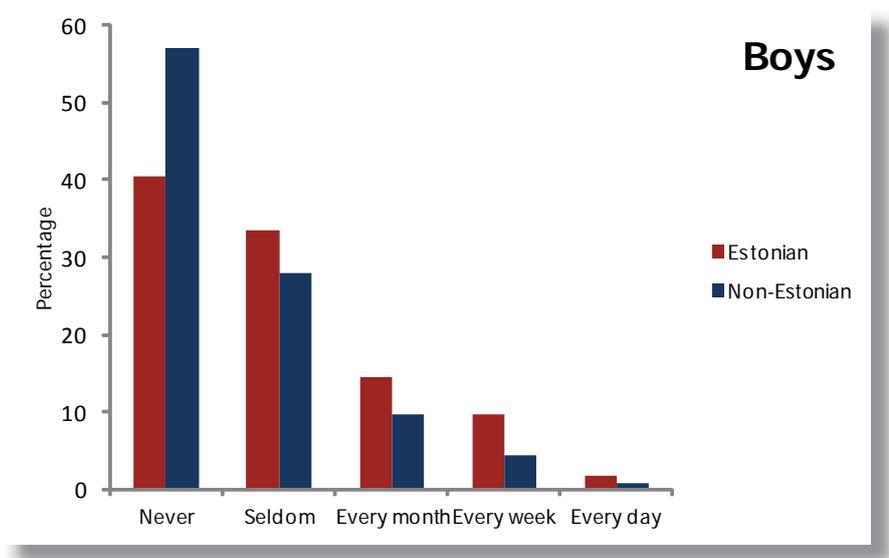
There can be various reasons for this, for example cultural and social (norms, attitudes) differences which are related to alcohol consumption (Caetano & Clark, 1999). Alcohol consumption patterns differ widely in Europe. Sweden, Finland and the United Kingdom are considered to be the northern dry region, where beer consumption is relatively high due to consumption on weekends and outside of mealtimes. France and Italy are considered as the southern or Mediterranean wet area, where wine is usually consumed with meals (Grant, 1985; Gual & Colom, 1997). Iontchev (1998) has divided the consumption pattern into 3, adding the central European area, which is more oriented towards beer consumption. He also added the Baltic countries, the Russian Federation and Ukraine to the northern European region, which is more associated with consumption of spirits, irregular binge drinking episodes (non-daily drinking) and the acceptance of drunkenness in public.

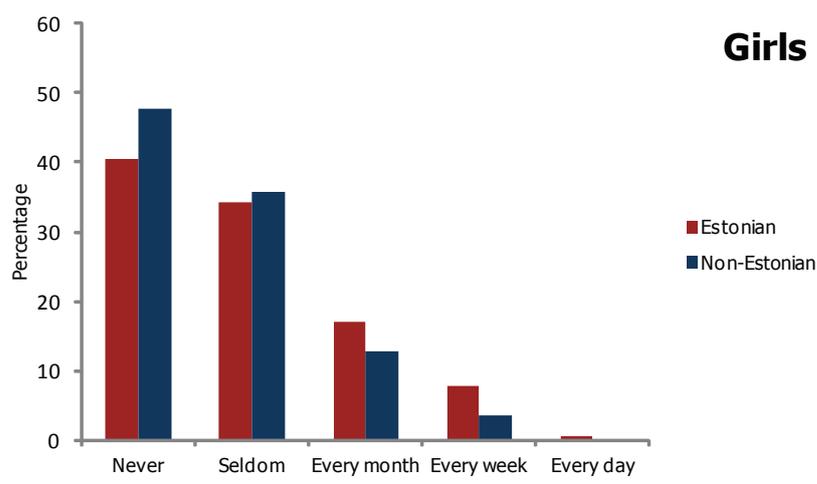
Within the Estonian population the share of non-Estonians is about 31%, consisting mostly of Russians (26% of the total population). Other ethnicities present in the non-Estonian group are, among others, Ukrainians, Belarusians, Finns, Tartars, Latvians, Poles, Jews, Lithuanians and Germans (Statistikaamet, 2011). Pärna and colleagues (2010) studied the alcohol consumption pattern for the period 1994–2006 and found that it differed between Estonians and Russians. More Estonian men consumed alcohol weekly, but more Russian women consumed more alcohol weekly by volume.

Adolescents

Estonian boys consume alcohol more frequently than non-Estonian boys (Fig. 1.12). Weekly alcohol consumption is twice as high among Estonian boys (11.5%) than non-Estonian boys (5.3%). The situation is the same among girls: the weekly alcohol consumption rate among non-Estonian girls is less than half of that among Estonian girls (respectively 3.7% and 8.4%).

Fig. 1.12. Alcohol consumption distribution^a among 11-, 13- and 15-year-old adolescents by ethnicity, 2010

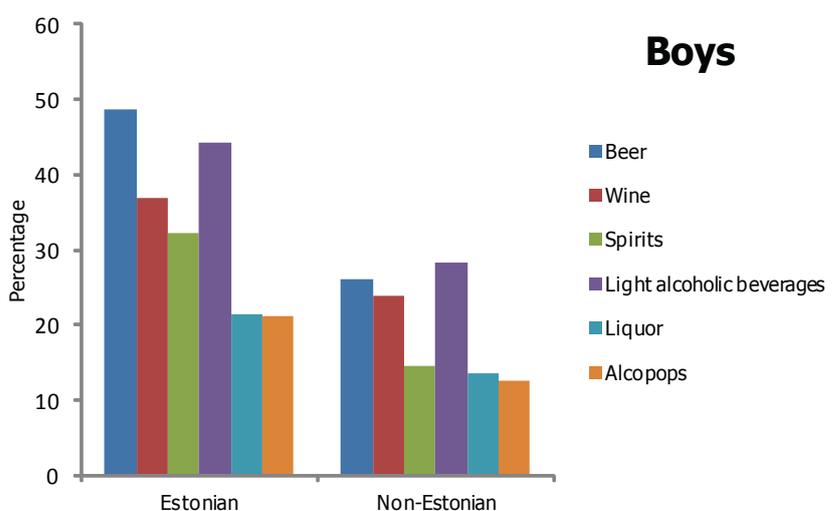


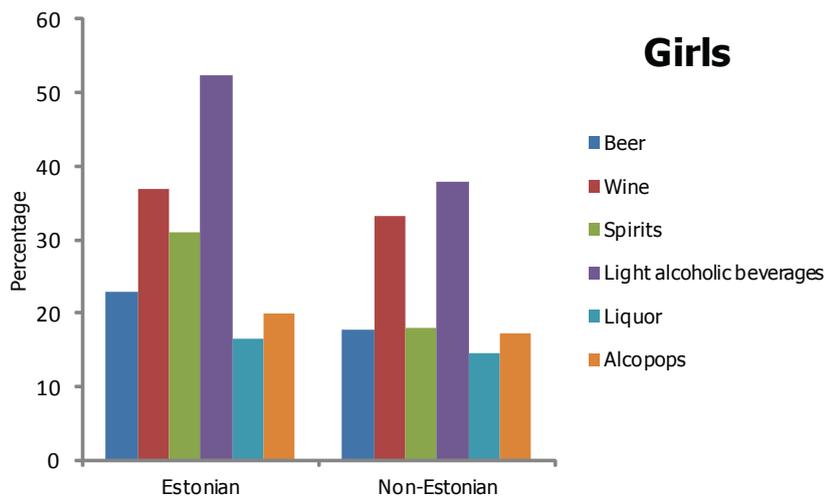


^aNever, seldom, every month, every week, every day
 Source: HBSC survey (NIHD, 2010c).

The preference for various alcoholic beverages is quite similar among Estonians and non-Estonians. The preferred drink among Estonian boys is beer, then light alcoholic beverages, wine and spirits (Fig. 1.13). Liquor and alcopops are not particularly popular. Among non-Estonian boys the preferred drinks are light alcoholic beverages, then beer and wine. Among Estonian girls, about 50% have consumed light alcoholic beverages, while the rate is about 40% among non-Estonian girls. Wine consumption rates are slightly under 40% among both groups. The rate of consumption of spirits is almost twice as high among Estonian girls (31%).

Fig. 1.13. Alcohol consumption distribution^a among 11-, 13- and 15-year-old adolescents according to different alcoholic beverages by ethnicity, 2010

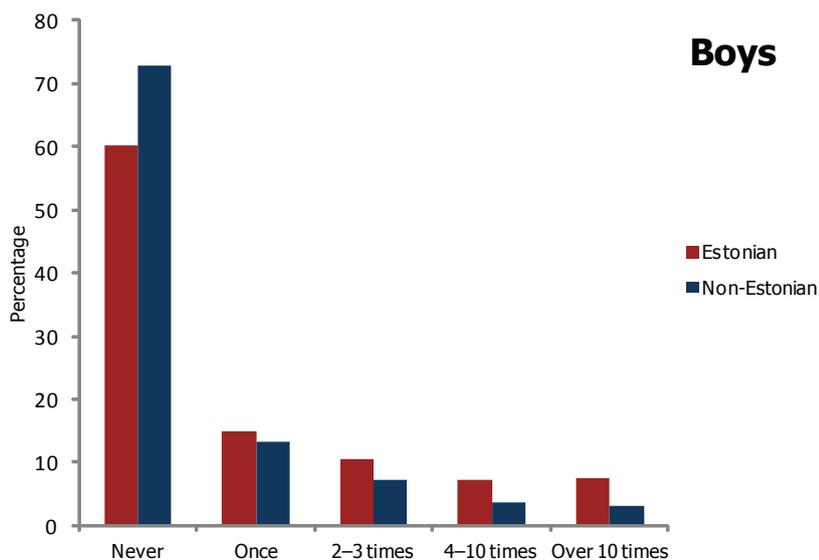


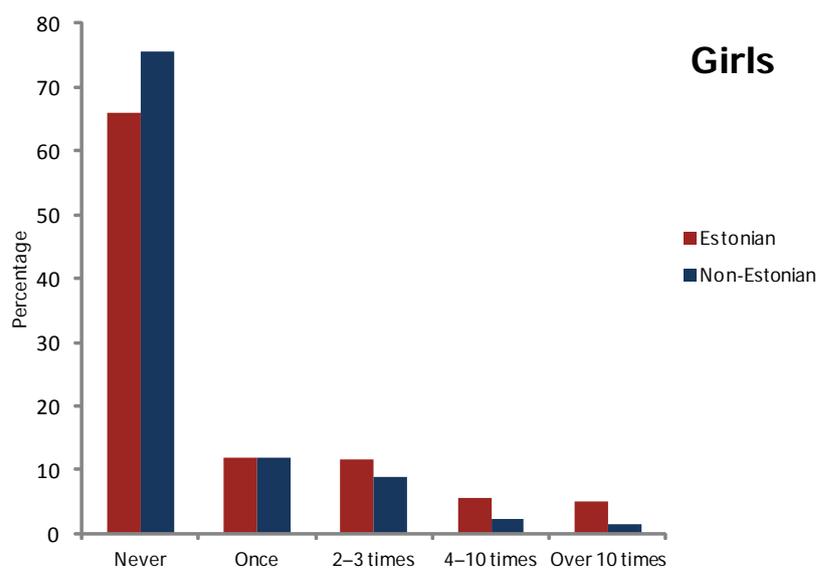


*Seldom, every month, every week, every day
 Source: HBSC survey (NIHD, 2010c).

Estonian teenagers have been drunk more frequently than non-Estonians of the same age (Fig. 1.14). 39.8% of Estonian boys have been drunk at least once and 14.6% have been drunk at least 4 times. Among non-Estonian boys the rates are 27.2% and 6.7%, respectively. 34.1% of Estonian girls have been drunk at least once and 10.6% have been drunk at least 4 times. The rates are lower among non-Estonian girls (respectively 24.6% and 3.8%).

Fig. 1.14. Drunkenness distribution among 11-, 13- and 15-year-old adolescents by ethnicity, 2010





Source: HBSC survey (NIHD, 2010c).

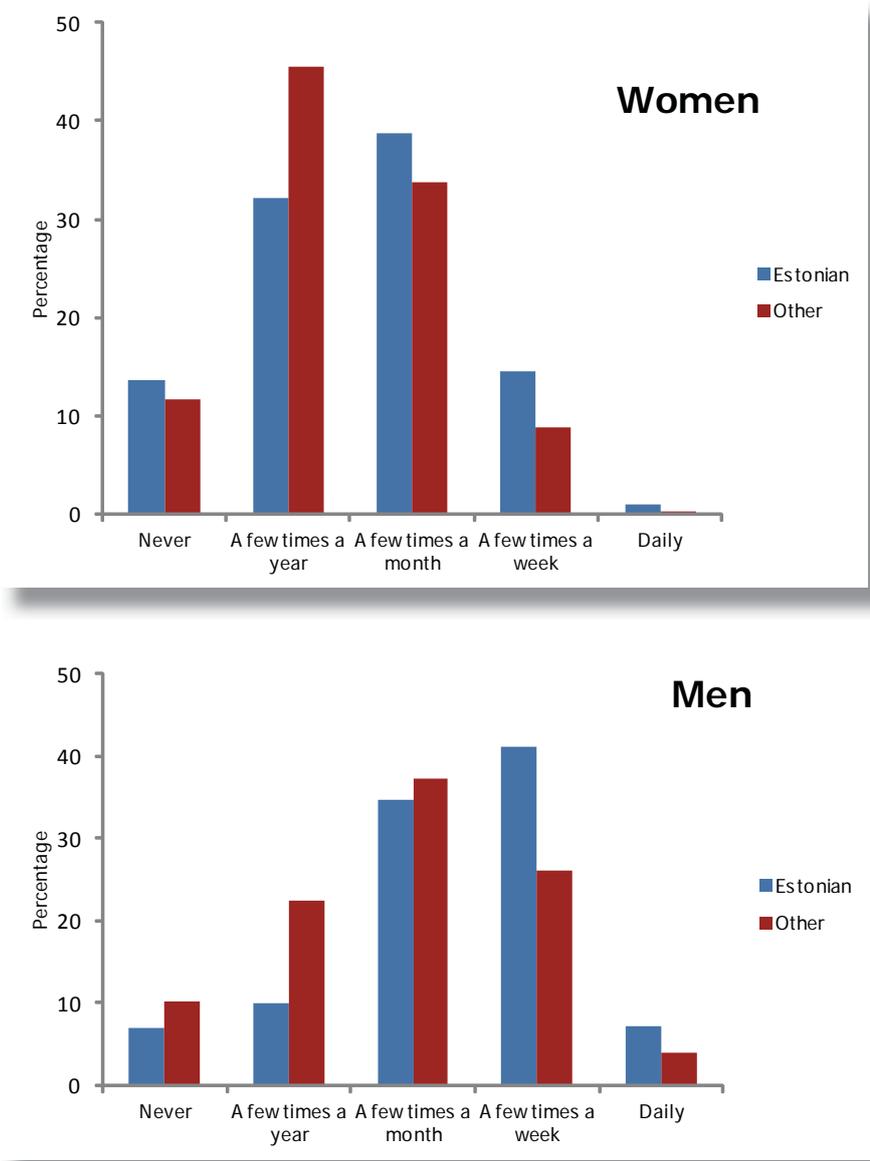
Estonian boys and girls consume more alcohol and they have been drunk more frequently than non-Estonians of the same age. The preferences for various alcoholic beverages are quite similar among Estonians and non-Estonians, albeit with some exceptions.

Adults

A similar pattern to that found with adolescents can be seen among adults. According to the “Health Behavior among Estonian Adult Population” survey, Estonians drink alcohol more often and more heavily than other nationalities living in Estonia. Among Estonians the prevalence of those abstaining from alcohol consumption is lower among men (7.0% and 10.2%, respectively; age-adjusted to 6.87% and 10.00%) than among ethnic minorities and is slightly higher for females (13.6% and 11.7%, respectively; age-adjusted to 13.5% and 10.8%) (Fig. 1.15).

The biggest difference in alcohol consumption frequency is among those men that drink alcohol “a few times a week”; this accounts for 41% of Estonian men, as opposed to 26% of non-Estonian men. The same applies to women: 14.6% of Estonian women compared to 8.8% of non-Estonians fall into this category (age-adjusted to 14.7% and 9.34%, respectively). The higher frequency of alcohol consumption among Estonian men could be explained by their preference for beer, while non-Estonian men prefer to drink strong alcohol (Pärna & Ringmets, 2011). In addition to those weekly drinkers, similar trends can be tracked among daily drinkers. Altogether nearly half (47.2%) of Estonian men drink alcohol at least few times a week, whereas 33% of non-Estonians do so. When adjusting for age the differential becomes even larger (48.6% and 30.0%, respectively).

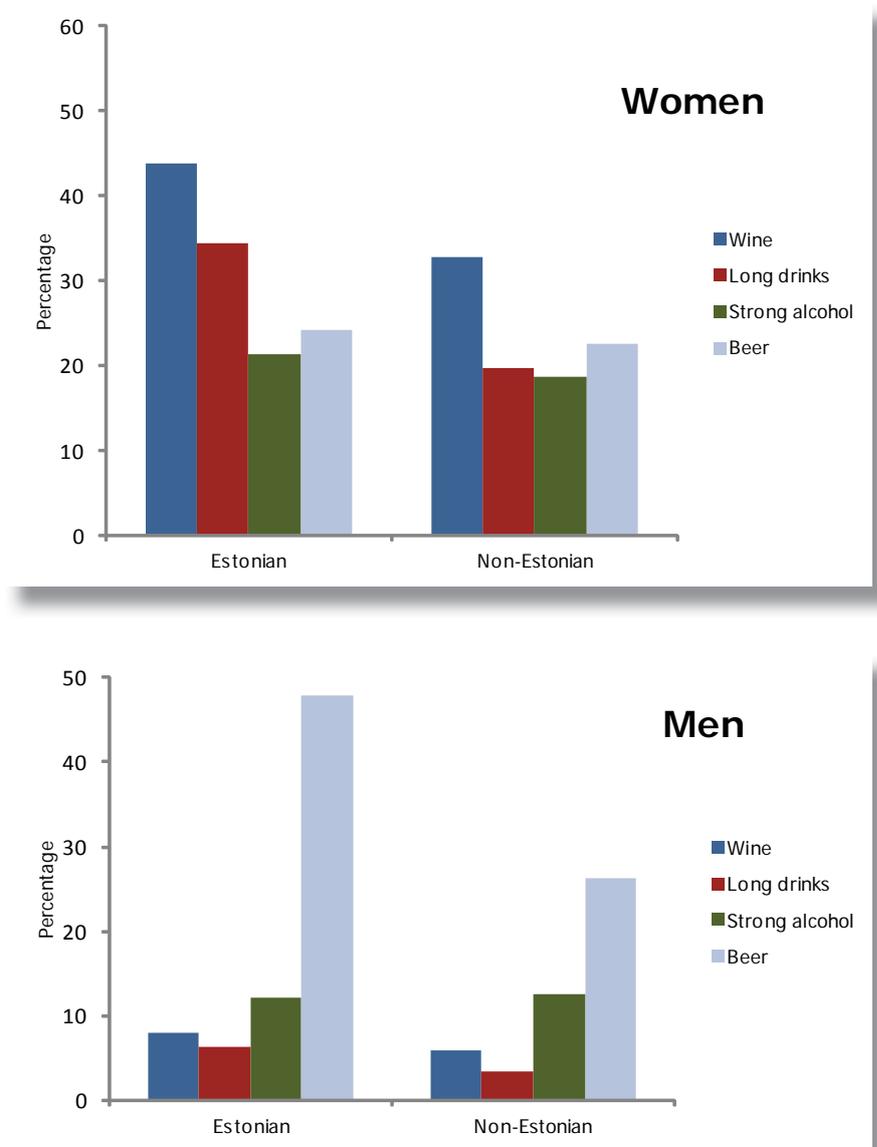
Fig. 1.15. Alcohol consumption distribution by ethnicity, 2010



Source: Health Behavior among Estonian Adult Population survey (NIHD, 2010b).

Estonian men are more frequent beer drinkers than non-Estonians (Fig. 1.16). Almost half of Estonian non-abstaining men compared to 26% of other nationalities drink beer at least few times a week. Although the differences are not large, Estonians also outweigh non-Estonians in terms of their consumption of other alcohol beverages; only spirit consumption is marginally higher among non-Estonians than Estonians. Estonian women drink more across all types of beverage. The biggest difference – almost 15% – is in the consumption of light alcoholic drinks. The order of preference for alcohol beverages is similar for Estonian and non-Estonian men and women.

Fig. 1.16. Alcohol consumption^a according to different alcoholic beverages by ethnicity, 2010



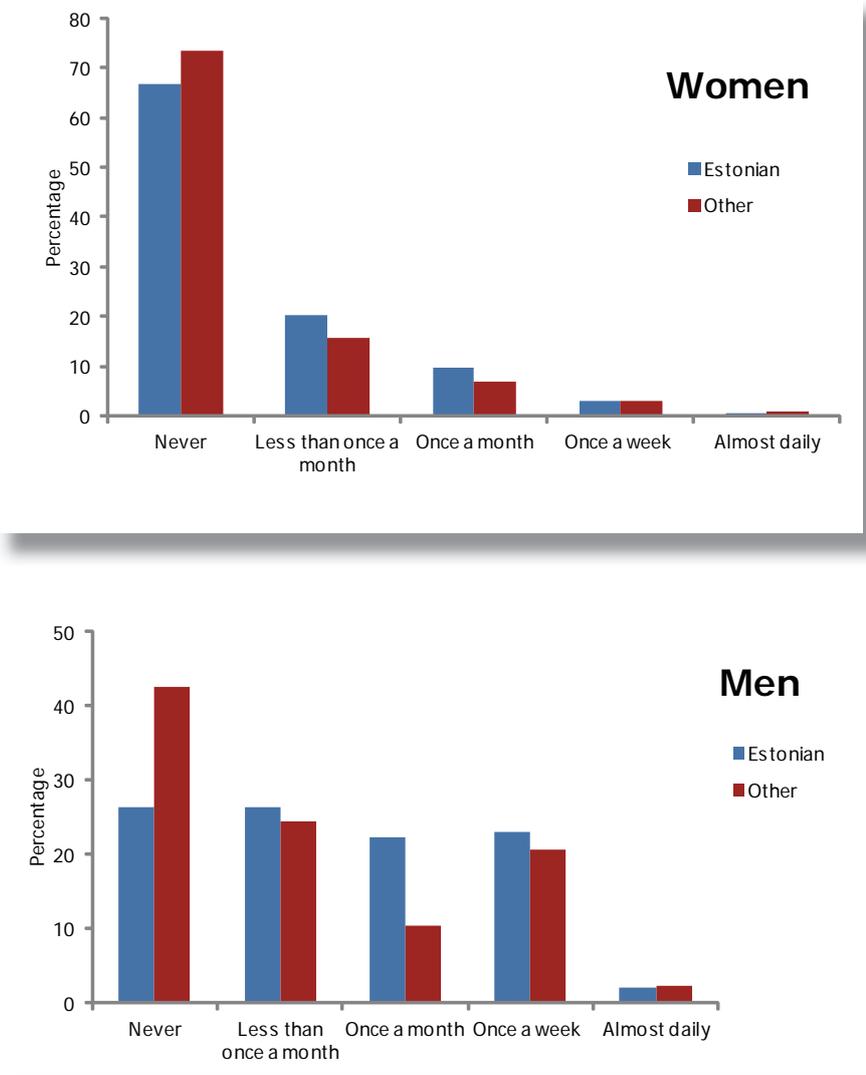
^aMen at least weekly and women at least monthly

Source: Health Behavior among Estonian Adult Population survey (NIHD, 2010b).

The harmful use of alcohol in terms of binge drinking (that is, drinking more than 6 portions of alcohol at one occasion and exceeding risk limits) is more prevalent among Estonians than non-Estonians (Fig. 1.17). 42.5% of non-Estonian men never engage in binge drinking, in contrast to 26.3% of Estonians (which is the same when adjusted for age). The biggest difference is between those men that consume more than 6 portions of alcohol once a month; more than twice as many Estonian men binge drink on monthly basis than men of other ethnic backgrounds living in Estonia. In addition to binge drinking, Estonian men are also more likely to exceed the weekly drinking limits compared to Russians and other ethnicities (respectively 16.7% and 9.1%; age-adjusted to 16.7% and 9.3%). Among

women the differentials in heavy drinking between Estonians and non-Estonians are not significant.

Fig. 1.17. Consumption distribution of 6 or more portions of alcohol at one occasion by ethnicity, 2010



Source: Health Behavior among Estonian Adult Population survey (NIHD, 2010b).

The only differential in alcohol consumption for which non-Estonians have a more harmful alcohol consumption pattern is the purchasing of illegal alcohol. 13% of non-Estonians compared to 5% of Estonians bought alcohol in 2010 illegally, and knew of more places to buy such alcohol (23% versus 9%, respectively) (EKI, 2010c). There is also a link between ethnicity and drinking surrogate alcohol. Pärna and Leon (2011) found that non-Estonians (mainly Russians) had an odds ratio (OR) (adjusted for age and education) of 2.58 (95% confidence interval (CI) 1.41, 4.72) relative to that for Estonian men in terms of surrogate drinking.

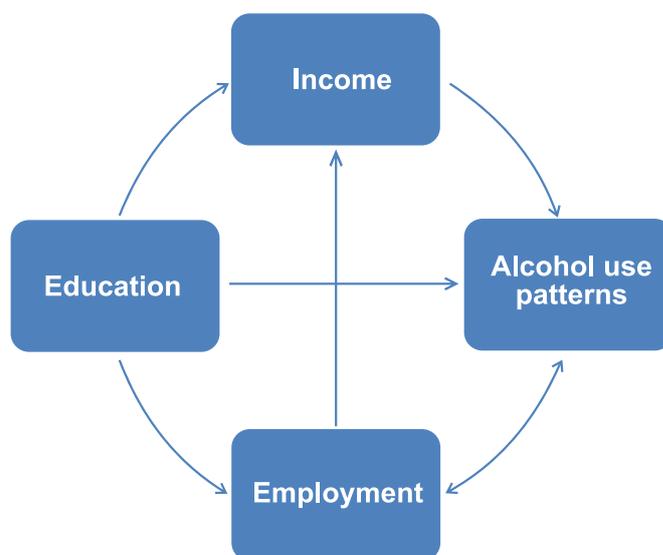
Estonians drink alcohol more often than other nationalities living in Estonia. Estonian men engage in binge drinking and exceed weekly drinking limits more than non-Estonians. Among women the differences in harmful alcohol consumption are small. Non-Estonians – on the other hand – buy alcohol illegally more frequently.

1.4 Differential alcohol use by socioeconomic determinants among adults

Alcohol use, harmful alcohol consumption patterns and related harm are strongly influenced by the socioeconomic situation. The pathways between various socioeconomic determinants and alcohol consumption patterns are complex and the determinants themselves are interrelated. In the analysis of those pathways and the possible differential alcohol use patterns of the Estonian adult population the analysis focuses mainly on 3 selected variables that indicate specific aspects of socioeconomic status. Those variables are: (1) employment status (employed, unemployed, inactive, with the latter comprises students, retirees, people in army service or at home); (2) education level attained (basic/primary, secondary, secondary-vocational and university); and (3) average family after-tax monthly income (from all sources) per family member (in the past 12 months). The relationships between selected variables and alcohol use patterns are presented schematically in Fig. 1.18.

Education, income, employment and alcohol use patterns are circularly related. On the one hand education influences possibilities for future employment and income level and on the other hand it might determine alcohol use patterns. However, the attained education level shows past actions and therefore is not likely to be affected by current hazardous drinking behaviour or socioeconomic status, although these variables may be influencing education through vertical pathways across generations. Income level is determined by employment status – whether an individual is employed or unemployed – and income itself influences alcohol use through its purchasing power; it determines to what extent an individual can afford to buy alcohol. Employment status – more specifically, the unemployment and harmful alcohol-use patterns – inhibit reverse causality; for example, the loss of a job may cause increased drinking and harmful drinking practices (Mullahy & Sindelar, 1996), whereas alcoholism or associated health problems may lead to unemployment (Claussen, 1999), that is, health consequences.

Fig. 1.18. Relationships between socioeconomic factors and hazardous drinking behaviours



Source: Tomkins et al., 2007.

Income

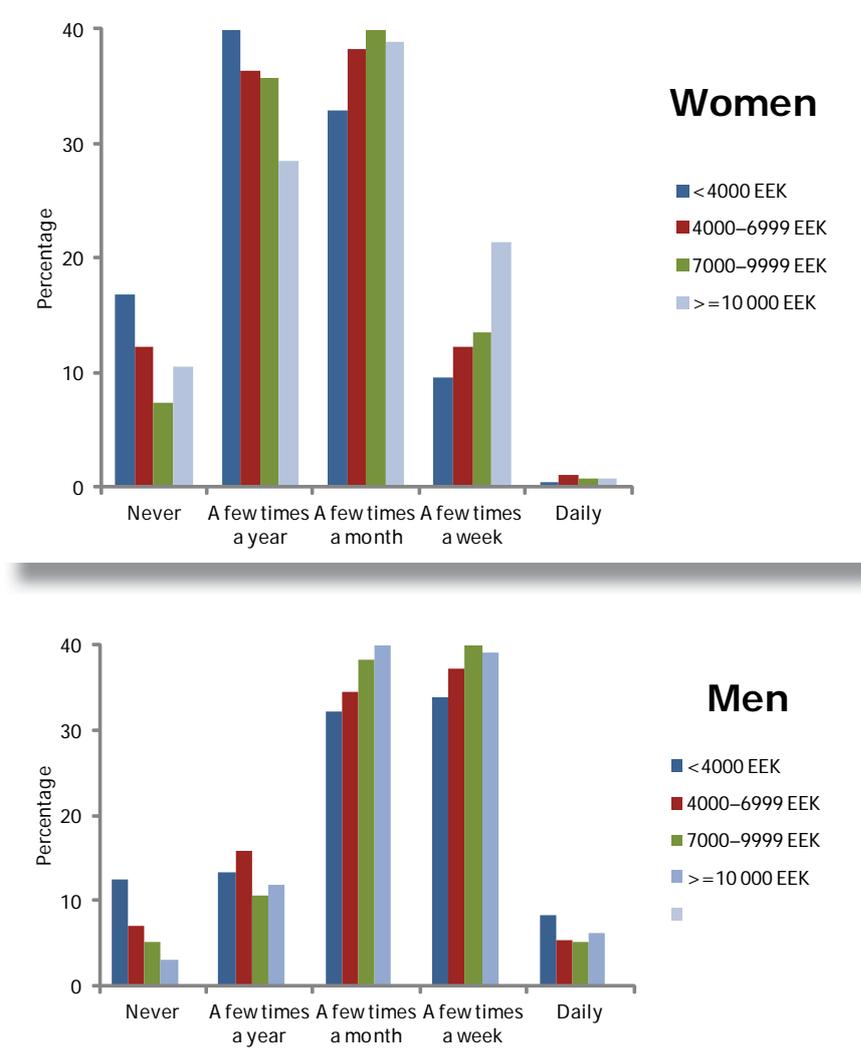
According to the “Health Behavior among Estonian Adult Population” survey the prevalence of alcohol use and consumption frequency increases with income level. This finding is consistent with those observed elsewhere (Strand & Steiro, 2003; McKee et al., 2000; Marmot, 1997). One possible explanation for this positive relationship between alcohol consumption and income levels is purchasing power – the more disposable income people have, the more alcoholic products they are able to purchase (Wagenaar, Salois & Komro, 2009). However, lower income is associated with higher probabilities of abstinence and of heavy drinking compared to light or moderate drinking (Cerdá, Johnson-Lawrence & Galea, 2011).

As can be seen from Fig. 1.19, individuals with the lowest level of income are more likely to abstain from drinking alcohol compared to those with higher income. 12.4% of men and 16.7% of women (age-adjusted to 16.9%) whose monthly family income is below 4000 Estonian kroon (EEK) (about €255) have not consumed alcohol during the last year, whereas in the highest income group (over EEK 10 000; about €639) the shares are 3.0% and 10.5% respectively for men and women. The gradient is valid even if the influences of other variables are taken into account. For women, the second highest income group has the lowest level of alcohol abstention (7.3%).

Income level also plays a significant role in frequent alcohol consumption. Among those who responded that they consume alcohol “a few times a week” and “a few times a month” there is a clear positive relationship between income level and alcohol consumption frequency. This pattern is especially pronounced among women: the prevalence of at least weekly drinking is 2.2 times higher among those who have the highest level of family income compared to the lowest level (22.2% and 9.9%, respectively; age-adjusted to 22.4% and

10.3%). Among men the difference between high-income and low-income individuals that drink “at least weekly” is not that large compared to among women (respective prevalence is 45.2% and 42.1%; age-adjusted to 44.80% and 41.35%). The share of men that drink alcohol daily in families in which the monthly family income is below EEK 4000 EEK is almost twice as high as among those in which the income level is above EEK 7000 a month. However, if the impact of all other variables under analysis (age, employment status, education and ethnicity) is taken into account, the differential becomes insignificant.

Fig. 1.19. Alcohol consumption distribution by family income level (monthly average), 2010



Source: Health Behavior among Estonian Adult Population survey (NIHD, 2010b).

The other alcohol consumption patterns of men that indicate harmful alcohol use – binge drinking and exceeding weekly drinking limits – do not demonstrate such a clear relationship between low income and hazardous alcohol use as was the case with frequent alcohol

use. Men with the highest and the lowest income levels are more likely to exceed weekly drinking limits – but without large differences between income groups (Table 1.1). Although the relevant literature suggests that binge drinking is typically more prevalent among drinkers of low socioeconomic status (Knupfer, 1989), in Estonia the individuals in the second highest income-level category binge drink more often than others. The people with the highest income level are least likely to binge drink. However, as the health behaviour survey is based on data derived from a postal survey, it should be taken into account that people with low levels of income and with high levels of alcohol consumption may not have a home to which to send the questionnaire, and/or the response rate may not be as high as for the other, more privileged individuals.

Table 1.1. Harmful alcohol consumption by family income level, 2010

Monthly family income	More than 6 portions, at least once a week % (adjusted for age)		Exceeding weekly limits, % (adjusted for age)		Daily drinking, % (adjusted for age)	
MEN						
<4000 EEK	27.5	(27.6)	16.1	(15.9)	8.3	(7.9)
4000–6999 EEK	21.4	(21.6)	11.5	(11.9)	5.4	(5.2)
7000–9999 EEK	28.4	(28.4)	15.3	(14.8)	5.0	(4.8)
>=10 000 EEK	20.5	(20.3)	16.5	(15.3)	6.1	(6.0)

Source: Health Behavior among Estonian Adult Population survey (NIHD, 2010b).

Among women the highest prevalence of binge drinking and exceeding weekly limits is skewed towards the higher end of income levels (Table 1.2).

Table 1.2. Harmful alcohol consumption in women by family income level, 2010

Monthly family income	More than 6 portions, at least once a week % (adjusted for age)		Exceeding weekly limits, % (adjusted for age)		Daily drinking ^a
WOMEN					
<4000 EEK	10.7	(11.1)	5.7	(5.8)	–
4000–6999 EEK	12.7		6.2	(6.2)	–
7000–9999 EEK	13.9	(14.4)	6.9	(7.5)	–
>=10 000 EEK	13.3		7.9	(8.1)	–

^aDaily drinking rates were very low and are therefore not presented in this table.

Source: Health Behavior among Estonian Adult Population survey (NIHD, 2010b).

The purchasing of illegal alcohol clearly depends on income level, decreasing along social gradient. Among the lowest earners (less than EEK 2000 a month; about €128), 26% of individuals had bought alcohol illegally, whereas in the highest income group (over EEK 10000 a month, about €640) the share was only 1%. 24% of the individuals from the low-income group compared to 6% of the high-income group know a place or a person where illegal alcohol can be bought.

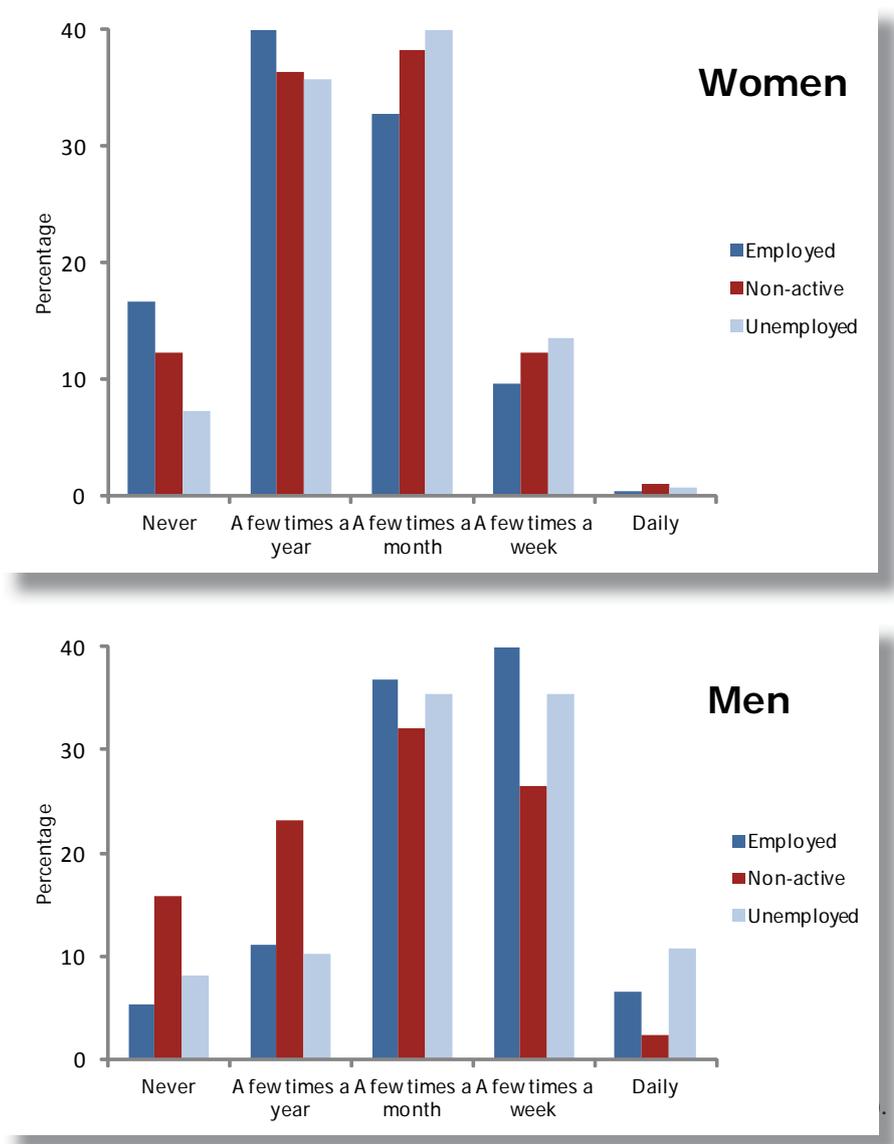
Weekly alcohol consumption is more frequent among high-income earners. However, men with low income are more likely to drink on a daily basis. In terms of binge drinking and exceeding weekly drinking limits, there is not such clear relationship between low income and hazardous alcohol use among men. For women, harmful drinking practices are more prevalent among high-income earners. The purchasing of illegal alcohol significantly decreases with income level.

Employment status

The alcohol consumption frequency varies significantly by employment status; namely, whether a respondent is employed, inactive (retired, at home, in the army or a student) or unemployed. As can be seen from Fig. 1.20 the share of individuals abstaining was highest among inactive people, followed by unemployed people. Overall, men that reported as being inactive were almost 3 times as likely as unemployed people to abstain from drinking alcohol (5.40% employed and 15.85% inactive; age-adjusted to 5.1% and 16.1%, respectively) and women were 2.5 times as likely (8.9% employed and 22.9% inactive; age-adjusted to 8.2% and 23.1%, respectively).

Individuals that are inactive due to their life circumstances use alcohol considerably less frequently than employed people, even if the prevalence is adjusted for age. Unemployed women consume alcohol less frequently than employed women. Among men the difference between employed and unemployed people is significant only among those that never consume alcohol and daily drinkers – the share of those abstaining and daily consumers is larger among unemployed than among employed people. When analysing the data it should be taken into account that in 2010 the unemployment rate was high, due to the economic crisis, and the share of short-term unemployed people was larger than during years of economic growth; the alcohol consumption of short-term and long-term unemployed people differs considerably.

Fig. 1.20. Alcohol consumption distribution by employment status, 2010



As can be seen from Table 1.3 and Table 1.4, harmful alcohol consumption patterns are more prevalent among unemployed people compared to individuals in employment or those that are inactive. This is observable across different harmful drinking categories. Unemployed compared to employed men and women are more likely to binge drink (33.5% versus 23.2% among men and 16.4% versus 12.7% among women), exceed weekly drinking limits (17.1% versus 15.4% among men and 9.8% versus 6.3% among women) and drink on a daily basis (10.8% versus 6.6% among men).

Table 1.3. Harmful alcohol consumption in men by employment status, 2010

Economic activity	More than 6 portions, at least once a week % (adjusted for age)		Exceeding weekly limits, % (adjusted for age)		Daily drinking, % (adjusted for age)	
MEN						
Employed	23.2	(23.7)	15.4	(15.5)	6.57	(6.2)
Inactive	19.3	(29.8)	9.4	(11.0)	2.44	(4.6)
Unemployed	33.5	(33.3)	17.1	(17.7)	10.77	(10.6)

Source: Health Behavior among Estonian Adult Population survey (NIHD, 2010b).

The strongest and most pertinent association between unemployment and hazardous alcohol use comes into play with the consumption of more than 6 portions of alcohol at least once a week. In such a case, the aforementioned association remains highly significant even if the impact of all other variables is taken into account. The share of binge drinkers among inactive men is higher when the age confounding is removed by adjusting for age. This is explained by the larger share of older people (retirees) and younger individuals (students, enlisted army recruits) among the inactive population than in the general population. If the effect of age confounding on the women's binge drinking figures is eliminated, the share of employed women that binge drink increases.

Table 1.4. Harmful alcohol consumption in women by employment status, 2010

Economic activity	More than 6 portions, at least once a week % (adjusted for age)		Exceeding weekly limits, % (adjusted for age)		Daily drinking ^a
WOMEN					
Employed	12.7	(15.2)	6.3	(7.4)	–
Inactive	10.3	(9.1)	6.5	(6.1)	–
Unemployed	16.4	(15.8)	9.8	(10.1)	–

^aDaily drinking rates were very low and are therefore not presented in this table.

Source: Health Behavior among Estonian Adult Population survey (NIHD, 2010b).

Inactive people consume alcohol the least frequently and in less harmful drinking patterns. Unemployed men are more frequent daily consumers than employed men and unemployed women drink alcohol less frequently than employed women. Harmful alcohol consumption patterns are more prevalent among unemployed people compared to individuals in employment or those that are inactive.

Education

In the relevant scientific literature, education has been shown to be a factor in the development of differential alcohol consumption patterns. However, the findings of studies analysing the relationship between alcohol use and education are not as consistent as in the cases of diet, physical activity and smoking, whereby research has constantly shown that individuals educated to a higher level are more likely to adopt healthy behaviours compared to individuals with a lower level of education.

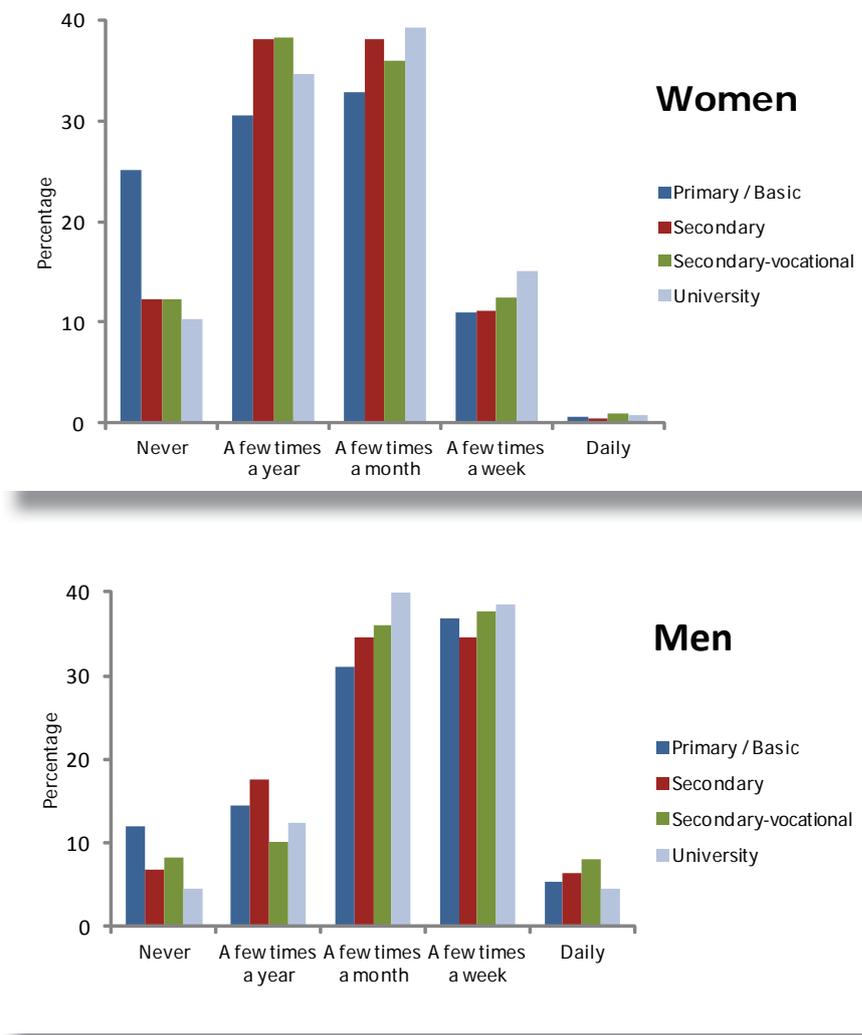
It has been shown in studies that education may be positively associated with frequency of drinking but negatively associated with harmful (heavy drinking) (Caldwell et al., 2008; Casswell, Pledger & Hooper, 2003).

Individuals with a higher level of education appear to be somewhat more likely to behave riskily, including consuming alcohol, because they face fewer financial limits and their working environments may be conducive to alcohol consumption (for example, at business lunches). In addition, an active social life, lack of social stigma, and high sense of self-control may lead highly educated individuals to consume more alcohol by frequency and by volume compared to individuals with less education (Huerta & Borgonovi, 2010). However, they manage to stop drinking before it becomes harmful or to keep consumption levels at a level below which problems start to emerge (Cutler & Lleras-Muney, 2008).

A higher education level helps to increase access to information, including health-related information, and usually indicates a higher level of cognitive ability, skills and knowledge with which to act upon relevant information (Goldman & Smith, 2005). In addition, education improves ability to assess risks more adequately and possibilities to invest in health. It has a major impact on wages and therefore people are more able to purchase services and products that enhance health. Also, more educated people are less likely to be unemployed (Hobcraft, 2000); they have higher levels of social support; they suffer less from mental health conditions (Ross & Van Willigen, 1997); and they have more at stake if they engage in harmful alcohol consumption patterns than individuals that are less educated (Cowell, 2006).

In Estonia the largest share of individuals abstaining from alcohol consumption is among the group with the lowest education level (combined category for primary and basic level of education). Overall, as can be seen from Fig. 1.21, the share is diminishing along the educational gradient, with the exception of men with secondary-vocational education. Our analysis suggests that educational attainment is positively related to the frequency of alcohol use for both men and women: the higher their education level, the more likely people are to drink a few times a month or week. However, the differences are not particularly large and they lack statistical significance.

Fig. 1.21. Alcohol consumption distribution by education level, 2010



Source: Health Behavior among Estonian Adult Population survey (NIHD, 2010b).

The prevalence of harmful alcohol use practices is much lower among individuals with a university degree (Table 1.5 and Table 1.6). They engage less frequently in binge drinking and less frequently exceed weekly drinking limits compared to individuals with lower levels of education.

Table 1.5. Harmful alcohol consumption in men by education level, 2010

Education level	More than 6 portions, at least once a week % (adjusted for age)		Exceeding weekly limits, % (adjusted for age)		Daily drinking, % (adjusted for age)	
MEN						
Primary/basic	24.6	(25.3)	14.1	(14.4)	5.4	(6.7)
Secondary	25.4	(25.6)	15.1	(13.6)	6.5	(6.7)
Secondary-vocational	27.9	(27.3)	16.9	(15.6)	8.0	(7.7)
University	16.8	(18.8)	10.4	(9.8)	4.5	(4.0)

Source: Health Behavior among Estonian Adult Population survey (NIHD, 2010b).

The differences between individuals without a university degree are somewhat smaller; however, the higher share of harmful alcohol use among men with secondary-vocational education stands out. 28% of men with that level of education drink more than 6 portions of alcohol at least once a week, 8% drink on a daily basis and 16.9% exceed weekly drinking limits.

Table 1.6. Harmful alcohol consumption in women by education level, 2010

Education level	More than 6 portions, at least once a week % (adjusted for age)		Exceeding weekly limits, % (adjusted for age)		Daily drinking ^a
WOMEN					
Primary/basic	14.4	(14.4)	7.7	(3.6)	–
Secondary	13.8	(13.6)	8.3	(7.6)	–
Secondary-vocational	14.0	(15.6)	6.3	(7.1)	–
University	8.7	(9.8)	5.1	(5.1)	–

^aDaily drinking rates were very low and are therefore not presented in this table.

Source: Health Behavior among Estonian Adult Population survey (NIHD, 2010b).

The probability of buying illegal alcohol are higher among individuals with an education level under that of a university degree – 14% of individuals with primary or basic education and 11% of those with secondary-level education had purchased alcohol illegally either once or regularly in 2010, whereas the share was only 3% among people with a university degree (EKI, 2010c). According to Pärna and Leon (2011), education is clearly related to consumption of surrogate alcohol: relative to people with higher education levels, those with secondary education had a 2.28 times higher probability of drinking surrogate alcohol and those with basic education were 3.91 times as likely to do so (OR, adjusted for age and ethnicity).

Educational attainment is positively related to the frequency of alcohol use for men and women: the higher the educational level, the larger the share of people who drink alcoholic beverages on a weekly basis. The prevalence of harmful alcohol-use practices is much lower among individuals with a university degree and these people are also less likely to consume illegal alcohol. The higher share of men with harmful drinking patterns is among those with a secondary-vocational level of education.

1.5 Differential alcohol use by other socio-demographic, socioeconomic and risk behaviour determinants among adolescents

Place of residence

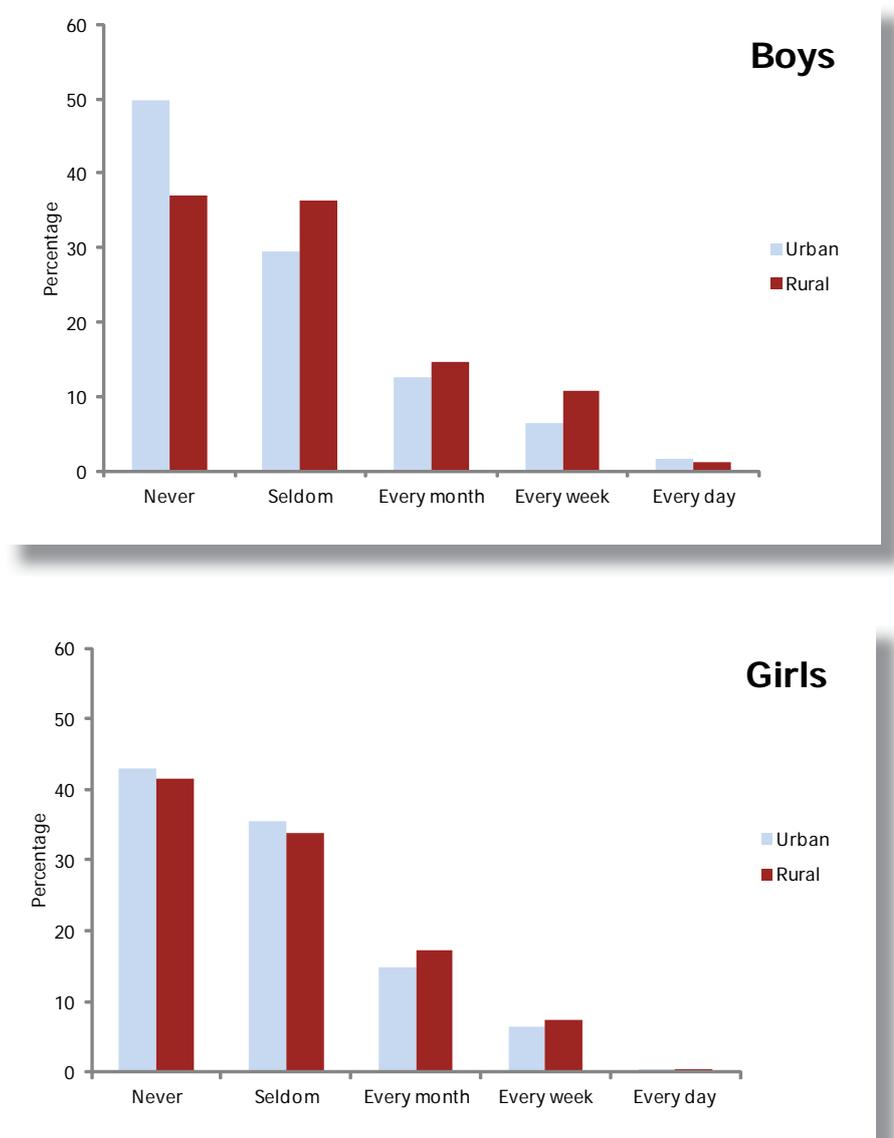
Urban areas exhibit structural characteristics that can be explained by weak social control and disorganization, larger anomie, greater tolerance towards differences, and more opportunities to learn behaviours with potentially negative health outcomes, such as substance use, including alcohol, marijuana or other illicit drugs (Wilson & Donnermayer, 2006).

Wilkinson (1984 a, b) and Conger (1997) have found that smaller rural areas may be more negatively affected by persistent poverty, geographic isolation, lack of health and other welfare services and various external influences, such as urbanization, constant population growth, and the relocation of industry. These conditions may cause some rural communities to display relatively high levels of crime, substance use, and other risk behaviours. Economic and social changes have the potential to substantially and adversely influence established patterns of social control in smaller areas.

It has been observed that there are differences in rural and urban alcohol consumption prevalence. For example, in Germany, in rural areas the number of adolescents aged 15–16 years that had never drunk alcohol was smaller compared to adolescents from urban areas. Almost 50% of adolescents from rural areas and about 40% of adolescents from urban areas consumed alcohol at least once a month (Donath et al., 2011).

In Estonia, 49.8% of boys from urban areas and 37.1% from rural areas have never consumed alcohol (Fig. 1.22). The figures for girls are, respectively, 42.9% and 41.4%. The consumption pattern is more varied among boys than girls. 12.0% of boys from rural areas consume alcohol weekly, whereas among boys from urban areas the rate is 8.2%.

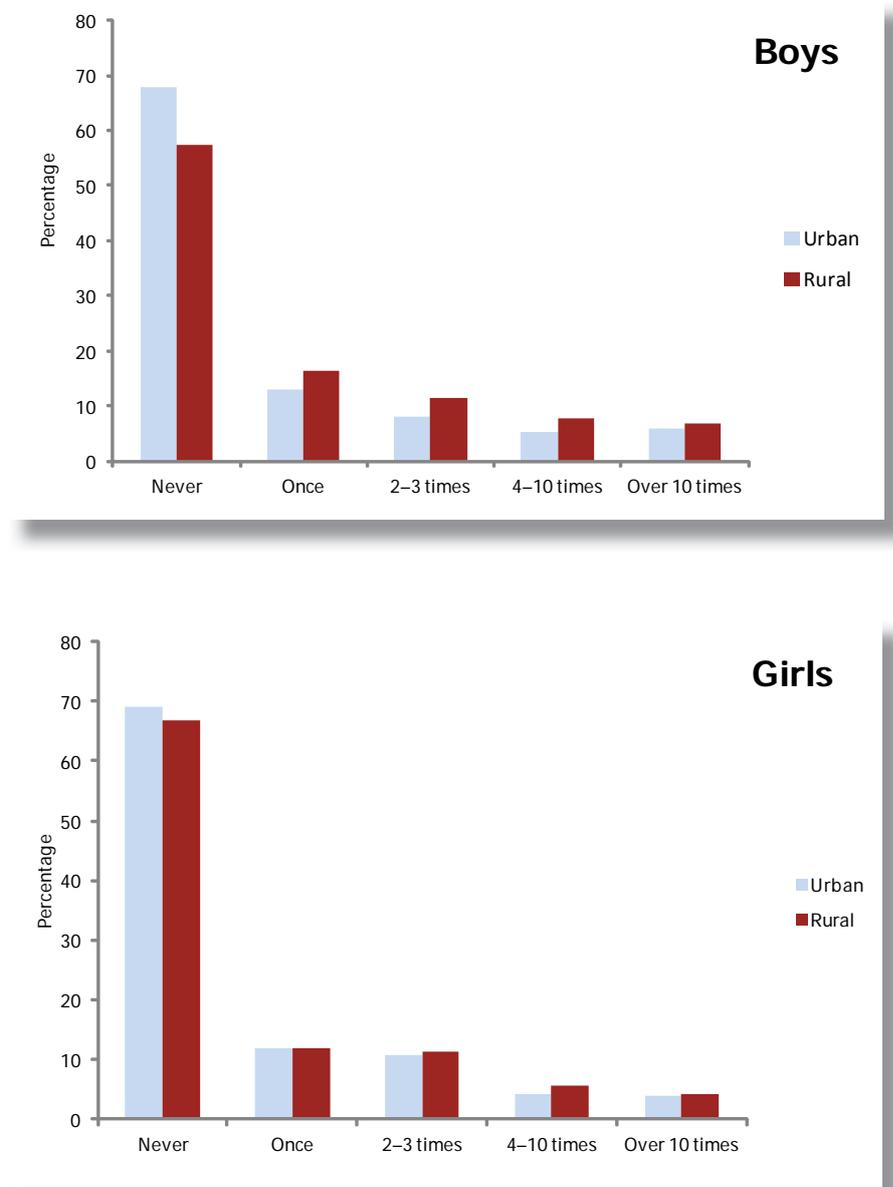
Fig. 1.22. Alcohol consumption distribution among 11-, 13- and 15-year-old adolescents by place of residence, 2010



Source: HBSC survey (NIHD, 2010c).

Approximately 70% of boys from urban areas and 60% of boys from rural areas have never been drunk (Fig. 1.23). The rates among girls from urban and rural areas are similar, at 70%. Nearly 15.0% of boys from rural areas and 11.1% of boys from urban areas have been drunk at least 4 times.

Fig. 1.23. Drunkenness distribution among 11-, 13- and 15-year-old adolescents by place of residence, 2010



Source: HBSC survey (NIHD, 2010c).

Rural boys and girls tend to drink alcohol more often and rural boys have been drunk more times than urban boys and girls.

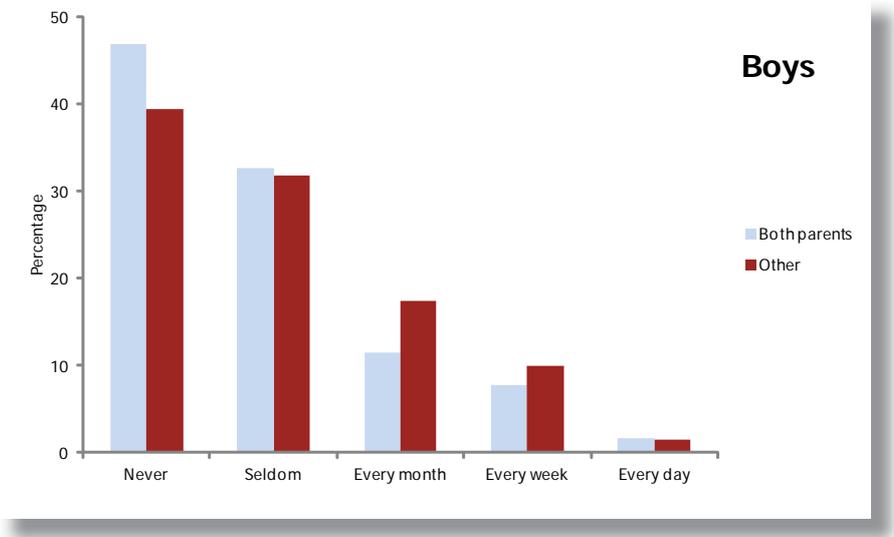
Family structure

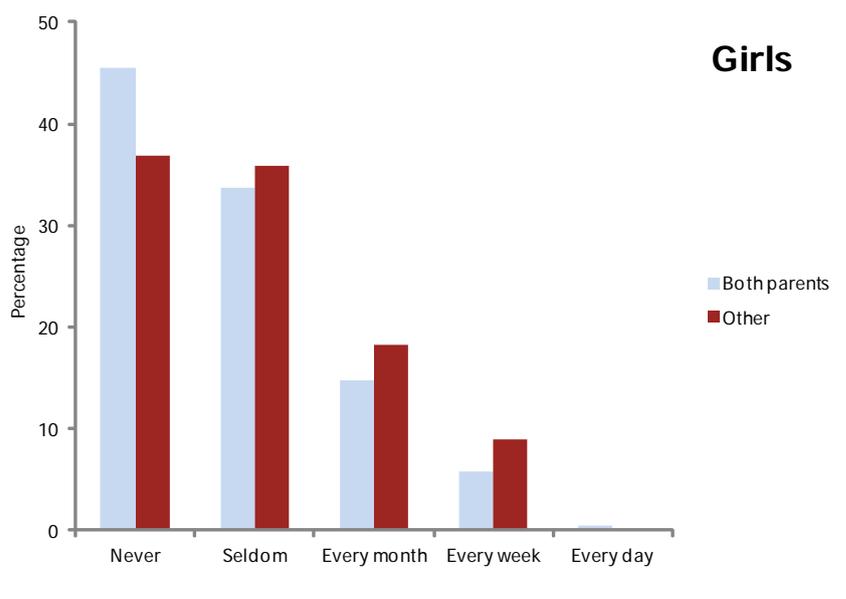
Various studies have analysed the associations between adolescent alcohol consumption and family structure. It has been found that children who do not live with both biological

parents are more likely consume alcohol more frequently and more heavily (Bjarnason et al., 2003; Shucksmith, Glendinning & Hendry, 1998). The effect of family structure on adolescent alcohol use is associated with various emotional and social family determinants that result in decreased parental involvement in adolescents lives. The problems associated with not living with both parents are expected to be more substantial when alcohol is more available in society at large and when alcohol consumption is more prevalent in adolescent society (Bjarnason et al., 2003).

About 45% of students live with both parents and have never consumed alcohol (Fig. 1.24). Among students that do not live with both parents (expressed as “other” in the figures), the prevalence rate is lower. There are no significant differences when it comes to alcohol consumption that is classed as “seldom” among adolescents from different families. The differences can be seen in cases involving more frequent alcohol use: 20.7% of boys and 20.8% of girls that live with both parents consume alcohol at least once a month, and the rates among students that do not live with both parents are, respectively, 28.8% and 27.3%.

Fig. 1.24. Alcohol consumption distribution among 11-, 13- and 15-year-old adolescents by family structure, 2010

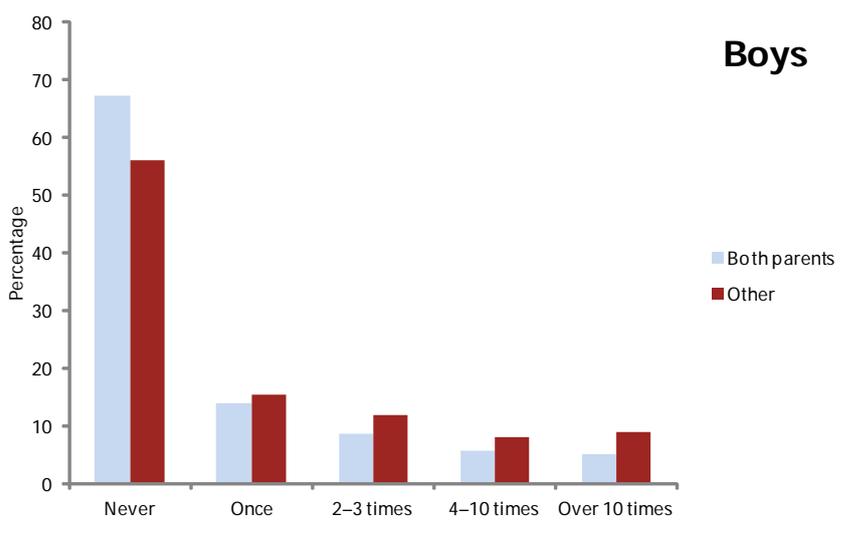


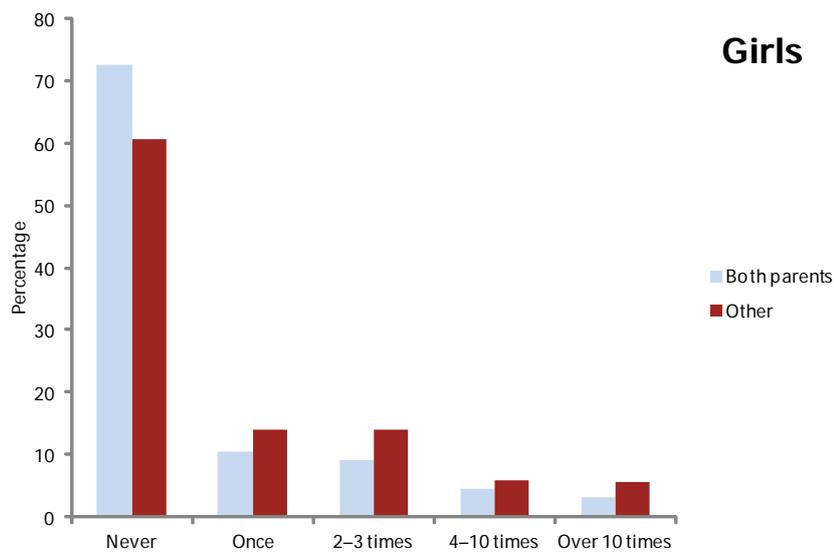


Source: HBSC survey (NIHD, 2010c).

33.0% of boys and 27.3% of girls that live with both parents have been drunk at least once, and 10.6% of boys and 7.5% of girls have been drunk at least 4 times (Fig. 1.25). The rates among students that do not live with both parents are respectively 43.9% and 39.3% for being drunk at least once, and 16.8% and 11.5% for being drunk at least 4 times.

Fig. 1.25. Drunkenness distribution among 11-, 13- and 15-year-old adolescents by family structure, 2010





Source: HBSC survey (NIHD, 2010c).

Boys and girls that do not live with both parents are more likely to drink frequently and have been drunk more times than boys and girls that live with both parents.

FAS

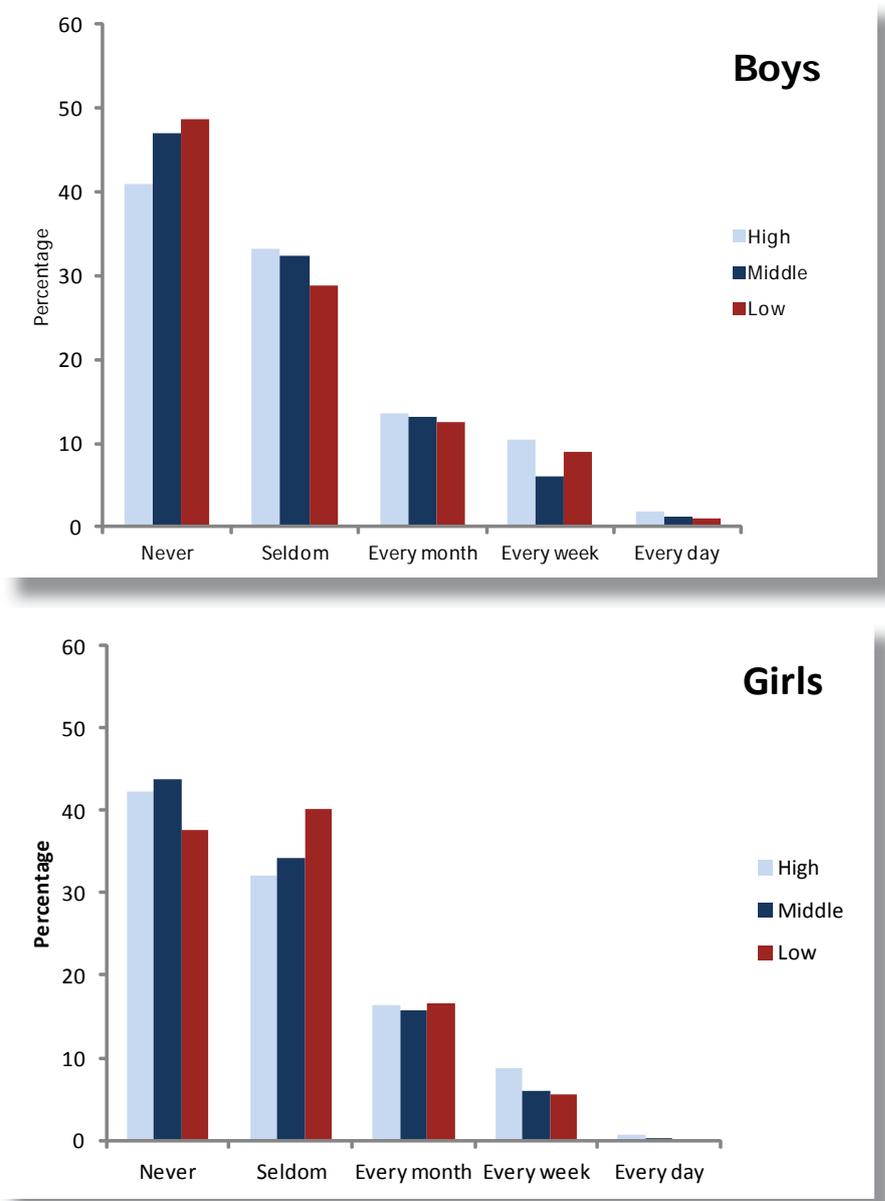
The variables that are used in adult population surveys are usually not appropriate for use in adolescent surveys. It is not possible to ask about the wage, occupation or education level of the respondents. One determinant that is used in the HBSC surveys is the FAS. The FAS as a proxy measure is more suitable because many adolescents cannot accurately report their parents' occupations or educational levels, and even less so their incomes (Currie et al., 1997).

The FAS in Estonia's HBSC survey 2010 was composed of 4 items: number of cars in family; number of computers in family; number of family holidays in past 12 months; and existence of own bedroom (Aasvee & Minossenko, 2011). It is known that certain biases and limitations may apply to these questions, especially in cross-national contexts – for example, car ownership may vary according to urban or rural area of residence; bedroom sharing may be related to culture and family size, as well as to age and sex of other children; having a holiday might mean different lengths of time or distances, depending on the cultural context; and the number of computers may vary according to parents' jobs (and children might also count workplace laptops) (Boyce et al., 2006).

From Fig. 1.26 it is clear that, among boys, alcohol consumption is higher, when the FAS score is high (weekly alcohol consumption: 12.3%), compared to a mid-range FAS score rate of 7.4%. Also, among girls, the weekly alcohol consumption is highest when the FAS score is high (9.3%), compared to a low FAS score (5.5%).

The FAS was calculated on the basis of 4 questions: (1) does your family own a car? (0, 1, 2 or more); (2) how many times did you travel away on holiday with your family during the past 12 months? (0, 1, 2, 3 or more); (3) do you have your own bedroom for yourself? (0, 1); and (4) how many computers does your family own? (0, 1, 2, 3 or more). The sum of the responses from all 4 items was calculated and the FAS score established (Richter, Leppin & Gabhainn., 2006). The score ranged from 0 to 9 and it was subsequently recoded into tertiles: low (0–4 points); middle (5–6 points); and high (7–9 points). According to tertiles, the respondents were divided into 3 groups (Currie et al., 2008).

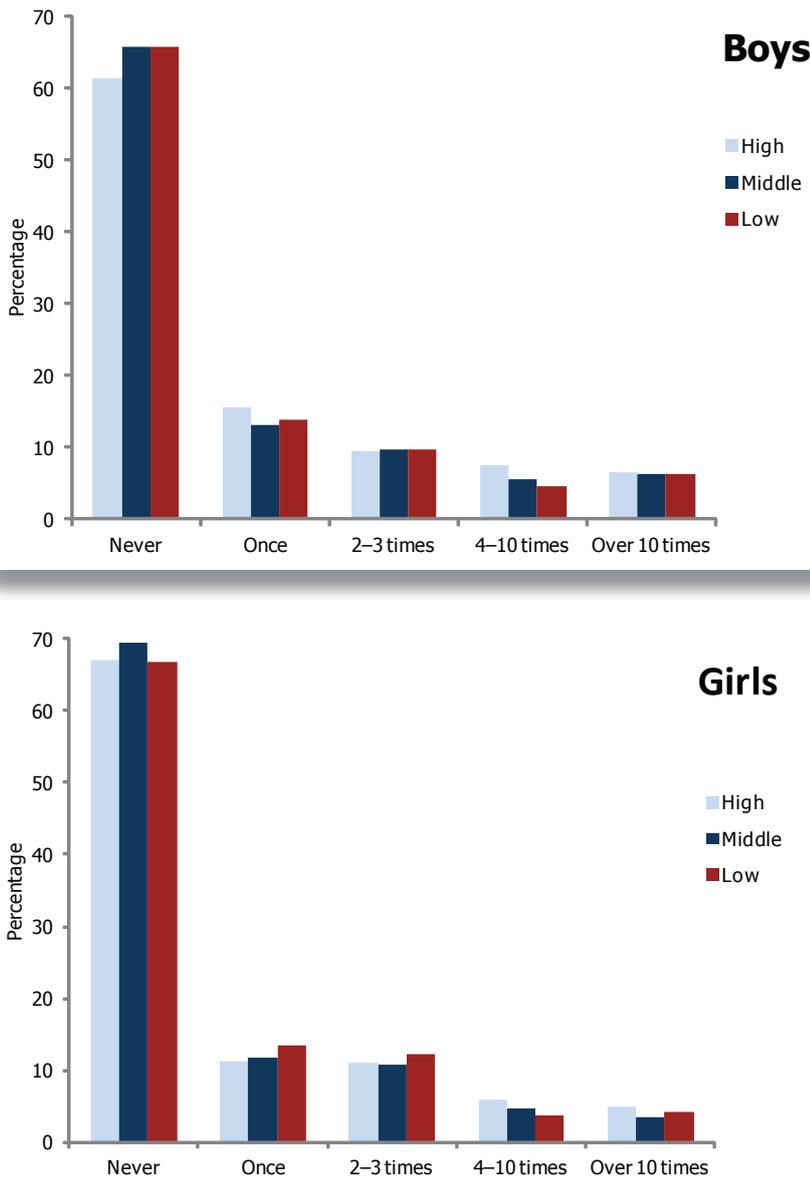
Fig. 1.26. Alcohol consumption distribution among 11-, 13- and 15-year-old adolescents by FAS, 2010



Source: HBSC survey (NIHD, 2010c).

The drunkenness frequency does not vary significantly by FAS (Fig. 1.27). There are differences among boys that have been drunk 4–10 times (7.4% when their FAS score is high and 4.5% when it is low). The prevalence rate among girls who have been drunk at least 4 times is 7.9% for a low FAS score and 10.7 when the FAS score is high.

Fig. 1.27. Drunkenness distribution among 11-, 13- and 15-year-old adolescents by FAS, 2010



Source: HBSC survey (NIHD, 2010c).

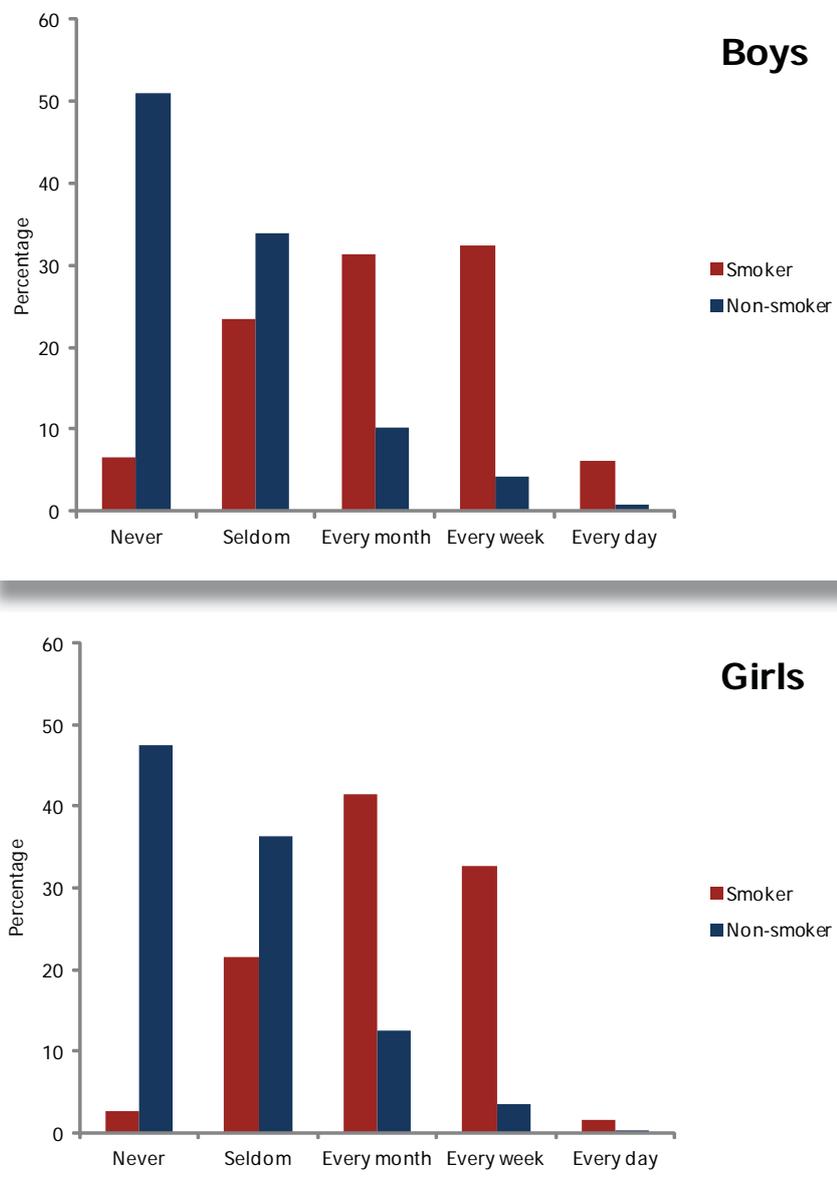
The level of alcohol consumption is higher for boys and girls that live in more affluent families. Although the frequency of drunkenness does not vary significantly by FAS, children from affluent families have been drunk slightly more often than those from families that are poorer by comparison.

Smoking

Alcohol consumption and cigarette smoking among adolescents are strongly related to each other (Myers & Kelly, 2006). Adolescents that start to smoke regularly and drink alcohol to get drunk at early ages are at greater risk of developing harmful drinking patterns in the future. Riala and colleagues (2004) researched the Northern Finland Birth Cohort Study for 1966 and found that regular smoking and heavy alcohol consumption among 14-year-olds was a risk factor for future drunk driving and substance use problems needing hospital treatment. The risk with regular smoking was about 4–6 times higher for women and 7–9 times higher for men compared to non-smoking participants. In terms of future substance use-related problems, smoking was a greater risk factor for men, and alcohol was a greater risk factor for women. The study conducted also showed that substance use-related problems may already start occurring in late adolescence and young adulthood, even with non-regular alcohol consumption, smoking and other substance use in adolescence.

As seen in Fig. 1.28, alcohol consumption frequency is higher among smokers. The prevalence rate of individuals that seldom drink alcohol is higher among boys that do not smoke (33.9%) and also among girls that do not smoke (36.3%). The difference between monthly drinking among boys that smoke and those that do not smoke is almost 3-fold (31.4% versus 10.1%, respectively). Among girls, the difference is even greater (41.5% versus 12.5%). 38.6% of boys and 34.2% of girls that smoke also consume alcohol weekly. The rates among non-smokers are respectively 4.9% and 3.7%.

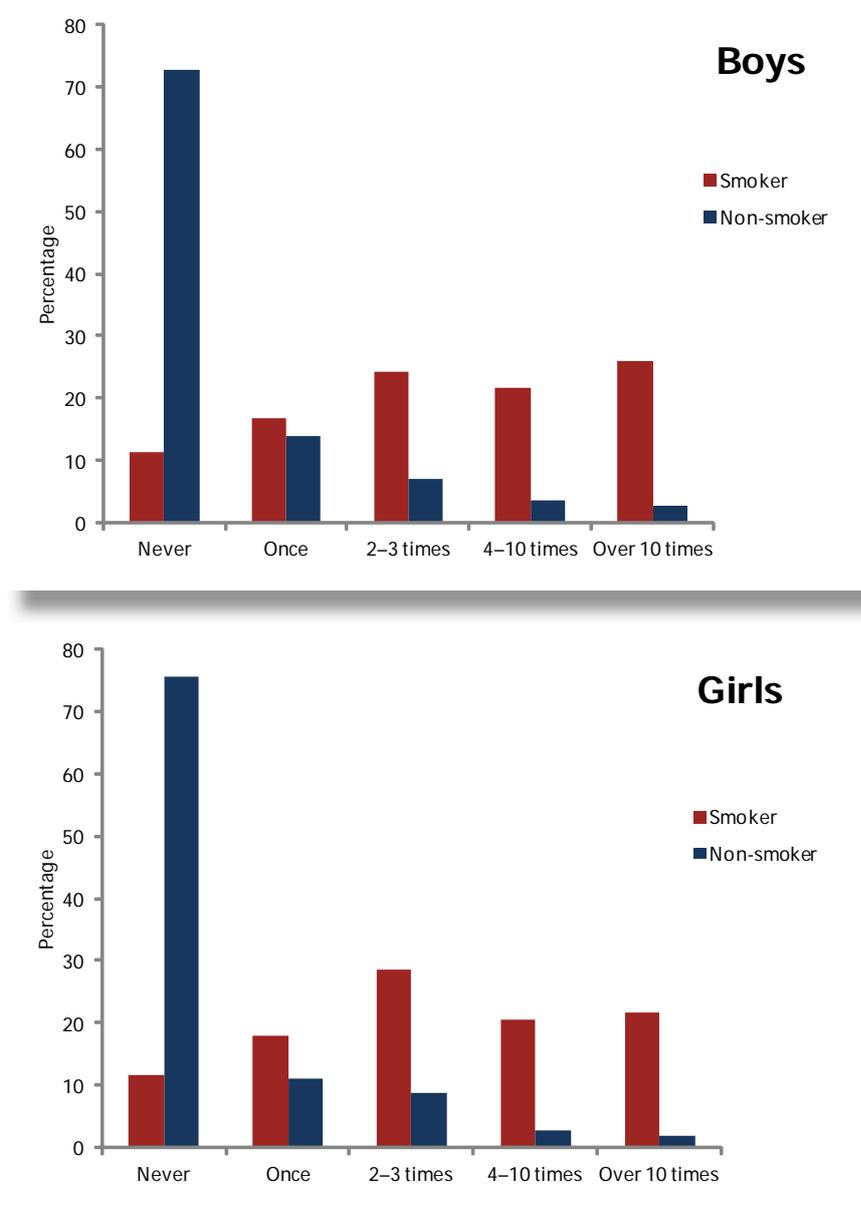
Fig. 1.28. Alcohol consumption distribution among 11-, 13- and 15-year-old adolescents by smoking status, 2010



Source: HBSC survey (NIHD, 2010c).

Among non-smokers, over 70% of boys and girls have never been drunk (Fig. 1.29). Among smokers the rate is around 10%. About 50% of boys and 40% of girls that smoke have been drunk at least 4 times. The rates among non-smokers are below 7%.

Fig. 1.29. Drunkenness distribution among 11-, 13- and 15-year-old adolescents by smoking status, 2010



Source: HBSC survey (NIHD, 2010c).

Smoking is very strongly related to alcohol consumption among adolescents: boys and girls that smoke are more likely to drink frequently and they have also been drunk significantly more often compared to non-smoking adolescents.

2. The health outcomes and socioeconomic consequences of alcohol use

2.1 Differential health outcomes of alcohol use

Differential health outcomes of alcohol consumption include a wide range of chronic and acute disorders, as well as unintentional and intentional injuries (Rehm et al., 2006). Direct outcomes can include alcohol dependence, harmful alcohol use, acute intoxication and alcohol poisoning. Alcohol use has an adverse effect on various cancers (Baan et al., 2007), gastrointestinal tract diseases, neuropsychiatric disorders, cardiovascular diseases (Rehm et al., 2006) and communicable diseases (tuberculosis (TB), HIV/AIDS). Alcohol might also impact the course of disease – it weakens the immune system (Szabo, 1997) and it influences individuals' behaviour (often leading to less likelihood of seeking help).

Among men the burden attributable to alcohol consumption is higher compared to that among women. In 2002 alcohol accounted worldwide for 1.4% and 7.4% of DALYs among women and men, respectively. Deaths related to alcohol consumption account for 1.1% and 6.0% of all deaths among women and men, respectively, reflecting differences in drinking habits, both in quantity and in terms of drinking patterns (WHO, 2009). These differences are less noticeable among adolescents. In different countries (including Estonia), alcohol consumption rates for girls are increasingly similar to those for boys. This could lead to a higher rate of alcohol-related problems and deaths among women in the future.

Mackenbach and colleagues (2008) found in a pan-European study that in Europe “inequalities in alcohol-related mortality account for 11% of inequalities in the rate of death from any cause among men and 6% of those among women”. Large inequalities in alcohol-related mortality result in larger inequalities in the mortality from any cause in the case of men in the Baltic region. This scale of inequality among both men and women is only similarly observable in Hungary.

In Estonia in 2010 there were 415 deaths caused directly by wholly alcohol-attributable conditions, such as alcoholic cirrhosis of liver and alcohol toxication, among others. Nearly 80% of those deaths are premature deaths, that is, under the age of 65 years. Since 2009 the number of deaths has been decreasing; however, it still constitutes 8% of total premature mortality (and this number does not take into account those conditions in which alcohol is partially a causal factor).

Treatment costs of alcohol-related diseases in Estonia have increased over time. However, during the period of recession in 2008–2010 there was a reduction in the number of treatment cases and total costs. The decrease in total costs also inhibits changes in health service prices that were reduced by 6% in 2010. The total cost of 10 wholly alcohol-attributable

conditions was €323 thousand in 2008 and in €311 thousand in 2010, including the emergency care costs for uninsured individuals. The biggest expenditures are related to mental and behavioural disorders resulting from alcohol use – approximately €65 000 was spent in 2009. Alcoholic liver disease treatment cost €707 000 in 2009 (EKI, 2011b).

Differences between men and women

The biggest differential in alcohol induced death is between men and women. The premature death of men makes up 70% of all deaths in which alcohol is considered to be direct cause, that is, alcohol is directly referred to in the cause of death diagnosis. Nevertheless, since 2007 the women's share of such deaths increased from 23.4% to 30.0% (calculations based on data from the National Institute for Health Development (NIHD) Estonian Causes of Death Registry (NIHD, 2009, 2010c)). In 1992–2008 there was a dramatic increase in alcoholic liver cirrhosis mortality in Estonia. Pärna and Rahu (2010) showed that mortality rates were higher among men.

There were 956 deaths in Estonia in 2010 due to chronic diseases (cancers, cardiovascular diseases, and so on) causally related to alcohol that can be attributed to alcohol using the attributable fraction method. Men account for 60% of those deaths. However, the women's share of these alcohol-related deaths has doubled since 2002, when burden of disease due to alcohol was first calculated, increasing by 87% from 207 deaths to 387 (2010). On the other hand, the share of men's deaths has decreased by 26%, from 773 to 568. Overall, there have not any significant changes in trends reflecting the total number of deaths (EKI, 2011).

The majority of fatal alcohol-attributable injuries (suffocation, poisoning, violence, drowning, fires, suicides, traffic accidents) occur to men due to their harmful drinking practices. It is calculated that in 2010 male deaths account for 87% of a total of 296 deaths (EKI, 2011). Traffic-related injuries are more prevalent in low- and middle-income countries. In 2011 Estonia was considered to be a high-income country (World Bank, 2011), but in 2006 it was middle-income country (World Bank, 2006). Kaasik, Väli and Saar (2007) researched road traffic mortality in Estonia in 2000–2002 and found that 64.4% of deaths were alcohol related. The gender-related shares of alcohol-related deaths were 70% among men and 44% among women.

Men also account for most of the directly alcohol-related morbidity. For instance, in 2010, of all the 1720 incidence cases related to alcohol dependency, 81% were men, and of the 477 alcohol-related liver disease incidence cases, 72% were men (NIHD, 2010e).

In order to understand better the reasons behind the differences, such as why Estonian men experience more harm, and in order to tackle the issue with targeted interventions, it is necessary to carry out further qualitative analysis, including of the differences in gender norms and stereotypes.

Age

The majority of alcohol-related premature deaths occur in the age groups 45–54 and 55–64 years: 42.0% and 40.1% for men and 34.3% and 49.1% (2009) for women,

respectively. When comparing the age distribution of alcohol-related deaths with total premature mortality, the shares of age groups 35–44 and 45–55 are considerably larger corresponding to alcohol-related deaths than to total mortality (calculations based on data from the Estonian Causes of Death Registry, 2009 (NIHD, 2009)).

The highest number and mortality rate of alcohol-related traffic accidents among male drivers was in the age young group 25–34 years (17.0 per 100 000). Among pedestrians, the mortality rate was the highest among males in the age group 55–64 years (15.7 per 100 000). The calculations by Kaasik and colleagues show that 65% of the drivers were younger than 40 years of age, while 65% of the pedestrians were aged 40 years and older (Kaasik, Väli & Saar, 2007).

More than half of the alcohol dependency incidence cases relate to men and women in the age group 35–54 years (53% and 55%, respectively), whereas alcohol-related liver disease is more prevalent among the (older) age group 45–64 years (51% and 58% for men and women, respectively) (NIHD, 2010e).

Ethnicity

It is interesting that, even though in the self-reported behavioural studies significantly higher prevalence of harmful drinking patterns can be observed among Estonians compared to non-Estonians, the alcohol-related health outcomes are worse among non-Estonians. This might be explained by the more prevalent consumption of illegal and surrogate alcohols among non-Estonians, which is also implied in Pärna and Ringmets' work (2011). A study by Rahu and colleagues (2009) also showed that during years 1983–2005, non-Estonians aged 25–64 years were more likely to die due to alcohol-related causes. The age-adjusted mortality OR was 1.58 among 25–64 year old non-Estonian men and 2.42 among non-Estonian women of the same age. Research by Pärna and Rahu (2010) also showed higher alcoholic liver cirrhosis mortality rates among non-Estonians. The latest analysis from Baburin and colleagues (2011) identified that alcohol contributes largely to the gap in ethnic temporary (or partial) life expectancy (TLE) between Estonians and non-Estonians. Causes of death directly related to heavy drinking, including alcohol poisoning (69% of all accidental poisonings) explained approximately 24% of the total male and female ethnic TLE gap in the population aged 0–74 years.

Socioeconomic determinants

In Estonia the available data on health outcomes according to social determinants is scarce, especially relating to alcohol consumption. Regular monitoring is needed with regards to the socioeconomic determinants and linkages with mortality and morbidity, in order to observe the socially determined inequities stemming from the adverse effects of harmful alcohol consumption. This study aims to provide an overview of research previously carried out in this regard, while also drawing on studies elsewhere.

Alcohol-related harm is more likely to be prevalent in lower socioeconomic groups, and mostly in the case of men. For example, in Nordic countries, people with lower socioeconomic status are more likely to be hospitalized because of alcohol-related problems (Mäkelä, Keskimäki & Koskinen, 2003). Studies in developed countries

have also revealed that alcohol consumption-related deaths are more common among lower socioeconomic groups than among higher ones. Studies conducted in the Russian Federation and in Nordic countries showed that, among men, between the lowest and highest educational, occupational and income groups the mortality ratios for individuals dependent on alcohol were between 3.2 and 6.1 (Mäkelä, 1999; Hemström, 2002; Shkolnikov et al., 1998).

Education

Among men in Estonia that died under the age of 65 years due to wholly alcohol-attributable causes in 2009, nearly half (48.9%) had primary- or lower than primary-level education; 45% had secondary-level education and only 6.1% had a university degree. For women, the figures were respectively 31.1%, 58.2% and 10.7%. This distribution should be regarded with caution; in order to understand the real differentials it should be compared with the education level distribution across the total population. This information, however, is not currently available. For comparison, the share of people with a university degree among total premature deaths is 8.3% (calculations based on the data from the Estonian Causes of Death Registry (NIHD, 2010d)).

Leinsalu and colleagues (2003) researched differences in mortality rates by education and found that the age-standardized mortality rates per 100 000 population (aged 20+ years) increased extensively from the years 1989 to 2000 across all education levels in Estonia. The highest mortality rates in the year 2000 were among men that had an upper-secondary or lower level of education and among women that had lower-secondary or less education. The age-standardized mortality rate for alcohol poisoning was 5.4 times higher among men that had a lower-secondary level of education or less, compared to men that had university education. Among women the rate was 9.5 times higher.

In the case of alcoholic liver cirrhosis the mortality rate was 2.2 times higher among men who had lower-secondary or less education; among women the rate was 13.6 times higher. Rahu and colleagues (2009) showed the presence of association between alcohol-related mortality and education. Compared to groups with higher education, age-adjusted mortality ORs were 2.29 for secondary education among men and 3.51 among women. Pärna and Rahu (2010) indicated that alcoholic liver cirrhosis mortality rates were higher among people with lower levels of education in the period 1998–2001.

Economic activity

Studying the working status of the population revealed that relatively more unemployed men (30.8%) and men that are not able to work (32.1%) die of alcohol-related causes. More inactive women die prematurely (40.4%), as well as those that are incapable of working (24%). A difference in comparison to the total number of premature deaths (men and women) is that more unemployed people die of alcohol-related causes (men 30.8%, women 21.0%), compared to 20.9% of unemployed men and 11.6% of unemployed women in the total number of deaths under the age of 65 years.

Men experience considerably more alcohol-related adverse health outcomes than women. Alcohol-related deaths occur at younger ages than deaths from other causes. Non-Estonians are more likely to die from alcohol-related causes than Estonians, as well as people with lower levels of education. These findings are consistent with the global trend that while the levels of alcohol consumption among people with lower socioeconomic status are less, the harm caused by such drinking patterns is greater.

2.2 Differential socioeconomic consequences of alcohol use

In addition to the differential adverse alcohol-related health outcomes, there may also be significant social and economic consequences that are worse among people from groups with low socioeconomic status. This study aims to improve knowledge about the socioeconomic consequences of alcohol use. However, findings from Estonia regarding differential socioeconomic consequences of alcohol use are scarce and it is necessary to rely on the general findings on the relationship between socioeconomic consequences and alcohol use elsewhere.

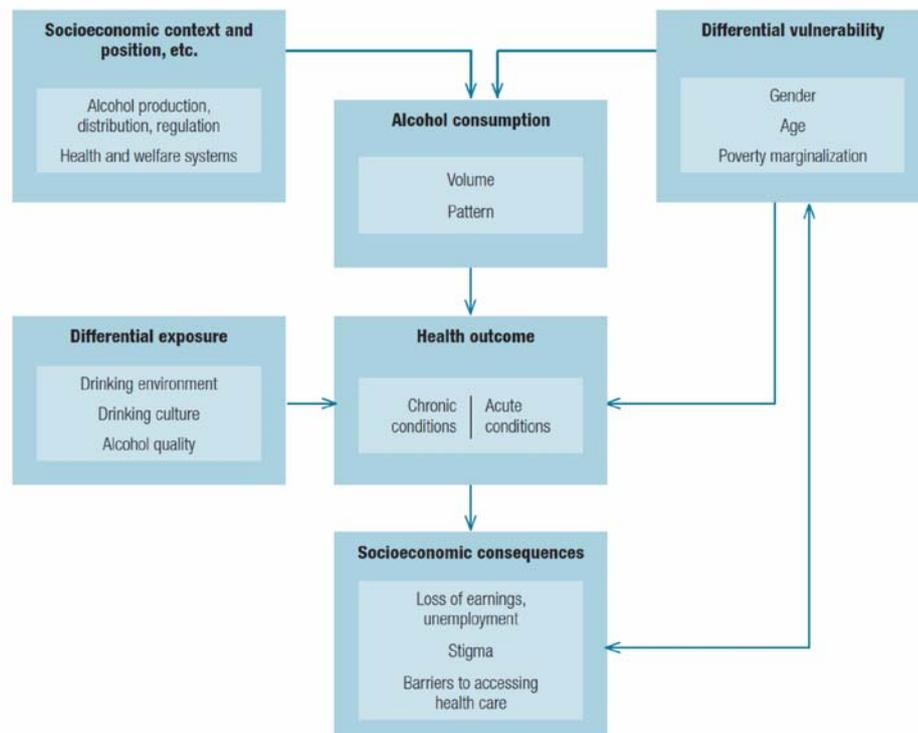
Harmful use of alcohol contributes to economic consequences. For instance, in terms of productivity, alcohol is one reason for absenteeism, decline in work performance, accidents at work, and loss of work and income (NICE, 2010). In Estonia the main reasons for becoming homeless are unemployment (85%) and/or alcoholism (60%) (Mäe, 2003). Also, the long-term unemployed population in Estonia do not have health insurance coverage; therefore, their access to health services is significantly reduced.

Evidence shows that in different societies the individuals and groups with alcohol problems are stigmatized and marginalized, magnifying the other aforementioned socioeconomic consequences, such as loss of earnings, loss of ability to work, unemployment, homelessness, poverty, social isolation or exclusion. Particularly in affluent societies, the most marginalized individuals in the population and those defined as having serious alcohol problems seem to overlap (Schmidt et al., 2010). To the authors' knowledge no recent studies have been carried out in regard to stigmatization of alcohol use in Estonia. However, a study on the social pressures associated with alcohol consumption shows that drinking is seen as a norm in Estonia and alcohol-related problems are relatively widespread. Nearly 60% of the study respondents have a friend(s) or acquaintance(s) with alcohol problems and 31% have somebody in their family with alcohol problems. In addition, most of the respondents (93%) agree with the statement that people should help those who are drunk and 85% have been worried for individuals who have consumed too much alcohol; 32% have been in this situation often (Möller, 2010). These findings indicate that the stigma attached to alcohol use and marginalization of people with alcohol problems might not be as acute as in other countries, but this area needs further research.

3. Causal pathways and possible interventions

3 causal pathways help us to explain and understand how social determinants are linked to different alcohol consumption patterns and differentials in alcohol-related adverse health and social consequences (Fig. 3.1). These pathways are: (1) socioeconomic context and position; (2) differential vulnerability; and (3) differential exposure to risk factors. In addition to the pathways, targeted attention should also be given to reducing the differential adverse health outcomes and socioeconomic consequences of alcohol consumption.

Fig. 3.1. Analytical framework to analyse the relationship between social determinants and alcohol-related harm



Source: Schmidt et al., 2010.

3.1 Socioeconomic context and position

The main pathway – namely, how the overall broader socioeconomic context is causally related to alcohol consumption and subsequent alcohol-related harm – is the overall

availability of alcohol in society. However, societal choices regarding all aspects along the alcohol distribution chain from production to consumer (production, importation, advertising, distribution and pricing of alcoholic beverages) determine how available alcohol is in society in general, as well as to the groups with low socioeconomic status (Schmidt et al., 2010).

During recent decades the availability of alcohol in general – as well as for the lower socioeconomic groups – has constantly increased, owing much to increased purchasing power, market liberalization and increased advertising (Manning, 2004; Cartwright, Shaw & Spratley, 1978). In Estonia the higher proportion of alcohol drinking among adults in the younger age groups could reflect the country's liberal alcohol policy and attitudes towards alcohol consumption (Lai & Habicht, 2011). The most effective and cost-effective ways to prevent alcohol abuse and alcohol-attributable harm have consistently been proven to be various alcohol control policies, which express societal choices through restrictions on production, distribution, marketing and pricing of alcohol. By reducing the overall availability of alcohol, these measures may have a disproportionate positive impact on people of low socioeconomic status (Edwards et al., 1994; Babor, 2003; Österberg, 1995; Hurst et al., 1997).

The data and analysis in the previous sections of this case study show that in Estonia alcohol consumption as well as harmful alcohol consumption are relatively frequent, even among the general population and people without low socioeconomic status, especially among Estonian men. This finding points to the fact that alcohol and alcohol consumption are regarded in society as ordinary and part of the culturally normalized way of life. Therefore, interventions that target general socioeconomic context and position need to be implemented and effectively enforced if any positive change in the alcohol consumption patterns is to be expected.

Availability of alcohol

Some generic measures are already in place in Estonia to restrict the overall availability of alcoholic products. Alcohol production, import, wholesale, retail and serving are licensed, and kiosk sales and the sale of homemade alcohol is prohibited (Estonian Parliament, 2010). There are a number of places in Estonia where the sale of alcohol is prohibited, for example in educational, health care and social care institutions, in military forces premises and prisons, as well as during events targeted at youths. In addition, since mid-2008 a nationwide off-premise sale of alcohol is permitted only between 10.00 and 22.00. Before the adoption of nationwide restrictions, the application of alcohol sale restrictions was within the jurisdiction of local municipalities. The local restrictions were relatively inefficient, as it was easy to obtain alcohol from a nearby municipality in which the restriction was not applied (Lai & Habicht, 2011).

However, this does not apply to on-premise alcohol sales, namely to bars, restaurants and other places, where alcohol is consumed on site. Local municipalities have the legal right to set additional restrictions on alcohol outlets, type and method of retail alcohol sales. For example, some of the local municipalities have prohibited alcohol sale on the last day of April (Walpurgis Night). It has been prohibited to sell alcohol from 22.00 to 10.00 at shops, tea gardens and events that take place outside.

To prevent alcohol use among adolescents, the minimum age for purchase, ownership and consumption of alcoholic beverages is set at the age of 18 years. In addition, offering and selling alcohol to a minor is legally prohibited, with the liability placed also on sellers and servers. However, there is a problem with the enforcement of the age limit: adults buy alcohol for children (children asking strangers to buy) and ID cards are not always requested to confirm the person's age when buying alcohol (meaning that children who are under 18 but look older can still buy alcohol). In general, alcohol is regarded as being very accessible to minors. According to Allaste and colleagues (2008), 74.6% of respondents aged 15–16 years say that it is very easy to buy beer; 58.0% say the same about wine; and 52.4% about spirits. In addition, 18.2% of students state that they have consumed alcohol in a public place (Allaste et al., 2008). Thus, existing restrictions should be more stringently enforced. For example, in Sweden in Systembolaget shops (a retail alcohol sales monopoly), all buyers are asked for ID if they look younger than 25 years old. Systembolaget shops only sell alcohol (> 3.75%) to people that are 20 years old or older. Mystery shopping carried out in Systembolaget shops showed that in 2009 the percentage of ID requests was 93% (Systembolaget, 2010). The Estonian NIHD carried out mystery shopping in June 2011 and the results showed that an ID was only requested in 28.8% of cases. Charlie Mowat from Serve Legal demonstrated in the seminar “Tackling under-age drinking” in Brussels in April 2011 that consistent mystery shopping reduces significantly the cases in which alcohol is sold to minors (Mowat, 2011).

In the event that a seller sells alcohol to an under-age person and gets caught, the shop receives a fine and the shop owner has the right to punish the seller of its own accord. A preventive option would be to implement a policy whereby the shop and the seller receive a fine if alcohol is sold to an under-age person. This measure would place more responsibility on the seller. The main objective of this is to make alcohol less available to youth, which could be achieved by better enforcement.

The punishments designed for children that consume alcohol are quite weak. Usually an adolescent will get a warning if (s)he is caught for the first time. Subsequently they will get a fine, which parents are required to pay by default. This means that adolescents might not face the consequences of their actions. One potential solution would be community service work, alongside the fine; children would be given a specific number of hours of community service that they have to complete. There should be specific awareness-raising activities for children to ensure they understand the consequences of their actions.

Another problem is the availability of so-called non-alcoholic drinks, the alcohol volume of which is 1.2% or lower, such as root beer (0.5% and 0.8%), beer (0.5%) and cider (1.2%). Children are allowed to buy these drinks; one view is that in this way they are “trained” to drink alcohol in the future. Starting to drink so-called non-alcoholic drinks in adolescence might lead to drinking alcoholic beverages when turning 18. Lowering and enforcing the legal alcohol volume limit in beverages (for instance to 0.5% as currently set for beer) would help to address this issue.

In order to avoid the perceptions of minors that alcohol consumption is normalized in society and also to prevent alcohol-related violence and harm, under current legislation drinking in

public places is only allowed at outlets on the premises of which alcohol can legally be served. The fine for consuming alcohol in public can result in arrest or a fine that can be up to 100 penalty units (1 unit equals €4). For these restrictions to achieve their objectives they should be properly enforced; alternatively, an increase in fines could be considered.

However, despite the current alcohol control policy restrictions, alcohol can be regarded as relatively available in Estonia. The licensing system currently in place to restrict the number of places at which alcohol products are sold is not effective in reducing the density of alcohol retail outlets. In Estonia there are nearly 200 retail shops per 100 000 inhabitants⁴ in which strong alcohol can be bought; this is more than 30 times the number in Finland. There are on average 1.3 alcohol sales points per 10 km² in Estonia and for the majority of the population (87%), the time to the closest alcohol sales point from their living place is a journey of less than 10 minutes. One option to regulate the density of the sales network is to start regulating nationally/centrally the number and location of on-premise and off-premise alcohol outlets. Other options include widening the prohibition of alcohol sales to encompass other locations, where sale of alcohol is not the primary function, for instance at gas stations and at shops within the close vicinity of dwelling houses (for example, shops that have residential apartments above them, in the same building). These latter restriction proposals are also supported by public opinion. According to the survey “Alcohol consumption and alcohol policy” (EKI, 2010a), on average 62% of the respondents are not in favour of sales in these locations. The illicit production, sale and distribution of alcoholic beverages should be restricted more effectively, so that the consumption of legal alcohol would not be substituted by illegal, homemade or surrogate alcohol, especially during the introduction of new alcohol control policy measures or during and after excise tax increases.

Pricing policies

In Estonia, as in most developed countries, a system for domestic alcohol taxation has been established. An excise duty is levied on all alcoholic beverages, whereby the excise duty rates exceed the minimum rates set by the European Union (EU) and beverages are also taxed with value-added tax (VAT) (20%). However, when setting the excise duty rates the alcoholic content of the beverage is not taken into account. The share of the excise duty in the price of alcohol is between 4.92% (beer) and 12.91% (spirits). Since 2005 the excise duty rates on alcoholic beverages (except wine) has been gradually raised, across 4 occasions (Lai & Habicht, 2011). The most recent excise duty rate increase was on 1 January 2010, when on average the rate increased by 10%. This increase came hand in hand with an increase in general VAT from 18% to 20%. Saar (2011) wrote his doctoral thesis on the estimation of optimal alcohol taxation in Estonia, finding that excise duty should be raised by between 50% and 200% to reduce alcohol-related harm and ensure financial profit is delivered back to the Estonian Government. These days, an increase in excise duty is usually mostly unnoticed from the consumer point of view. Although excise duty is not targeted directly at the people with low socioeconomic status, it still has a larger effect on low-income individuals; due to the regressive nature of this type of tax (Vörk, Pulus & Poltimäe, 2008), price increases make alcohol less affordable to the poor,

⁴ 198 on 1 January 2009.

thus reducing consumption (Herttua, Mäkelä & Martikainen, 2008). This is supported by findings from the study by Sutton and Godfrey (2006), in which they indicated that groups of low socioeconomic status respond to changes in alcohol prices more than others. In Estonia there are no adequate estimations of alcohol price elasticities of demand, especially by population group, which makes it difficult to predict the actual impact of price increases. Price increases can also affect university students, whose income is relatively small. As regards children and adolescents, it has been shown that in the longer term a price increase delays the age at which young people start to drink, reducing the number of drinking sessions as well as the amount of alcohol consumed on each occasion (NICE, 2010).

The relatively low price of alcohol is another measure that makes adolescents' alcohol consumption more feasible. Also, the price differences between alcoholic and non-alcoholic beverages are non-existent. Price incentives should be considered for non-alcoholic drinks. Children spend their pocket money on buying alcoholic drinks, especially light alcoholic beverages.

Even though the retail prices of alcoholic products have been increasing since 2005 due to the raised excise duty rates and increased production input prices, the change in pricing of alcoholic beverages had until 2008 been constantly smaller compared to the growth in prices of other goods and services (EKI, 2010b). There is no mechanism to review and adjust the price of alcohol beverages in relation to the level of general inflation in order to avoid a decrease in the relative price of alcoholic beverages. This could be an additional measure to consider implementing.

In addition, until the economic downturn, the average salary in Estonia was constantly increasing, making alcohol more affordable in general, as well as to individuals with lower levels of income. In 2008, when the affordability level was highest, with the average monthly income an average of 62 litres of vodka or 400 litres of beer could be purchased. These numbers have more than doubled in less than 10 years. As a result of the recession, in 2009 the affordability of alcohol dropped to 52 and 365 litres, respectively, for vodka and beer. During that year the average alcohol consumption per capita dropped significantly – from 16.16 litres per capita in 2008 to 13.61 litres in 2009, indicating a possible causal relationship (EKI 2010b). Regular reviewing and adjusting for the overall average income would address this issue, in order to avoid alcohol becoming relatively more affordable with time.

However, in addition to relative price decreases and income increases, alcohol affordability is also influenced by various price promotions or discounts (sales below cost) that currently are not regulated. Although there are some restrictions in the advertising act on marketing, such marketing practices could potentially have more impact on people with low socioeconomic status by providing low price alternatives to products at market price and therefore most likely increase the alcohol consumption disproportionately among low-income earners. One feasible policy option is to introduce a minimum price level to avoid the producers and sellers absorbing the price increase, to avoid sales below cost and to prohibit alcohol discount sales, promotions and flat rates for unlimited drinking.

Marketing of alcohol beverages

Current policy on marketing in Estonia focuses mainly on reducing the impact of marketing to youth and adolescents: the television (TV) and radio advertising ban from 07.00 to 21.00 was adopted in 2008 and enforced. Before that, prohibition of TV advertisement ended at 20.00 for alcoholic beverages other than spirits. Targeting youth directly in advertisements is prohibited and promotions in connection with activities targeting young people are also banned. In addition there are some restrictions on the content of alcohol product marketing (for example it is prohibited to show under-age people in advertisements). Alcohol advertising cannot directly promote alcohol consumption and purchasing. One option to reinforce this would be to clarify the restrictions on the content of alcohol marketing, as currently enforcement is limited and the restrictions provide a lot of room to manoeuvre. Furthermore, regulating new alcohol marketing techniques – including Internet and social media marketing, and hidden drinking promotion in TV programmes – would also be beneficial, as this area is currently not regulated as well as the placement of alcohol products. Although the alcohol industry have agreed with the biggest TV broadcasters that no alcohol advertisements are to be shown during children's and family movies, the current restrictions do not grant children an entirely alcohol-free environment. Alcohol adverts are visible to children, alcohol is perceived to be easily accessible and counter-advertising (especially targeting vulnerable groups) is insufficient, especially in comparison to the volume of alcohol advertising. Almost every month 90% of children and adolescents aged 4–17 years are exposed to at least 1 alcohol advertisement, while about 80% are exposed to 3 and 68% to 10 or more. Based on information from 2007 (TNS Emor, 2008), according to the existing restrictions on timing of alcohol marketing it is theoretically possible to reach 42% of children and adolescents (aged 4–17 years) with light alcohol advertisements and 37% of them with spirits advertising. By increasing the time restriction to 22:00, the share of exposed children would decrease to 29%, while 23:00 would limit it to 19% and midnight to 10% (TNS Emor, 2008). One could conclude from these results that better enforcement and stricter regulation of marketing are needed.

Given that alcohol advertising is still relatively visible to children and adolescents, restrictions on alcohol advertising could be further strengthened and extended to the print media. Even a comprehensive ban on alcohol advertising could be considered, as suggested by previous research in Estonia (Lai et al., 2007; Lai & Habicht, 2011).

3.2 Differential vulnerability

The differential vulnerability of social groupings (according to sex, age and socioeconomic status) to harmful alcohol consumption patterns and alcohol-attributable harm depends on their social, cultural and economic environments, which are caused by different pathways. For example, alcohol consumption has been higher among Estonian boys, but consumption rates among girls have risen in recent years (Aasvee et al., 2007; Aasvee & Minossenko, 2011). There are no special measures to target young girls' alcohol use as

a growing problem. The main explanation for the differential vulnerability of groups of low socioeconomic status is the cumulative disadvantage of different risk factors, such as insufficient income, malnutrition, smoking, inadequate housing conditions and poor access to health services; together these have an important adverse effect in addition to the exposure to harmful patterns of alcohol use and related harm attributable to alcohol consumption (Mäkelä, 1999).

Furthermore, the cumulative disadvantage increases the risk of developing other alcohol-related health conditions. For instance, nutritional deficiencies and poor housing may have negative impacts on alcohol-related health outcomes and co-morbidities, such as TB, HIV/AIDS and injuries, through a weakened immune system. The higher disease burden may subsequently lead to the greater need for integrated health and social services. However, those with greatest need may be faced with limited access to those services due to stigmatization and economic barriers (Schmidt et al., 2010).

On the other hand, those individuals with higher socioeconomic status may have a stronger social network that protects them from the negative consequences of their alcohol use or abuse. This is not the case for groups of lower socioeconomic status, whose alcohol drinking occurs more often in public places, where drunken behaviour is more likely to be noticeable to authorities and where individuals are more vulnerable to violence (Chambliss, 1973).

Interventions are mainly targeted at populations to either reduce the effects of exposure or to ameliorate clustering and cumulative disadvantage. 3 areas of intervention provide appropriate entry-points for helping to break the vicious circles of vulnerable populations related to alcohol consumption and associated harm: community mobilization, empowerment, and enhancing access to services for groups with low socioeconomic status. Action at community level – through detection of vulnerable groups and people at risk, assessment of their needs and development of appropriate programmes and policies – provides a promising entry-point to prevent or reduce the adverse effects stemming from cumulative disadvantages. Policy interventions that improve access to services and target at-risk drinkers in medical and primary health care settings could also help to reduce harmful drinking practices.

Community mobilization and empowerment

Within the framework of a programme funded by the European Social Fund,⁵ various initiatives have been implemented recently for community mobilization and capacity building in order to increase and develop needs-based community programmes and policies. Community mobilization and development of community programmes and policies – especially targeting subpopulations at particular risk, such as youth and unemployed people – could be implemented more widely, including in rural and low-income communities. Community mobilization at municipality level would benefit

⁵ European Structural Fund framework programme: Promotion of Healthy Choices and Lifestyles (periods 2008–2009 and 2010–2013) under the priority axis “Good-quality and long working life“ of the Operational Programme for Human Resource Development.

from interaction and collaboration between specialists from different sectors (such as education, social care, health care and the police, as well as already existing networks – health councils, trauma councils, and so on), to identify the individuals and families with alcohol problems and disorders, especially among people with lower socioeconomic status and potentially affected by the clustering of problems. Such collaboration could focus on providing or tailoring the most appropriate interventions and solutions to mitigate alcohol-induced problems and prevent them from worsening.

Community health needs assessment is a tool that could be used to inform policy-making at municipality level and to design and implement community mobilization programmes. This would: (1) provide information on: alcohol consumption prevalence and habits; population groups at risk; alcohol-related problems; knowledge, attitudes and behaviours of the population at community level; and (2) help to develop effective and culturally sensitive interventions.

A specific intervention to be considered is the possibility of making more use of the positive examples of the leaders of society (such as singers, athletes, and so on) to attempt to change the norms and practices related to drinking alcohol, particularly where vulnerable population groups (such as young girls) are concerned. Such role modelling needs to challenge stereotypes and to do so in a non-stigmatizing and non-judgemental way.

Enhancing access to services for groups of low socioeconomic status

Personal interventions such as alcohol counselling have received very little focus in Estonia (Lai & Habicht, 2011). Since 2010, brief interventions in primary health care settings have been introduced to identify individuals with harmful alcohol consumption patterns; this activity has gradually been developed and more general practitioners provide this intervention. Along with identifying people that would benefit from help, brief interventions usually also include a few sessions of counselling, and education has been shown to be effective in international clinical trials (Babor & Higgins-Biddle, 2000; Bien, Miller & Tonnigan, 1993; Wilk et al., 1997).

The system for treating alcohol dependency is underdeveloped and there are only a limited number of beds for treatment. The fee for these services is not covered by health insurance, which renders the treatment almost completely inaccessible to low- and middle-income earners. Currently little is known about the vulnerable groups' need for and access to treatment services. Increasing the capacity of health and social welfare systems to deliver prevention, treatment and care for alcohol use-related disorders and co-morbid conditions for groups of low socioeconomic status is certainly an area that requires more attention and improvement.

In some bigger towns there are free-of-charge mutual aid clubs (Alcoholics Anonymous, for example) and community-based counselling services that are accessible to people with low income, but they do not extend to rural areas and – due to the cost of transport – may be inaccessible to individuals with low levels of income. The local municipalities could help people in creating and promoting mutual aid clubs by providing free-of-charge rooms for gatherings, as well as sharing information and encouraging possible beneficiaries of those mutual aid groups.

Only 4 institutions in Estonia offer counselling for children and there is a lack of possibilities for parent–child counselling. This is of particular concern for children with weak parental control (for example, where parents are working abroad) or those with problematic parents (addicts, and cases of neglect or abuse, and so on). Children sometimes feel pressure from parents and this can be difficult to deal with. Another form of pressure comes from peers: children may not have enough confidence to say no, for example, to friends who insist. Children often feel that to be part of the group, it is necessary to be like others. 4 institutions do not cover the need for services and it is likely that the services provided are not accessible to vulnerable people. In addition, children might be embarrassed or uncomfortable about seeking help. One solution would be online counseling, which could be anonymous and easily accessible to children.

A new initiative linking alcohol-use disorders and TB treatment services promises good results in improving treatment compliance. This deserves further development, including consideration of how to ensure good practice in linking or integrating the services that are available for those with conditions related to alcohol use and other co-morbidities, such as drug-use disorders, depression, suicide, and HIV/AIDS.

Rehabilitation services are provided for alcohol-dependent jobseekers by the Unemployment Insurance Fund, but the quantity of services is insufficient to break the vicious circle associated with the problem. In some counties, activities have been implemented for long-term unemployed individuals to enable people who are unemployed and have harmful or hazardous levels of alcohol consumption to stop drinking or change their patterns of alcohol consumption. Currently there are no significant measures in terms of targeted workplace programmes focusing on the prevention of risky alcohol drinking and future unemployment among blue collar workers or individuals with lower levels of education.

Enhancing access to information and knowledge at schools

In addition to alcohol policy measures, alcohol abuse prevention measures and raising awareness of alcohol-related harm are part of health education and included into the school curriculum. However, the curriculum does not deal with the area of alcohol consumption prevention in enough depth. The aim is to inform children, but another important target group – parents – is left out. In other countries there are many different programmes directed towards children and their families.⁶ In the year 2000 a series of teaching books entitled “Social coping skills”⁷ were introduced for different schooling levels, and teachers were trained to implement these materials in their schools. Unfortunately,

⁶ Such as **Project Northland** – implemented, for example, Austria, Canada, Croatia, Columbia, Finland, Greece, United States; the **Strengthening Families Program** – implemented, for example, in Australia, Canada, Italy, Netherlands, Portugal, Russian Federation, Spain, Sweden, United States; **Unplugged** – implemented, for example, in Austria, Belgium, Germany, Greece, Italy, Spain, Sweden; **LifeSkills Training** – implemented, for example, in Australia, Canada, Croatia, Denmark, France, Germany, United Kingdom, United States; **Örebro Prevention Program/Effekt** – implemented, for example, in Belarus, Finland, Netherlands, Norway, Russian Federation, Sweden, Ukraine, United Kingdom, United States.

⁷ See Kull and colleagues (2001, 2002); as well as Kiive and colleagues (2004, 2007).

no information is available on how effective this has been. It is planned to renew these books and to start the implementation process in schools in 2012–2013. The NIHD is also planning to implement alcohol consumption-related prevention programmes in Estonia to educate schoolchildren and parents. The efficacy of these kinds of programmes has been demonstrated (Koning et al., 2010). The Örebro Prevention Program/Effekt is planned to start in the autumn of 2012. The objective of the programme is to reduce adolescent alcohol consumption and episodes of drunkenness via educating parents. This is possible in cases in which the parents' attitude to restricting alcohol intake lasts across several years (often their attitude changes as the child gets older). It is necessary to show parents how influential their behaviour and beliefs are on children. For example, offering an alcoholic beverage to adolescents at home to try to prevent alcohol consumption elsewhere is not the best solution to avoiding adolescent alcohol consumption.

3.3 Differential exposure

Vulnerable people and those with low socioeconomic status spend their lives in social and physical environments that due to the disadvantageous nature may lead to the heightened exposure to alcohol-related harm compared with the groups with high socioeconomic status. This differential exposure is among other reasons a result of consuming poor-quality alcohol and surrogates; drinking in unsafe settings and housing as well as exercising group drinking practice that increases the risk of poisonings, unintentional injury and violence as well as certain infectious diseases, such as TB, STD and HIV/AIDS. The strategies to address differential exposure are targeted mainly at controlling quality of alcohol, reducing the public health impact of illegal alcohol and using appropriate harm reduction policies. (Schmidt et al., 2010)

Controls on alcohol quality

During recent years there have not been major problems with the officially produced or imported alcohol as the tax stamps are used to mark the legal alcohol, the quality control mechanisms are in place, and properly enforced by the authorities. This practice should be continued.

Reducing the public health impact of illegal alcohol

However, the main problems are with the availability and the quality of the illegal alcohol as well as consuming surrogates, products that contain alcohol, but the main purpose is not intended for consumption the illegal alcohol, including surrogate consumption is relatively prevalent in Estonia and presumably more prevalent among people with low socioeconomic status. Even though illegal alcohol is prohibited by law and this is enforced, 7% of consumers still buy illegal alcohol. According to the survey "Consumption and trade of illegal alcohol in Estonia" (EKI, 2010c), during recent decades this has considerably decreased; in 1999 the figure was 28%. However, the majority of respondents think the availability of illegal alcohol during that period was either easier than before or it is remained the same. The main reason for buying illegal alcohol is

its relatively cheaper price, indicating that majority of consumers of illegal alcohol are from price-sensitive low-income groups and that the explanation for the decrease is rather the increased affordability of legal alcohol during recent years. Therefore, scaling up enforcement capacities to limit the availability of illegal alcohol addresses the problem of the alcohol-related harm differential. According to the aforementioned survey (EKI, 2010c), the reasons given for preferring legal alcohol indicate that people are relatively aware of the harmful nature of illegal alcohol (87% of respondents stated this as an important factor), as well as the bad quality of it (mentioned by 81%). During recent years enforcement has been strengthened in areas such as tackling import and production of illegal alcohol and improving tax collection (Lai & Habicht, 2011). The very prevalent harmful consumption – among groups of low socioeconomic status and homeless people – of substances containing alcohol that are sold legally but are not intended for drinking include medicinal products, aftershaves, illegally produced spirits, and fire-lighting fuel should also be addressed. The possible interventions to combat this are raising awareness about the potential health hazards of this practice; issuing relevant public warnings about contaminants and other health threats; levying excise duties on the alcohol content of such products; considering putting controls on the sizes of the containers; or other harm-reduction policies.

Harm-reduction policies

Harm reduction policies oriented towards lower socioeconomic groups aim to reduce the negative consequences of drinking and alcohol intoxication by making the drinking context safer for those that drink, instead of trying to change drinking behaviours. These policies include: regulating the drinking context in order to minimize violence and disruptive behaviour; placing planning requirements on the design of drinking places or alcohol retail outlets; reducing drink sizes and strength within different beverage categories; implementing interventions to make servers responsible for identifying already intoxicated and aggressive customers and denying them service; random driver breath tests; providing consumer information about – and labelling alcoholic beverages to indicate – the harm related to alcohol; and providing necessary care or shelter for severely intoxicated people (Schmidt et al., 2010).

Of the aforementioned policies, random breath tests for drivers are carried out frequently on the roads; the legal blood alcohol concentration (BAC) limit for motor vehicle drivers is 0.02% of blood volume (or 0.1 mg/l in breath), established in 2000 when drink-driving became a criminal offence (Lai & Habicht, 2011).⁸ However, as discussed in subsection 2.1 of this report, alcohol-related traffic accidents are still relatively frequent (albeit decreasing), especially among young men.

In the 3 biggest towns in Estonia, care and shelter are provided for severely intoxicated people.

⁸ From the mid-1980s until the year 2000 the allowed level was zero; however, although the BAC limit is no longer zero, public discussion and communication to the public about the legislation still maintain that no (measurable) levels of alcohol are allowed while driving (Lai & Habicht, 2011).

The consumption of strong beer from very big bottles (1–2 litres) is very popular among price-sensitive people, as it is a very cost-effective way to get drunk. However, drinking this amount at once cannot be regarded as moderate and harmless drinking practice and restrictions on the size and strength of beer could be significantly beneficial in reducing alcohol-related harm.

Usually adolescent drinking takes place at parties, which might indicate that there is lack of free or low-cost activities for children. The availability of (free) activities would be a great alternative to parties at which adolescents take the opportunity to consume alcohol.

3.4 Addressing health outcomes of alcohol use

If alcohol-related health outcomes are present, everyone in need of remediation and mitigation of the related health effects should receive appropriate health services, regardless of their income, social position or other socially determined circumstances (instead of further amplifying the health outcomes by reducing access to services or providing inappropriate or less-effective services for disadvantaged people). At the health systems level there is potential to remedy the harm; to provide better primary health care to ameliorate or even prevent the damage early on; and to provide improved treatment services for those who have real damage (that is, institutional/hospital care and then further links to social care upon discharge, for example, for homeless people).

Health care services – including acute and chronic diseases – are covered for insured individuals (95% of the population), except the treatment of alcohol dependence, whereas emergency care for acute health conditions is available to all, including uninsured people, with a fee of €3.2 per visit providing a possible barrier to access. Treatment for non-emergency care of uninsured individuals (5% of the population) is not covered and therefore may be inaccessible to unemployed people who are not registered with Töötukassa (an unemployment agency). Recent studies have shown that there are significant social inequalities in the utilization of outpatient specialist care, purchasing drugs and medical products, especially with regards to household income in Estonia (Võrk, Saluse & Habicht, 2009; Habicht et al., 2009). The rate of out-of-pocket (OOP) payments for prescription pharmaceuticals in Estonia is particularly high, and it is therefore probable that the lower socioeconomic groups are most adversely affected (Kanavos et al., 2009). The risk of high health expenditure and impoverishment has increased since the year 2000 (Võrk, Saluse & Habicht, 2009), mainly due to the relatively large increased share of OOP payments in health care financing (Thomson et al., 2010). A potential solution is to reduce the share of OOP payments in health expenditure or to provide at least partial compensation for the health care costs to low-income households, for example via higher social assistance benefits, especially if the health care financing system becomes more regressive, as proposed in Võrk and colleagues' work (2009). Ensuring universal coverage of health would also help to mitigate the cumulative health differentials.

In addition to the direct financial barriers there are also other, non-financial barriers that hinder access to services, such as geographical access, including cost of transportation, lack of knowledge and so on, which are usually related to people with low socioeconomic status.

Recently, an NIHD and WHO initiative (“Improving MDR-TB⁹ treatment by treating alcoholism”) was brought about to identify alcohol problems among TB patients and to provide alcohol dependency treatment and social support in a comprehensive and patient-centered way. In addition to access to health and social care services, the Directly Observed Treatment, Short-course (DOTS) project covers transportation costs. These are excellent examples of how to address cumulative disadvantage deserving not only further implementation to ensure they are sustained, but also exploration of the possibilities to expand them to encompass other diseases and problems for which harmful alcohol consumption is a relevant consideration.

3.5 Addressing differential socioeconomic consequences of alcohol use

Individuals with alcohol dependency and their family members (especially children) are faced with severe social and economic consequences, such as unemployment, homelessness, family problems and violence. The social welfare system in Estonia is in place and in general terms provides services and benefits for those in need. At municipality level there are social workers who should identify and deal with the social problems of children, the elderly, and people with disabilities and mental health problems. However, the capacities of social workers to deal with individuals with alcohol problems and their families are limited. Additional financial and human resources should be aimed towards dealing with the people with alcohol problems, including children with parents that have alcohol problems, experience troubles at school, exhibit self-destructive behaviour, and so on. Sometimes these children are from restructured families.

There are 10 shelters throughout the biggest towns in Estonia, providing protection for women and children with abusive family members, but the places available in women and children’s shelters are not sufficient to cover the need in the smaller districts, and they provide only temporary solutions (Estonian Ministry of Social Affairs, 2010).

Even though some of the bigger municipalities (Tallinn, Tartu, Pärnu, Rakvere) provide shelters for homeless people, individuals that are intoxicated are not permitted access to these facilities and therefore have to spend the night on the streets. This makes them vulnerable to violence and other crime, and susceptible to freezing conditions and injuries. An alternative to this is to provide simple and secure premises for those who do not comply with the rules in shelters.

⁹ Multidrug-resistant tuberculosis.

In case of loss of professional capacity, social security benefits are available, and in case of unemployment, benefits are provided to compensate for the loss of income. In addition, health insurance cover is reinstated for those who receive unemployment benefits and also participate in active employment measures, such as unemployment rehabilitation and retraining based on an individual jobseeking plan (Estonian Parliament, 2009).

Conclusions

Alcohol is globally the second largest risk factor for noncommunicable diseases. In addition to its adverse effects on health, alcohol consumption is a major cause of the various social and economic consequences among the population. Worldwide, evidence has shown that the alcohol-related adverse outcomes and consequences affect socioeconomically disadvantaged groups more often and more severely than population groups that are better-off in society.

In recent years, average alcohol consumption in Estonia has slightly decreased, but remains at a considerably high level: 9.7 litres of alcohol per capita in 2010. In addition, harmful drinking practices are prevalent.

This case study gives an overview of the recent alcohol consumption patterns and related harm in Estonia according to different demographic and socioeconomic determinants. In addition to the differentials in alcohol consumption patterns, health outcomes and socioeconomic consequences, a description of current alcohol control policies and interventions is presented, effective interventions and measures are identified that could be implemented or further developed. This approach provides a comprehensive picture from which to evaluate the health inequities situation in terms of alcohol consumption in Estonia.

Alcohol is the causal risk factor for approximately 60 different diseases that together result in significant health care costs. Alcohol-attributable health care costs are an (at least partially) avoidable economic burden for the society. Alcohol does not only affect individuals' health, but also their opportunities to work and fully enjoy life. Alcohol consumption and related harm are not equally spread across society. Alcohol use is more frequent in more affluent population groups, as they have higher purchasing power; however, more harmful alcohol use is more prevalent in groups in which socioeconomic status is lower. The latter groups also experience more alcohol-related harm. Thus, inequalities are present. Acting on those inequalities that are avoidable, unfair and/or remediable is important, as it helps the society to avoid losses to economy and development more efficiently than addressing alcohol-related problems only at a universal level. All of this could be taken into account in the development of comprehensive and intersectoral alcohol policy – the basis for all universal and targeted alcohol-related interventions and measures.

In September 2011 the Ministry of Social Affairs announced that a Green Paper on alcohol policy will be developed by the end of 2012, which will serve as the basis for governmental action. The strategy follows the structure of WHO's *Global alcohol strategy to reduce the harmful use of alcohol* (WHO, 2010), recommending 10 target areas for policy options and interventions: leadership, awareness and commitment; health services' response; community action; drink-driving policies and counter-measures; availability of alcohol; marketing of alcoholic beverages; pricing policies; reducing the negative consequences

of drinking and alcohol intoxication; reducing the public health impact of illicit alcohol and informally produced alcohol; and monitoring and surveillance.

At present in Estonia data and information are relatively scarce regarding alcohol consumption patterns and alcohol-related harm among socially vulnerable groups (low-income people, unemployed individuals, and so on). Regular national health behaviour surveys provide some relevant information. In order to obtain a better and statistically relevant overview of differing consumption patterns and health inequalities in terms of negative outcomes and consequences, the monitoring system will need to be designed to identify health equity impacts, complemented by surveys on specific issues.

The biggest problem with health surveys among adults and adolescents is that the people with risky behaviour are less likely to complete the survey. One reason for this might be their unwillingness to participate, because they do not want their problems to be recognized, although surveys are anonymous. Another problem arises in terms of homeless people that do not have a postal address, so it is impossible to reach them with the usual survey formats. Special surveys should be directed towards gathering data from homeless people; such surveys could be implemented in shelters. Among schoolchildren, the problems are somewhat similar. Problematic children might miss school on the day on which the survey takes place or, if they wish, they can decide not to participate. There have been cases in which questionnaires are completed with non-realistic answers. In such cases, those questionnaires have been left out of the data compilation. Participation of individuals with risky behaviour is a problem that should be solved in the future, to improve on the current methodology.

This case study shows that alcohol consumption as well as harmful alcohol consumption in Estonia are relatively commonplace among the general population, especially among Estonian men. This finding indicates that alcohol and alcohol consumption are regarded in society as ordinary and part of the culturally normalized way of life. Therefore, interventions that target general socioeconomic context and position need to be implemented and effectively enforced if any positive change in the alcohol consumption patterns is to be expected.

The alcohol dependency counselling and treatment system in Estonia is an area that needs further development and financing from public sources to ensure that the services meet the needs, and that they are accessible and affordable to the people who need treatment. During recent years a promising initiative has been implemented to provide brief interventions and advice at primary care level. Estonia could learn from other countries' experiences (such as Finland and Poland) in the development of a counselling and treatment system that functions effectively. In addition, online counselling is worth considering, as an affordable and accessible service. Early identification of the harmful use of alcohol and provision of appropriate counselling services would contribute to lowering the relatively high share of OOP expenditure currently faced by (in particular) low-income households in relation to health services and pharmaceuticals. The barriers to accessing health care services – not having health insurance coverage, high OOP payments and other, non-financial barriers – that are often related to diseases attributable to alcohol consumption

should also be addressed, particularly among low-income households, in order to mitigate the adverse health outcomes.

In conclusion, the objective of the study was to analyse alcohol consumption patterns in relation to social determinants, based on recently conducted health behaviour population surveys of adults and of school-aged children. The available data from Estonia show that there are clear differences in harmful alcohol consumption and there is evidence that people from lower socioeconomic groups experience more adverse health outcomes. There are several alcohol control measures in place; however, several opportunities exist for scaling up the existing measures, targeting them more specifically, or implementing new ones in order to reduce the overall level of harmful alcohol consumption, and to reduce the differentials. The present report offers recommendations in this regard. Although existing data from national regular surveys, databases and published literature present a clear picture, the need remains to develop the regular surveillance network for social determinants, as well as to improve the data sources to cover more characteristics relating to socioeconomic status, especially for school-aged children.

References

- Aasvee K, Minossenko A (2011). *Eesti kooliõpilaste tervisekäitumise uuring: 2009/2010 õppeaasta. Tabelid [Health behavior of school-aged children in Estonia: study year 2009/2010. Tables]*. Tallinn, Estonian National Institute for Health Development.
- Aasvee K et al. (2007). *Eesti kooliõpilaste tervisekäitumise uuring. 2005/2006 õppeaasta. Tabelid (tulemused kaalutud andmete alusel) [Health behavior of school-aged children in Estonia. Study year 2005/2006. Tables (results of the weighted data)]*. Tallinn, Estonian National Institute for Health Development.
- Ahlström S, Bloomfield K, Knibbe R (2001). Gender differences in drinking patterns in nine European countries: descriptive findings. *Substance Abuse*, 22:69–85.
- Allaste AA et al. (2008). *Koolinoored ja uimastid. 15–16-aastaste õpilaste legaalse ja illegaalse narkootikumide tarvitamine Eestis [Students and drugs. Legal and illegal drug consumption among 15–16-year old students in Estonia]*. Tallinn, TLÜ kirjastus.
- Baan R et al. (2007). WHO International Agency for Research on Cancer Monograph Working Group. Carcinogenicity of alcoholic beverages. *The Lancet Oncology*, 8:292–293.
- Babor TF (2003). *Alcohol: no ordinary commodity*. New York, NY, Oxford University Press.
- Babor TF, Higgins-Biddle JC (2000). Alcohol screening and brief intervention: dissemination strategies for medical practice and public health. *Addiction*, 95:677–686.
- Baburin A, Lai T, Leinsalu M (2011). Avoidable mortality in Estonia: Exploring the differences in life expectancy between Estonians and non-Estonians in 2005–2007. *Public Health*, 125(11):754–762 (doi:10.1016/j.puhe.2011.09.005).
- Bien TH, Miller WR, Tonnigan JS (1993). Brief Intervention for alcohol problems: a review. *Addiction*, 88:315–336.
- Bjarnason T et al. (2003). Alcohol culture, family structure and adolescent alcohol use: multilevel modelling of frequency of heavy drinking among 15–16 year old students in 11 European countries. *Journal of Studies on Alcohol*, 64:200–208.
- Blas E, Kurup AS (2010). *Equity, social determinants and public health programmes*. Geneva, World Health Organization (http://whqlibdoc.who.int/publications/2010/9789241563970_eng.pdf, accessed 15 June 2012).
- Boyce W et al. (2006). The family affluence scale as a measure of national wealth: validation of an adolescent self-report measure. *Social Indicators Research*, 78:473–487.
- Caetano R, Clark CL (1999). Trends in situational norms and attitudes toward drinking among whites, blacks, and hispanics: 1984–1995. *Drug and Alcohol Dependence*, 54:45–56.
- Caldwell TM et al. (2008). Lifecourse socioeconomic predictors of midlife drinking patterns, problems and abstinence: findings from the 1958 British Birth Cohort Study. *Drug & Alcohol Dependence*, 95:269–278.
- Cartwright AK, Shaw SJ, Spratley TA (1978). The relationships between per capita consumption, drinking patterns and alcohol-related problems in a population sample, 1965–1974. Part I: increased consumption and changes in drinking patterns. *British Journal of Addiction to Alcohol and Other Drugs*, 73:237–246.
- Casswell S, Pledger M, Hooper R (2003). Socioeconomic status and drinking patterns in young adults. *Addiction*, 98:601–610.
- Cerdá M, Johnson-Lawrence VD, Galea S (2011). Lifetime income patterns and alcohol consumption: Investigating the association between long- and short-term income trajectories and drinking. *Social Science and Medicine*, 73(8):1178–1185.
- Chambliss W (1973). The saints and the roughnecks. *Society*, 11:24–31.
- Claussen B (1999). Alcohol disorders and re-employment in a 5-year follow-up of long-term unemployed. *Addiction*, 94:133–138.

- Conger RD (1997). The special nature of rural America, 1997. In: Robertson EB et al., eds. *Rural substance abuse: state of knowledge and issues*. Rockville, MD, United States Department of Health and Human Services National Institute on Drug Abuse:37–52.
- Cowell AJ (2006). The relationship between education and health behaviour: some empirical evidence. *Health Economics*, 15:125–146.
- CSDH (2008). *Closing the gap in a generation: health equity through action on the social determinants of health. Final Report of the Commission on Social Determinants of Health*. Geneva, World Health Organization (http://whqlibdoc.who.int/publications/2008/9789241563703_eng.pdf, accessed 15 June 2012).
- Curran GM et al. (1999). Gender differences in the relationships among SES, family history of alcohol disorders and alcohol dependence. *Journal of Studies on Alcohol*, 60:825–832.
- Currie CE et al. (1997). Indicators of socioeconomic status for adolescents: the WHO Health Behaviour in School-aged Children Survey. *Health Education Research*, 12:385–397.
- Currie C et al. (2008). *Inequalities in young people's health. Health behavior in school-aged children: international report from the 2005/2006 survey*. Copenhagen, WHO Regional Office for Europe (http://www.euro.who.int/__data/assets/pdf_file/0005/53852/E91416.pdf, accessed 20 July 2012) (Health policy for children and adolescents, No. 5).
- Cutler D, Lleras-Muney A (2008). Education and health: evaluating theories and evidence. In: House J et al., eds. *Making Americans healthier: social and economic policy as health policy*. New York, NY, Russell Sage Foundation: 29–60.
- Dawson DA, Archer L (1992). Gender differences in alcohol consumption: effects of measurement. *British Journal of Addiction*, 87:119–123.
- DHS (2008). Binge drinking and Europe. Hamm, Deutsche Hauptstelle für Suchtfragen e.V.
- Donath C et al. (2011). Alcohol consumption and binge drinking in adolescents: comparison of different migration backgrounds and rural vs. urban residence – a representative study. *BMC Public Health*, 11:84 (epub).
- Edwards G et al. (1994). *Alcohol policy and the public good*. New York, NY, Oxford University Press.
- EKI (2010a). *Alkoholi tarbimine ja alkoholipoliitika (elanike hinnangute alusel) [Alcohol consumption and alcohol policy (based on inhabitants' estimation)]*. Tallinn, Eesti Konjunktuuriinstituut.
- EKI (2010b). *Alkoholi turg, tarbimine ja kahjud Eestis. Aastaraamat 2010 [Alcohol market, consumption and harms in Estonia. Yearbook 2010]*. Tallinn, Eesti Konjunktuuriinstituut.
- EKI (2010c). *Illegaalse alkoholi tarbimine ja kaubandus Eestis 2010 (elanike hinnangute alusel) [Consumption and trade of illegal alcohol in Estonia (based on inhabitants' estimation)]*. Tallinn, Eesti Konjunktuuriinstituut.
- EKI (2011). *Alkoholi turg, tarbimine ja kahjus Eestis. Aastaraamat 2011 [Alcohol market, consumption and harms in Estonia. Yearbook 2011]*. Tallinn, Eesti Konjunktuuriinstituut.
- Estonian Parliament (2009). Töölepingu seadus [Employment Contract Act], 1 July 2009. *Riigi Teataja [official database of Estonian legal acts]*. Tallinn, Estonian Parliament.
- Estonian Parliament (2010). Alkoholiseadus [Alcohol Act], 1 September 2010. *Riigi Teataja [official database of Estonian legal acts]*. Tallinn, Estonian Parliament.
- Estonian Ministry of Social Affairs (2010). *Vägivalda vastu võitlemise arengukava aastateks 2010–2014 [Development plan for reducing violence for years 2010–2014]*. Tallinn, Estonian Ministry of Social Affairs.
- EuroHealthNet (2012). About HI. Glossary [web site]. Brussels, European Portal for Action on Health Inequalities (http://www.health-inequalities.eu/HEALTHY/EN/about_hi/glossary/#S, accessed 15 June 2012).
- European Commission (2009). *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Solidarity in health: reducing health inequalities in the EU*. Brussels, European Commission (http://ec.europa.eu/health/ph_determinants/socio_economics/documents/com2009_en.pdf, accessed 15 June 2012).
- Goldman D, Smith J (2005). Socioeconomic differences in the adoption of new medical technologies. *American Economic Review*, 95:234–237.

- Grant M (1985). *Alcohol policies*. Copenhagen, WHO Regional Office for Europe (WHO Regional Publications, European Series, No. 18).
- Gual A, Colom J (1997). Why has alcohol consumption declined in countries of southern Europe? *Addiction*, 92(Suppl. 1):21–31.
- Habicht J et al. (2009). Social inequalities in the use of health care services after 8 years of health care reforms: a comparative study of the Baltic countries. *International Journal of Public Health*, 54:250–259.
- Hemström Ö (2002). Alcohol-related deaths contribute to socioeconomic differentials in mortality in Sweden. *European Journal of Public Health*, 12:254–262.
- Herttua K, Mäkelä P, Martikainen P (2008). Changes in alcohol-related mortality and its socioeconomic differences after a large reduction in alcohol prices: a natural experiment based on register data. *American Journal of Epidemiology*, 2008, 168:1110–1118.
- Hingson RW, Heeren T, Winter MR (2006). Age at drinking onset and alcohol dependence. *Archives of Pediatric and Adolescent Medicine*, 160:739–746.
- Hobcraft J (2000). *The roles of schooling and educational qualifications in the emergence of adult social exclusion*. London, London School of Economics Centre for Analysis of Social Exclusion (CASEpaper Series, No. 43).
- Huerta MC, Borgonovi F (2010). Education, alcohol use and abuse among young adults in Britain. *Social Science and Medicine*, 71:143–151.
- Hurst W et al. (1997). *International survey: alcoholic beverage taxation and control policies*. Ottawa, Brewers Association of Canada.
- Iontchev A (1998). Central and eastern Europe. In: Grant M, ed. *Alcohol and emerging markets: patterns, problems and responses*. Philadelphia, PA, Taylor and Francis:177–201.
- Kaasik T, Väli M, Saar I (2007). Road traffic mortality in Estonia: alcohol as the main contributing factor. *International Journal of Injury Control and Safety Promotion*, 14:163–170.
- Kanavos P et al. (2009). *Review of the Estonian pharmaceutical sector: towards the development of a national medicines policy*. Copenhagen, WHO Regional Office for Europe (http://www.euro.who.int/_data/assets/pdf_file/0004/96448/E93049.pdf, accessed 15 June 2012).
- Kiive E et al. (2004). *Sotsiaalsete toimetulekuoskuste õpetus: õpetajaraamat: 7.–9. klassile ja gümnaasiumile [Social coping skills: teacher's book: for grades 7–9 and gymnasium]*. Tallinn, ILO.
- Kiive E et al. (2007). *Sotsiaalsete toimetulekuoskuste õpetus: õpetajaraamat I kooliastmele (1.-5. klassile lihtsustatud õppekava järgi) [Social coping skills: teacher's book for 1st school level (for grades 1–5 according to simplified school curriculum)]*. Tallinn, National Institute for Health Development.
- Knupfer G (1989). The prevalence in various social groups of 8 different drinking patterns, from abstaining to frequent drunkenness: analysis of 10 U.S. surveys combined. *British Journal of Addiction*, 84:1305–1318.
- Koning IM et al. (2010). Why target early adolescents and parents in alcohol prevention? The mediating effects of self-control, rules and attitudes about alcohol use. *Addiction*, 106:538–546.
- Kull M et al. (2001). *Sotsiaalsete toimetulekuoskuste õpetus: õpetajaraamat: 4.–6. klass [Social coping skills: teacher's book: grades 4–6]*. Tallinn, Estonian Ministry of Education and Research.
- Kull M et al. (2002). *Sotsiaalsete toimetulekuoskuste õpetus: õpetajaraamat: 1.–3. klass [Social coping skills: teacher's book: grades 1–3]*. Tallinn, Avita.
- Lai, T, Habicht J (2011). Decline in alcohol consumption in Estonia: combined effects of strengthened alcohol policy and economic downturn. *Alcohol and Alcoholism*, 46(2):200–203.
- Lai T, Vals K, Kiiwet R (2003). *Haiguskoormuse tõttu kaotatud eluaastad ehk tervisekadu Eestis [Burden of disease in Estonia]*. Tallinn, Estonian Ministry of Social Affairs.
- Lai T, Vals K, Kiiwet R (2005). *Haiguskoormuse tõttu kaotatud eluaastad Eestis: seosed riskifaktoritega ja riskide vähendamise kulutõhusus [Life years lost due to burden of disease in Estonia: associations with risk factors and cost-effectiveness of risks reduction]*. Tallinn, Estonian Ministry of Social Affairs.
- Lai T et al. (2007). Costs, health effects and cost-effectiveness of alcohol and tobacco control strategies in Estonia. *Health Policy*, 84:75–88.

- Leinsalu M, Vagerö D, Kunst AE (2003). Estonia 1989–2000: enormous increase in mortality differences by education. *International Journal of Epidemiology*, 32:1081–1087.
- Lintonen T et al. (2000). The effect of societal changes on drunkenness trends in early adolescence. *Health Education Research*, 15:261–269.
- Mackenbach JP et al. (2008). Socioeconomic inequalities in health in 22 European countries. *New England Journal of Medicine*, 358:2468–2481.
- Mäe Ü (2003). Homelessness. Summary of questionnaires targeted to the heads of the shelters. *Social Work*, 4:34–35.
- Manning M (2004). *Calling time: the nation's drinking as a major health issue*. London, Academy of Medical Sciences.
- Mäkelä P (1999). Alcohol-related mortality as a function of socioeconomic status. *Addiction*, 94:867–886.
- Mäkelä P, Keskimäki IT, Koskinen S (2003). What underlies the high alcohol-related mortality of the disadvantaged: high morbidity or poor survival? *Journal of Epidemiology and Community Health*, 57:981–986.
- Marmot M (1997). Inequities, deprivation and alcohol use. *Addiction*, 92(Suppl. 1):13–20.
- McKee M et al. (2000). Alcohol consumption in the Baltic republics. *Journal of Epidemiology and Community Health*, 54(5):361–366.
- McNeely C, Blanchard J (2009). *The teen years explained: a guide to healthy adolescent development*. Baltimore, MD, Center for Adolescent Health at Johns Hopkins Bloomberg School of Public Health.
- Möller G (2010). *Alkoholi tarbimise sotsiaalse surve uuring [Alcohol consumption-related social pressure survey]*. Tallinn, TNS Emor.
- Mowat C (2011). The view from retailers in the UK. Paper presented at seminar entitled *Tackling under-age drinking in Europe*, Brussels, 13 April.
- Mullahy J, Sindelar JL (1996). Employment, unemployment, and problem drinking. *Journal of Health Economics*, 15:409–434.
- Myers MG, Kelly JF (2006). Cigarette smoking among adolescents with alcohol and other drug use problems. *Alcohol Research and Health*, 29:221–227.
- NICE (2010). *Alcohol-use disorders: preventing the development of hazardous and harmful drinking. NICE public health guidance 24*. London, National Institute for Health and Clinical Excellence.
- NIHD (2002). *Health behaviour in school-aged children (survey data)*. Tallinn, Estonian National Institute for Health Development.
- NIHD (2006). *Health behaviour in school-aged children (survey data)*. Tallinn, Estonian National Institute for Health Development.
- NIHD (2009). *Estonian causes of death registry 2009*. Tallin, Estonian National Institute for Health Development.
- NIHD (2010a). Alkoinfo.ee [web site] (in Estonian). Tallinn, Estonian National Institute for Health Development (<http://www.alkoinfo.ee/et/kogused/riskipiirid>, accessed 15 June 2012).
- NIHD (2010b). *Health behavior among Estonian adult population (survey data)*. Tallinn, Estonian National Institute for Health Development.
- NIHD (2010c). *Health behaviour in school-aged children (survey data)*. Tallinn, Estonian National Institute for Health Development.
- NIHD (2010d). *Estonian causes of death registry 2010*. Tallin, Estonian National Institute for Health Development.
- NIHD (2010e). Tervisestatistika ja terviseuuringu andmebaas [Health statistics and health surveys database] [web site] (in Estonian). Tallinn, National Institute for Health Development (<http://pxweb.tai.ee/esf/pxweb2008/dialog/statfile2.asp>, accessed 14 December 2011).
- Nolen-Hoeksema S (2004). Gender differences in risk factors and consequences for alcohol use and problems. *Clinical Psychology Review*, 24:981–1010.
- Österberg E (1995). Do alcohol prices affect consumption and related problems? In: Holder HD, Edwards G, eds. *Alcohol and public policy: evidence and issues*. Oxford, Oxford University Press:145–163.

- Pärna K, Leon DA (2011). Surrogate alcohol drinking in Estonia. *Alcoholism: Clinical and Experimental Research*, 35(8):1454–1457.
- Pärna K, Rahu K (2010). Dramatic increase in alcoholic liver cirrhosis mortality in Estonia in 1992–2008. *Alcohol and Alcoholism*, 45:548–551.
- Pärna K et al. (2010). Alcohol consumption in Estonia and Finland: Finbalt survey 1994–2006. *BMC Public Health*, 10:261 (epub).
- Pärna K, Ringmets I (2011). Alcohol consumption patterns during transition and economic growth in Estonia: results from the 1996 and 2006 health interview surveys. *Open Journal of Preventive Medicine*, 1:80–87.
- Rahu K et al. (2009). Contrasts in alcohol-related mortality in Estonia: education and ethnicity. *Alcohol and Alcoholism*, 44:517–522.
- Rehm J et al. (2006). *Alcohol consumption and the global burden of disease 2002*. Geneva, WHO, Department of Mental Health and Substance Abuse, Management of Substance Abuse (Internal document for the meeting of the WHO Technical Advisory Group on Alcohol Epidemiology).
- Riala K et al. (2004). Teenage smoking and substance use as predictors of severe alcohol problems in adolescence and in young adulthood. *Journal of Adolescent Health*, 35:245–254.
- Richter M, Leppin A, Gabhainn SN (2006). The relationship between parental socioeconomic status and episodes of drunkenness among adolescents: finding from a cross-national survey. *BMC Public Health*, 6:289.
- Ross CE, Van Willigen M (1997). Education and the subjective quality of life. *Journal of Health and Social Behavior*, 38:275–297.
- Saar I (2011). *Optimal alcohol taxation in Estonia*. Tartu, University of Tartu.
- Schmidt LA et al. (2010). Alcohol: equity and social determinants. In: Blas E, Kurup AS, eds. *Equity, social determinants and public health programmes*. Geneva, World Health Organization: 11–29 (http://whqlibdoc.who.int/publications/2010/9789241563970_eng.pdf, accessed 15 June 2012).
- Shkolnikov VM et al. (1998). Educational level and adult mortality in Russia: an analysis of routine data 1979 to 1994. *Social Science and Medicine*, 47:357–369.
- Shucksmith J, Glendinning A, Hendry L (1998). Adolescent drinking behaviour and the role of family life: a Scottish perspective. *Journal of Adolescence*, 20:85–101.
- Spanish Ministry of Health and Social Policy (2010). *Moving forward equity in health: monitoring social determinants of health and the reduction of health inequalities*. Madrid, Ministry of Health and Social Policy of Spain (http://www.msps.es/profesionales/saludPublica/prevPromocion/promocion/desigualdadSalud/PresidenciaUE_2010/conferenciaExpertos/docs/haciaLaEquidadEnSalud_en.pdf, accessed 15 June 2012).
- Szabo G (1997). Alcohol's contribution to compromised immunity. *Alcohol Health and Research World*, 21:30–38.
- Statistikaamet (2011). *Statistika andmebaas: rahvastik [Statistical database: population]*. Tallinn, Statistics Estonia.
- Strand BH, Steiro A (2003). Alcohol consumption, income and education in Norway, 1993–2000. *Journal of the Norwegian Medical Association*, 123(20):2849–2853.
- Sutton M, Godfrey C (2006). A grouped data regression approach to estimating economic and social influences on individual drinking behaviour. *Health Economics*, 4(3):237–247.
- Systembolaget (2010). *The Swedish monopoly – age control*. Paper presented at: 4th European Alcohol Policy Conference, Brussels, 22 June 2010.
- Tekkel M, Veideman T (2011). *Health behavior among Estonian adult population, 2010*. Tallinn, Estonian National Institute for Health Development.
- Tekkel M, Veideman T, Rahu M (2009). *Health behavior among Estonian adult population, 2008*. Tallinn, Estonian National Institute for Health Development.
- Thomson S et al. (2010). *Responding to the challenge of financial sustainability in Estonia's health system*. Copenhagen, WHO Regional Office for Europe (http://www.euro.who.int/__data/assets/pdf_file/0003/107877/E93542.pdf, accessed 15 June 2012).

- Tomkins S et al. (2007). Prevalence and socioeconomic distribution of hazardous patterns of alcohol drinking: study of alcohol consumption in men aged 25–54 years in Izhevsk, Russia. *Addiction*, 102:544–553.
- TNS Emor (2008). *Alkoholireklaam ja noored [Alcohol advertising and youth]*. Tallinn, TNS Emor (http://www2.tai.ee/teated/arenduskeskus/Uudised/Alkoholireklaam_kokkuvote.pdf, accessed 27 December 2011).
- Võrk A, Pulus A, Poltimäe H (2008). *Maksupoliitika mõju leibkondade maksukoormuse jaotumisele. [Effects of taxation policy on distribution of tax burden of households]*. Tallinn, PRAXIS Centre for Policy Studies.
- Võrk A, Saluse J, Habicht J (2009). *Income-related inequality in health care financing and utilization in Estonia 2000–2007. Health financing technical report*. Copenhagen, WHO Regional Office for Europe (http://www.euro.who.int/__data/assets/pdf_file/0009/78903/e92952.pdf, accessed 15 June 2012).
- Wagenaar A, Salois M, Komro K (2009). Effects of beverage alcohol price and tax levels on drinking: a meta-analysis of 1003 estimates from 112 studies. *Addiction*, 104:179–190.
- WHO (2009). *Global health risks: mortality and burden of disease attributable to selected major risks*. Geneva, World Health Organization (http://www.who.int/healthinfo/global_burden_disease/GlobalHealthRisks_report_full.pdf, accessed 15 June 2012).
- WHO (1994). *Lexicon of alcohol and drug terms*. Geneva, World Health Organization (<http://whqlibdoc.who.int/publications/9241544686.pdf>, accessed 15 June 2012).
- WHO (2010). *Global strategy to reduce the harmful use of alcohol*. Geneva: World Health Organization, 2010 (http://www.who.int/substance_abuse/msbalcstrategy.pdf, accessed 15 June 2012).
- WHO (2011). *Global status report on alcohol and health*. Geneva, World Health Organization (http://www.who.int/substance_abuse/publications/global_alcohol_report/msbgsruprofiles.pdf, accessed 15 June 2012).
- WHO (2012). Gender, women and health [web site]. Geneva, World Health Organization (<http://www.who.int/gender/whatisgender/en/>, accessed 15 June 2012).
- Wilk AI et al (1997). Meta-analysis of randomized control trials addressing brief interventions in heavy alcohol drinkers. *Journal of General Internal Medicine*, 12:274–283.
- Wilkinson KP (1984a). A research note on homicide and rurality. *Social Forces*, 63:445–452.
- Wilkinson KP (1984b). Rurality and patterns of social disruption. *Rural Sociology*, 49:23–36.
- Wilson JM, Donnermeyer JF (2006). Urbanity, rurality, and adolescent substance use. *Criminal Justice Review*, 31:337–356.
- World Bank (2006). Renewed support for middle-income countries at the annual meetings in Singapore [web site]. Washington, DC, World Bank (<http://web.worldbank.org/WBSITE/EXTERNAL/COUNTRIES/ECAEXT/UKRAINEEXTN/0,,print:Y~isCURL:Y~contentMDK:21058193~menuPK:328539~pagePK:2865066~piPK:2865079~theSitePK:328533,00.html>, accessed 15 June 2012).
- World Bank (2011). *Estonia*. Washington, DC, World Bank (<http://data.worldbank.org/country/estonia>, accessed 15 June 2012).

Annex

Table A1.1. Distribution of socio-demographic, socioeconomic and risk behaviour determinants among 11-, 13- and 15-year-old schoolchildren (based on alcohol consumption), 2010

Variables	11-year-old (N=1410) %	13-year-old (N=1406) %	15-year-old (N=1396) %	Total (N=4212) %
Gender				
Boys	47.4	48.9	47.2	47.8
Girls	52.6	51.1	52.8	52.2
Ethnicity				
Estonian	76.7	75.8	78.7	77.1
Non-Estonian	22.6	23.7	20.9	22.4
Missing	0.8	0.5	0.5	0.6
Place of residence				
Urban	52.9	52.5	55.2	53.5
Rural	46.0	46.8	44.7	45.8
Missing	1.1	0.7	0.1	0.7
Family structure				
Structured	67.9	63.9	58.7	63.6
Restructured	32.1	36.1	41.3	36.4
FAS				
Low	14.5	15.4	16.7	15.5
Middle	40.1	40.3	37.6	39.4
High	42.4	41.8	44.2	42.8
Missing	2.9	2.6	1.5	2.3
Smoking				
Smoker	1.6	13.4	25.4	13.4
Non-smoker	98.3	86.3	74.4	86.4
Missing	0.1	0.3	0.2	0.2

Source: HBSC survey (NIHD, 2010c).

Table A1.2. Distribution of socio-demographic and socioeconomic determinants among adults, 2010

Variables	Aged 16–24 years (N=1125) %	Aged 25–34 years (N=1196) %	Aged 35–44 years (N=1166) %	Aged 45–54 years (N=1361) %	Aged 55–64 years (N=1180) %	Total (N=6028) %
Sex						
Men	43.2	42.6	42.5	41.5	41.5	41.7
Women	56.8	57.4	57.5	58.5	58.5	58.3
Ethnicity						
Estonian	76.8	74.0	72.8	63.6	64.4	70.1
Non-Estonian	23.2	26.0	27.2	36.4	35.6	29.9
Education level						
Primary/basic	32.7	11.6	6.7	7.1	18.8	15.0
Secondary	39.9	19.7	24.5	26.5	26.5	27.3
Secondary-vocational	15.1	30.4	41.9	41.8	31.4	32.8
University	11.9	37.8	26.7	24.2	22.9	24.8
Missing	0.2	0.4	0.2	0.4	0.4	0.3
Income						
Less than 4000 EEK	30.1	22.6	37.1	35.0	32.9	31.6
4000–6999 EEK	28.1	26.1	28.3	34.4	38.3	31.2
7000–9999 EEK	18.7	18.6	16.6	15.3	15.2	16.8
over 10 000 EEK	15.8	30.3	16.0	13.0	11.3	17.2
Missing	7.3	2.4	2.0	2.3	2.4	3.2
Economic activity						
Employed	31.3	75.7	82.4	78.8	60.1	66.3
Inactive	59.3	16.05	9.0	10.0	32.2	24.6
Unemployed	7.6	6.6	7.3	10.2	5.4	7.5
Missing	1.8	1.7	1.3	1.0	2.3	1.6

Source: Tekkel & Veideman, 2011.

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

Member States

Albania
Andorra
Armenia
Austria
Azerbaijan
Belarus
Belgium
Bosnia and Herzegovina
Bulgaria
Croatia
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Georgia
Germany
Greece
Hungary
Iceland
Ireland
Israel
Italy
Kazakhstan
Kyrgyzstan
Latvia
Lithuania
Luxembourg
Malta
Monaco
Montenegro
Netherlands
Norway
Poland
Portugal
Republic of Moldova
Romania
Russian Federation
San Marino
Serbia
Slovakia
Slovenia
Spain
Sweden
Switzerland
Tajikistan
The former Yugoslav
Republic of Macedonia
Turkey
Turkmenistan
Ukraine
United Kingdom
Uzbekistan

World Health Organization Regional Office for Europe

Marmorvej 51, DK-2100 Copenhagen Ø, Denmark
Tel.: +45 45 33 70 00 E-mail: contact@euro.who.int
Web site: www.euro.who.int