Alcohol and hazardous drinking in Russia: a mixed design study

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Declaration

‘I, Natalia Bobrova, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.'

Abstract

This thesis investigated drinking patterns in the Russian city of Novosibirsk, with a specific focus on hazardous drinking. It explored the relationship between hazardous drinking and social-economic characteristics, depressive symptoms and self-reported health. The study also provided an in-depth description of drinking patterns, consumption of 'surrogate' alcohol, and perceptions of the Russian drinking culture and the state's alcohol policies.

The research used a combination of quantitative and qualitative methods. First, it assessed alcohol consumption and drinking patterns using data from the HAPIEE (Health, Alcohol and Psychosocial factors In Eastern Europe) cohort. Second, a series of 44 semi-structured interviews were conducted with men and women sampled from the HAPIEE cohort. Third, 40 semi-structured interviews were conducted among clients of an alcohol treatment facility. These interviews were focused on hazardous drinking.

The main findings were as follows. First, hazardous drinking was common among men, but rare among women (30% of men and 1% of women reported binge drinking, 19% of men and 1% of women reported problem drinking, and 9% of men and less than 1% of women reported more than two negative consequences of drinking). Second, hazardous drinking was associated with lower education (e.g. men with secondary education were 1.9 times more likely to binge drink than men with university education), unemployment, poor health (men and women rating their health as good were more likely to binge than people with poor health), and with certain occupations (e.g. drivers or construction workers were likely to report binge drinking). Third, high accessibility of alcohol and a need to relieve withdrawal symptoms were common reasons for surrogate consumption given in interviews by participants from alcohol treatment facility. Finally, the Russian drinking culture was perceived as characterised by heavy drinking and strongly influenced by the interplay of individual and structural factors.

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1. Introduction

Many researchers directly or indirectly connect the appalling mortality crisis which Russia faced during the economic, social and cultural transition period with high levels of alcohol intake. Life expectancy for men in Russia is about 59 years (compared to 76 in the UK), and the probability that a 15 year-old boy will die before age 60 is more than 40% (The World Bank, 2005). Moreover, Russia's 12-year gender gap in life expectancy, one of the largest in the world, appears also related to differences in behaviours such as alcohol consumption (UNDP, 2005). The losses in the male population are comparable with losses during the Second World War.

The drinking of alcohol is inextricably implanted in Russian culture and everyday life. Alcohol for long has been used to celebrate, to show hospitality, for joy and pleasure, to mark important events: to commemorate the dead, to celebrate births, and to "seal" a business deal. It is hard to imagine any special occasion without alcohol in Russia. However, it is difficult to overestimate the consequences of this consumption. Alcohol addiction, violence, disruption of family lives, injuries, alcohol poisoning, liver and possibly heart disease are some of the problems which accompany drinking. According to the WHO, alcohol was a prime risk factor for disability-adjusted life years lost in 2002 in Russia (World Health Report, 2002). Around 40,000 people die every year from alcohol poisoning, compared to just several hundred in the USA (Nemtsov, 2001). Although figures for annual consumption of alcohol in Russia are below many European countries, Russian consumption patterns and drink type preference make drinking hazardous on long and often on short time scales. The preference for alcohol with high concentrations of ethanol, drinking relatively infrequently but in large amounts on a single occasion, and often with the single aim of intoxication, are some of the features of the Russian drinking pattern (Stickley, et al., 2009, Leon et al., 2009, Cockerham et al., 2006).

It has been suggested that at least part of the high death rate in Russia might be attributed to the consumption of drinking substances which are not intended to be drunk, or alcohol surrogates (Leon et al., 2009, 2007). Surrogates include substances such as industrial spirits, antifreeze, cologne, aftershave, lotions and medicines with a high

percentage of ethanol. Most of these substances have twice the concentration of alcohol as traditional vodka. In just several months of 2006 (July-November) around 5,000 cases of alcohol poisoning due to such substances came to hospitals in 14 Russian regions. The government called this situation an unprecedented epidemic. Understanding why people choose to drink such substances, what kind of people drink them, and in which environments, is essential to address this worrisome trend in drinking behaviour.

This thesis explores drinking patterns in contemporary Russia, focusing on hazardous drinking patterns, such as heavy drinking, binge drinking and drinking surrogate alcohol. There appears to have been only one previous study which has looked at surrogate drinking in Russia (Tomkins et al., 2007), and although several epidemiological studies have examined alcohol consumption and, less often, some aspects of drinking patterns in Russia, few of them were designed to investigate drinking behaviours, and especially hazardous behaviour, in detail. This study aims to shed light on a relatively new and unstudied area, to provide useful information that can be used for public health interventions and policy development, and to contribute to the field of alcohol research in general.

1.1 Outline of the thesis

The thesis is organised in eight chapters. Chapter 1 provides an introduction and rationale of the research and outlines the thesis structure.

Chapter 2 presents a literature review, divided into five sections. The first section provides a historical overview of drinking in Russia, showing the long history between alcohol and the Russian people and how governmental policies have influenced drinking patterns, illegal alcohol and surrogate consumption. The second section shows how alcohol consumption impacts on mortality, both negatively and positively; analyses direct and indirect causes of premature mortality during the transition period in Russia; and summarises other (than alcohol) explanations for the dramatic fall in life expectancy among men after the collapse of the Soviet Union. The third section looks at existing theoretical models of problem drinking, focusing on models that describe individual social and environmental factors that influence drinking behaviour. The fourth section

examines the theoretical premises to study drinking patterns, defines them, and shows how they vary by gender, socio-economic status, and age. Finally, the fifth section describes drinking patterns, including hazardous drinking in Russia and its impact on people's health.

Chapter 3 outlines the aims and objectives of the research.

Chapter 4 describes the research design and is divided into two major sections. These sections describe the quantitative and qualitative methodology with detailed description of the data collection, the research settings and instruments, sampling, measurements used in the study, and the statistical and qualitative analyses.

Chapter 5 presents the results from the quantitative study and from the qualitative study. First, the quantitative results provide descriptive information about the sample and its alcohol drinking patterns, including hazardous drinking patterns. Second, the chapter explores patterns of drinking in different age groups; drinking patterns in the past if different from current patterns; and drinking in the past among current abstainers, with description of underlying reasons for changes in drinking. It also examines whether drinking patterns have changed between baseline data collection and the subsequent re-examination. Third, the results of predictors of hazardous drinking are presented, and include age-adjusted and fully adjusted models which explore the associations between hazardous drinking patterns and marital status, education, main life-time and current occupation, material situation, employment status, depressive symptoms, and self-reported health separately for men and for women. Finally, the chapter shows whether gender difference in alcohol intake can be explained by other covariates.

Results from the qualitative studies first explore drinking patterns among respondents recruited from the HAPIEE cohort starting with a description of the sample, then describes traditional and individual drinking patterns, perceived gender differences in drinking and the reasons behind them, drinking and occupation, and perceptions about drinking in Russia in general. Second, the results from the qualitative study conducted in an alcohol treatment facility are presented. After giving sample characteristics, it provides a detailed description of heavy drinking patterns including surrogate drinking patterns and the reasons behind them. Further, it shows how occupation and/or

unemployment are interrelated with heavy drinking. The chapter concludes with the description of the participants' perceptions of how drinking behaviour is influenced by alcohol policies, alcohol prices, and the overall socio-economic environment.

Chapter 6 discusses the findings. After a summary of the results and research limitations, drinking patterns in the HAPIEE cohort using the results of both quantitative and qualitative studies are discussed, where the qualitative study helps explain the findings in the quantitative survey. This is followed by a discussion of the findings on surrogate consumption from the HAPIEE study and the qualitative study conducted in the alcohol treatment facility. Finally, participants' perceptions about the Russian drinking culture and alcohol policies, with the policy implications, are discussed.

Chapter 7 draws general conclusions from the data presented throughout the thesis.

2. Background

The first section of the chapter provides a historical-cultural overview of alcohol consumption in Russia. The second section examines the relationships between alcohol consumption and mortality in the context of theories of problem drinking. The final section provides theoretical premises for the study of drinking patterns, overall and in the Russian context specifically.

2.1 Drinking in Russia - historical overview

2.1.1 Pre-Soviet Russia

From the times of the Kiev Rus, Russian people have enjoyed drinking. "Drinking…is a joy of the Russes. We cannot exist without that pleasure" said the Russian prince Vladimir in the 10th century (Nestor, 1953). The Russian tradition of drinking was deeply connected with rituals and was itself ritualised and controlled, with drunkenness discouraged. Russians drank on special occasions and in ritual celebrations, though those were numerous: births, weddings, funerals, pagan and religious holidays, feasts to celebrate victories over the enemy. Lord's festivals, market days, days to commemorate the dead, fraternities ("bratchiny", a feast when drinks and food were shared with one's kin group). Honey-based mead and beer brewed from hops were the only alcoholic drinks available in Russia until the 16th century, with the exception of imported wines, which were only available to a few nobles.

Vodka as we know it became distilled and available for consumption in Russia only in the 16th century. Ivan the Terrible (1505-33) monopolised the production and sale of alcoholic drinks, including vodka, and founded the first "tsarskii kabak", a pub, where drinks could be consumed. "*All during Holy Easter…everyone – lay and ecclesiastical people, men and women – avidly patronized simple kabak. They drank so much that frequently people were seen lying here and there in the streets, and some of them had to be thrown onto wagons or sleighs by their relatives and taken home. Under the circumstances, it may be understood why many people, murdered and stripped of their clothing, were found in the morning lying in the streets*."(Olearius, 1967) It is since this time that drunkenness and heavy drinking began to be recognized as a problem. The church and the tsar responded by limiting drinking days and alcohol sales on holy days.

Drinking was prohibited on Sundays, Wednesdays, Fridays and during fasts. However, although the problem of drinking was recognised and drinking restricted, income from alcohol sales and taxes was of no less importance, and sooner or later the decrees were cancelled or bypassed.

A further increase in drinking in Russia came with Peter the Great (1689-1725), whose search for revenue to fund wars with Poland and Sweden placed restrictions on distillation in 1705, leading to a growth in the number of gentry distillers (Nemtsov, 2005). The revenue coming from alcohol sales has grown ever since. During Peter's reign it was 11.4% of all state revenues; it increased to 30% during the reign of Catherine the Great, and under Alexander II was almost 40% (Nemtsov, 2005, Smith &Christian, 1984). In fact, in the middle of the 19th century, alcohol became the largest single source of revenue in Russia. Consumption of alcohol increased accordingly from about two litres per male per year during Peter's time to five litres by the end of the 18th century, with more people preferring spirits to beer, mead or kvas.

In the early 19th century, addiction to alcohol and problems connected to alcohol consumption started to spread among the male population (Smith & Christian, 1984). Although consumption in Russia was lower than in the majority of European countries during this period (e.g., 20 litres in per capita in France, 10 litres in Great Britain and 6 litres in Russia), the way in which men consumed alcohol was a big concern. Men drank on special occasions such as holidays, in big quantities and to extreme intoxication and oblivion. Some holidays could last up to three days, and in some areas up to eight days. "*Now every day is a festival, and you find everywhere helpful servants under the royal eagle, ready to relieve peasants of their money, their mind, and their health*." (Pryghov, 1913). According to some estimates, from 1842 to 1852, 7,562 people from 55 Russians regions died of drinking. Crime and violence related to alcohol and alcoholism, increased as well. In Moscow in 1842 alone, 6,405 men and 1,319 women were arrested for drunkenness, but by 1863 that number had almost doubled to 10,000 men and 2,128 women (Pryghov, 1913).

As in many other European countries, Russian alcohol consumption increased substantially during the period of industrialization. After the abolition of serfdom in 1861, the growth of industry increased both the migration to the cities and alcohol

consumption. And, as in the USA and England, drunkenness became one of the moral and social problems (McDonald, 1994). As Stickley at al. put it: "*the growth of urbanization, and with it, the spread of the tavern during the 19th Century gave rise to the co-existence of two drinking cultures in Russia – the 'traditional' and the 'modern' – both associated with extreme drinking but the latter distinguished by the more frequent drinking episodes. This pattern of lower overall but more intense consumption was encapsulated in the well-known saying from this period, 'not much alcohol is drunk in Russian but it is drunk crazily*' (Stickley, et al., 2009). The word alcoholism and an understanding of drunkenness as a disease appeared at the same time. Russian psychiatrist Sikorskii said, "If earlier we had drunkenness, since the 19th century alcoholism began spreading with its unavoidable consequences." The government once again monopolised vodka production, and in 1914 the sale of vodka was prohibited, due to the mobilization of the male population for the First World War. Official alcohol consumption dropped to less than 1 litre per capita, and remained at that level until 1925, when the dry law was abolished. The decrease had an almost immediate impact on daily life. The doctor and scientist Vvedenskij wrote in his monograph "Experience of compulsory abstinence": "… familiar pictures of street drunkenness have disappeared, have vanished from sight drunk, disfigured swearing persons, beggars…The common tone of street life became totally different. The change was felt first by establishments, which served victims of alcoholism. The cells for drunkards became empty and the number of alcoholics decreased both in outpatient facilities and in psychiatric and general hospitals." (Vvedenskij, 1915). However, illegal home production of spirits increased, as did the use of other ethanol-based substances (not intended for consumption), which led to a growth in the number of deaths due to alcohol poisoning (Vvedenskij, 1915, Zaigraev, 2002, Stickley, et al., 2009). This is probably the earliest period in the professional literature from which we have a detailed description of alcohol surrogates and characteristics of the victims of surrogate alcohol poisoning.

In summary, although drinking is recorded early in Russian history, there was no recorded problem drinking before the introduction and spread of spirits, vodka, in the 16th century. Throughout its history, vodka generated high revenues for the government and at the same time created big problems related to drunkenness. Although the overall annual alcohol consumption in the pre-Soviet Russia was lower than among most other

European countries, the way in which alcohol was consumed was a major concern. Drinking was not regular, but occurred on special occasions, on numerous festive celebrations, and the quantities consumed during these multi-day occasions were large, leading to an increase in violence and deaths from alcohol poisoning. The government and the church tried to control the alcohol consumption and to reduce the harm related to it by introducing new policies, decrees and punitive measures. However, they had limited success because of on-going alcohol production, corruption, and the desire for profits (Smith & Christian, 1984).

2.1.2 Drinking in Soviet Russia

The Soviet government, supporting Lenin's assertion that the proletariat "had no need of intoxication", promulgated the idea of sobriety in the nation and placed restrictions on illicit alcohol production and sale in the 1920s (White, 1996). So while there were some isolated drunken riots just after the revolution, international visitors noted that there were no drunks on the streets, and Russia was one of the most sober nations at that time (White, 1996). Temperance societies were established, and propagandistic movements against drinking were established in schools, clubs and at factories, keeping alcohol consumption at relatively low levels. As one author noted, there was no place for alcoholism in Soviet society, since the image of the Soviet citizen was one of healthy, sport-loving, and hard-working (Dragadze, 1994). By 1925, however, sales of beer, wine and spirits were again legal, the number of distilleries had increased, and alcohol consumption increased, leading to a rise in alcohol-related deaths (McKee, 1999, Stickley, et al., 2009). Nevertheless, during and after the Second World War, alcohol consumption remained very low, under 2 litres per capita per year (McKee, 1999, White, 1996).

Alcohol consumption grew between the 1950s and 1980s in most European countries, including Russia (Mozkalewicz & Simpura, 2000, Popova et al., 2002). The production of spirits tripled between the late 1940s and 1980s (White, 1996), and annual per capita consumption reached 4.5 litres by the 1960s (Nemtsov, 2005). Although information about alcohol consumption in the Soviet Union during this time is mostly speculative, it appears that the government had concerns about heavy drinking in the early 1970s. By then, Russia was one of the highest consumers of spirits in the world, with annual per capita consumption of 6.0 litres of absolute alcohol among people of drinking age

(Nemtsov, 2005). Illegal production of spirits was wide-spread and comprised one quarter of all consumed alcohol between 1967 and 1972 (Treml, 1976). But in the early 1970s, the government decided to undertake some measures to reduce alcohol consumption. The hours of sale for vodka were limited, and restricted to particular shops; the price of vodka was increased; vodka production was decreased, while the production of beer and wine increased; compulsory treatment of alcoholics was initiated; and medical-labour rehabilitation institutes were established where chronic alcoholics would stay for one or two years (Treml, 1976). However, these efforts had little impact. It is said that although the government initiated decrees, it did not take their implementation seriously, and even "encouraged people to intoxicate themselves, so that they might not think about politics or notice the mountain of problems that had been accumulating". This time was even called the "epoch of developed alcoholism". (White, 1996, McKee, 1999).

It was only with Gorbachev in power that a serious anti-alcohol campaign was launched in 1985. The accumulated problems related to alcohol consumption during the "stagnation period", the costs of heavy drinking, and political willingness pushed the campaign forward, although not for long. Most work absences were related to alcohol, and heavy alcohol consumption reduced production output by 30%, with annual losses due to alcohol consumption growing from 1.3m roubles in the 1960s to 4m by the early 1980s. Some researchers assert that these costs were larger than profits from alcohol sales (White, 1996). Gorbachev's campaign was ambitious and involved the whole society, from Party members in the government who were punished for their alcohol habits, to wine growers whose vintages were destroyed. It involved mass-media, the education system and the sectors of public health and internal affairs. It fought public drunkenness through the introduction of fines, compulsory treatment, confinement, and the introduction of the system of voluntary police auxiliaries, *drughinniki*, to look after public order on the streets. Vodka production and sales during the campaign were cut from 10.5 litres per capita per annum in 1984 to 3.4 litres in 1989 (Ryan, 1995). All these measures had an impact, and estimated alcohol consumption decreased by 40%. Alcohol psychosis and the number of people diagnosed with alcoholism dropped, and deaths from alcoholic poisoning fell by almost 50% within two years.

However, there were major downsides to the campaign, and the illicit production of alcohol and home brewing was one of them. As consumption of state-produced alcohol decreased, consumption of home brew samogon increased from 3.3 litres per capita per annum in 1984 to 6.1 litres in 1987 (Ryan, 1995). The notorious queues at the alcohol sales outlets (with some lines as long as 3,000 people), and the inability to buy alcohol for weddings or funerals, increased surrogate drinking, causing a death toll comparable with loses in Afghanistan (White, 1996). This toll, and other factors such as diminished government revenues (from reduced sales), contributed to the growing unpopularity of the campaign among the public and some political leaders, and the campaign was abolished in 1988.

2.1.3 Alcohol consumption in the 90s, and in contemporary Russia

Shortly after the anti-alcohol campaign was abolished, estimated alcohol consumption increased dramatically, due to multiple factors created after the collapse of the Soviet Union (1991) and the transition to an open-market economy. The estimated consumption was highest in 1992-1994, and was mainly attributed to the enormous increase in the supply of alcohol after the de-monopolization of the alcohol industry, reduced control of the industry by the State, and a liberalization of alcohol market (Nemtsov, 2000, Levin 1997). Alcohol became more accessible and more affordable. The price of alcohol fell, and one could buy alcohol on every street corner in small kiosks, 24-hour convenience shops, supermarkets, open markets, bars, restaurants and cantinas (Reitan, 2000). The oft-cited example is that if, prior to reform, a consumer had the choice of buying two kilograms of good-quality sausages or one bottle of vodka, after reform one could buy one kilogram of sausages or five bottles of vodka, and many preferred vodka (Levin, 1998).

Widespread availability of affordable alcohol matched growing demand during this time, with unemployment, disruption of social ties and relationships, and resulting psychosocial distress characterizing the transition period (Abbot et al., 2006, Simpura, 1997, Cockerham, 2006). Everyday life drew a grim picture of increased poverty, growing alienation, crime, and an uncertain future (Levin, 1997, Leon & Shkolnikov, 1998, Cockerham, 2006). According to the US Central Intelligence Agency, four out of every ten Russians lived below the poverty level in 1999. From 1990 to 1998, the cumulative decline in GDP was about 42.3%. The unemployment rate in 1999 was

12.4% (compared with 4.2% in the USA). Real wages decreased by 30% and pensions by 45% over the same time period. Many people sought escape from hardship and social dislocation through alcohol use. At the same time, a positive feeling of personal liberty, not only after the anti-alcohol campaign restrictions but also because of the general liberalization of the Soviet state, created more choices, along with an atmosphere of increased permissiveness and tolerance towards excessive drinking (Kubica et.al, 1995).

Currently, Russians are considered to be the largest per capita consumers of spirits in Europe and among the highest alcohol consumers in all WHO regions of the world (WHO, 2010, Rehm 2006, Mozkalewicz & Simpura, 2000). It is estimated that annual alcohol consumption in Russia is between 13 and 15.7 litres (Table 1), which is higher than in most western European countries (WHO, 2010, Simpura & Levin, 1997). In different cross-sectional studies, the European numbers are between 8 and 12 litres. These figures could be much higher, given that alcohol drinking reported in surveys is usually underestimated across countries, due to different social-cultural factors, among which are negative attitudes towards heavy or excessive drinking (Room, 1989). It has been estimated that the coverage by the surveys is only about 40-60% of sales figures (Stockwell, 2004, Rehm, 2004, Knibbe & Bloomfield, 2001). In fact, the Russian ministry of health estimated that Russian people consume annually on average 18 litres of alcohol (Euromonitor International, 2010).

Table 1: Mean annual consumption per capita in men and women in Russia

	Type of study	Year	Quantity (litres per year)
Nemtsov	Sales analysis + indirect calculations	2000	13.2
Nemtsov	Sales analysis + indirect calculations	1994	14.9
Nemtsov	Sales analysis + indirect calculations	2001	15.0
Treml		1997	13.8
Ryan		1992	14.0
Demin		2001	14.0-15.0
WHO		2004	10.6
WHO	Global Survey on Alcohol and Health (Official data on adult (15+) per capita consumption)	2003-2005	15.7 (11 recorded+4.7 unrecorded)

The number of abstainers varies between the studies and the reports (Table 2). In 2003, the World Health Survey estimated 12.4% of men were lifetime abstainers and 25.8% of women (WHO, 2004). In an earlier national sample of 1,599 Russians aged 18 and older, 9% of men and 35% of women reported never drinking (Bobak et al., 1999). The most recent estimates from the European region survey have shown that about 11% of Russian men and 29% of women reported lifetime abstinence in 2005, though the number of abstainers in the past 12 months was much higher: 30% for men, and 51% for women (WHO, 2010). In a prospective cohort study the prevalence of non-drinkers was 5% in the last year among Russian men, versus 11% of American men; and 18% and 21% respectively for Russian and American women (Deev et al., 1998). A cross-sectional study among 993 men and women in Moscow in 1994 showed lower rates and smaller differences between male and female abstainers – 9% and 8% respectively (Simpura & Levin, 1997). Eleven per cent of Russian men and 16% of women reported not drinking in the past year in a cross-sectional study conducted in three European countries in 1999-2000 (Bobak et al., 2004). The same study found the highest proportion of abstainers in Poland and the lowest among men in Czech Republic, with Russian and Czech women having a comparable proportion of abstainers (Bobak et al., 2004).

Table 2: Life-time and last year abstainers in Russia

			Life-time abstainers		Past year abstainers	
	Type of the study	Year	Men	Women	Men	Women
Simpura & Levin, 1997	Cross-sectional (age 15+)	1994			9.0%	8.0%
Deev et al., 1998	Prospective cohort(age 40-69)	1972-1982			4.7%	18.0%
Bobak et al., 1999	Cross-sectional (age 18+)	1999	9.0%	35.0%		
Bobak et al., 2004	Cross-sectional (age 45–64)	1999–2000			11.0%	16.0%
Pomerleau et al., 2005	Cross-sectional (age 18+)	2001	11.0%	27.0%		
WHO, 2004	Cross-sectional (age 18+)	2003	12.4%	28.5%		
WHO, 2010	Cross-sectional (age 15+)	2005	10.7%	28.6%	18.3%	22.0%

If abstinence rates are varied between studies (which could be due to different age groups, types of questions asked, different time of data collection), Russian patterns of drinking are notoriously persistent across studies, especially among men with binging and a preference for drinking spirits. Russia is described as a country with the most "health-risky", "detrimental" patterns of drinking, which will be discussed in detail in the section 2.5 (WHO, 2004, 2010, Rehm, 2006, Popova et al., 2007).

2.1.4 Illegal production of alcohol

Estimation of real alcohol consumption in Russia is complicated by the enormous scale of illegal production of alcohol. About half of all alcoholic drink producers in Russia operate illegally, and many of those who operate legally underreport production. Legal vodka distilleries do not report up to one third of their production, while illegal or "shadow" vodka, accounts for 30%-40% of vodka sales (Euromonitor International, 2006, 2010, Popova et al., 2007, International Center for Alcohol Policies, 2010). It is estimated that annual profits from illegal alcohol production is more than one billion US dollars (Lehto, 1997). In 2001 in Moscow alone the share of illegal vodka increased from 4% to 45% (The Alcohol Issue in Russia and the Baltic Sea Region, 2000, 2004). According to a Euromonitor report, in 2002 the government confiscated about 8 million litres of vodka and other spirits produced illegally. There were 909 underground plants in Russia in 2003, 14 of which were working in conjunction with legal producers of spirits; this number declined to 632 by 2007 (Euromonitor International, 2006, 2010). However, according to the same reports "shadow" vodka is not going to decline.

The quality of illegally-produced alcohol is difficult to control. Apart from unreported vodka, there are other counterfeit spirits in the market which are much cheaper than vodka, which are produced from low-quality, sometimes toxic materials and carry a major health danger. After the de-monopolization of the alcohol industry, large quantities of toxic counterfeit spirits entered the market. Most of them were based on industrial spirits and accounted for about 20% of alcohol consumption in the first years of market reform (Nemtsov, 1995, 2001, 2003). Licenses on synthetic and hydraulic spirits are 30% cheaper and are often used by small producers of alcoholic beverages (Nughnyj, 1998). Direct falsifications of western alcohol products are also widespread (Simpura & Levin, 1997). In six months of 2006, 1400 criminal cases were registered in Russia for selling surrogate alcohol. According to the Russian National Alcohol

Association, the annual consumption of industrial spirits, which are used to produce illegal vodka, is 300 million litres per capita (Kolchina, 2006).

2.1.5 Alcohol surrogates, non-beverage alcohol

In addition to illicit vodka, there is also a wide range of other substances consumed by people, known as alcohol surrogates. The Library of Congress Country Studies Report on Russia mentions, "If vodka is unavailable or unaffordable, Russians sometimes imbibe various combinations of dangerous substances." The first detailed description of such substances appeared during "the dry law" of 1914, when the sale of alcohol was banned by the government due to the mobilization of the male population for the First World War: "The disappearance of vodka has created a void in people's everyday life which had to be filled, but this adjustment has sometimes taken very dangerous forms…In this sense there is a growing use of vodka surrogates and different kinds of spirit containing substances: denatured and wood spirit, cologne, furniture polish, etc. These substances are used either pure or subjected to a process to make them as harmless as possible and to improve the taste" (Vvedenskij, 1915). In Kostroma region, authorities were concerned that despite the prohibition of alcohol sale "common people drink denatured spirit and intelligent people use medical recipes for spirit which they get from doctors." (Vvedenskij, 1915). Surrogate drinking also occurred during Soviet times despite government efforts to build a sober and hardworking proletariat. Venedikt Erofeev, a writer and heavy drinker himself, provides three pages of receipts for cocktails made of denatured spirit, cologne and beer in his famous book "*Moskva-Petushki"* (1969, published only in 1988). In the same book, he mentions that in Russia nobody knows what Pushkin died from – but everyone knows how to make furniture polish drinkable. In the book "*Ivan Petrov: Russia through a shot glass*", based on a true story, the main character, from a small industrial town, describes the types of surrogate drinks in 1950s: "*Most people drank meths or some other vodka substitute because the real thing was expensive and hard to obtain. We called methylated spirits Blue Danube. It was sold for lighting primus stoves and was in great demand. It was drunk even at weddings, with fruit syrup added to the women's glasses.*" (Walton, 1996).

In the current Russian research literature, alcohol surrogates (from Latin: *surrogatus* = substitute) are defined as "substances which are used for intoxication, instead of usual

alcoholic drinks, when the latter are absent" (Nughnyj, 2005). Russian clinical toxicology classifies these substances into two groups: 1) substances which are based on ethanol spirit or contain high levels of ethanol; 2) substances which do not contain ethanol but contain similar orchanoleptical characteristics such as methanol, isobutanol, propanol, and isoamyl spirits. The first group of substances include denaturant, synthetic ethanol spirits, hydraulic spirit, cologne, lotions and antifreeze (Nughnyj, 2005). Although it is very difficult to tell what proportion of the population consumes such substances, one study in the Russian city Izhevsk estimates that about 7% of men aged 25-54 drank such substances during the last year, and that 2% of them drank them daily (McKee, 2005). One of the major concerns about these substances is that, besides having high levels of ethanol, they also have poisonous elements that could severely damage the liver and could be lethal. The question, however, remains whether it is a large amount of ethanol consumed per occasion, or poor quality alcohol with poisonous toxins which are responsible for the high number of accidents. For example, a study which looked at alcohol-related mortality in three Russian cities found that non-beverage alcohol consumers were at no independent risk of mortality, although they were in the highest alcohol consumption category (Zaridze et al., 2009). V. Nughnyj, in his analytical review, "Alcohol mortality and toxicity of alcohol drinks", came to the conclusion that neither home-made alcohol, nor alcohol substances produced on the basis of industrial spirits or alcohol falsificates play such a great role in high alcohol mortality. He refers to experimental studies on rats at the National Research Institute in Moscow, which found that industrial spirits (hydraulic and synthetic) with a high level of ratification and spirit used for legal production of alcohol have the same level of toxicity (Nughnyj, 2005).

Poisoning by alcohol surrogates received much attention between August 2006 and November 2006, when a wave of hospitalizations and deaths swept through 14 Russian regions (Table 3). Some media headings around this topic included: "Life for "Maksimka", "Commemoration after the feast. Ural is stormed by alcohol poisonings", "Fake vodka wipes out Kursk alcoholics", "Maksimka" is worse than a machine gun.", "Tver region drowns in surrogate alcohol", "Let's toast with Boyaryshnik. Poisoning with alcohol surrogates takes mass character", "Russians dying for a drink", "The Stench of Death and Alcohol in Pskov". Table 3 shows the numbers of hospitalizations and deaths taken from press coverage during this period. One explanation for the

epidemic of alcohol poisonings suggested by the media and government officials is the introduction of a number of new government policies, governing licensing and labelling, designed to protect the quality of the legal alcohol products. The labelling law came into effect in July 2006, with several consequences. Alcohol sales declined as alcohol producers waited for new labels; cheap vodka disappeared from the shelves of the stores; and vodka prices increased substantially. All these changes resulted in increased consumption of surrogates. However, the other explanation suggested is that the attention to the mass alcohol surrogate poisoning in the state media in 2006 was largely driven by the government's desire to monopolise the vodka market. In fact, the number of alcohol poisonings in 2005 was considerably higher than in 2006, and surrogate consumption was always a part of Russian drinking culture (Butaev et al., 2006). Whatever drew attention to the subject of surrogate alcohol, from a public health perspective one message remains important: surrogate drinking exists, and causes substantial damage to human health and cost to society.

Table 3: Surrogate alcohol poisonings August – November, 2006 from the Internet press-media.

Region	Surrogate alcohol poisonings 2006 (main diagnosis: toxic hepatitis) (N)
Voronezh and Tver	300 people in two weeks
Ural region	377 in one month – 11 people died
Perm region	195 people in two months
Kursk region	111 people in one month
Rzhev town	100 people in two month, five died
Tatarstan region	58 people in one week, four died
Chuvashija	1,059 in six months (including also other alcohol not just surrogates)
Belgorod region	180 people in two weeks two died
Orenburg town	238 in six months (including also other alcohol not just surrogates), 75 people died
Cheliabinsk	3,000 people since August
Balashov town (Saratov region)	113 people in two weeks
Chita region	400 people died in 2006
Irkutsk region	5,000 people, 300 died
Habarovsk region	213 people in one week

Economic necessity is one of the most frequently cited reasons why people choose to consume surrogates. So although there are no studies done on surrogate drinkers, it is commonly believed that surrogates are consumed by poor populations, people on the

margins of society, and heavy drinkers, including those who have developed alcohol addiction (Parfitt, 2006, McKee et al, 2005, Nemtsov 2005). There are some assumptions, however, that this population could be much bigger and include those with lower income such as pensioners, teenagers and students (Butaev et al., 2006). It has been suggested that consumption of alcohol surrogates increases as the proportion of people who cannot afford good quality vodka increases. The cheapest vodka (500 ml) costs 75 roubles and the same quantity of diluted spirit costs only 20 roubles. At this price legal alcohol is accessible only to people with an income over 6-7 thousand roubles, while the average income in Russia is about 3 thousand roubles (Pronina, 2006). The Russian newspaper *Komsomolskaya Pravda* recently divided people who had alcohol poisoning from surrogates into two groups. One group is characterized as "normal" people who bought a half-litre [of vodka] of dubious appearance and quality at a place where it was not permitted to sell vodka. The second group are "outcasts" for whom to pay 70-100 roubles for half a litre is an unforgivable luxury." (Butaev et al., 2006).

Alcohol surrogates are very accessible. One type, medicines with high ethanol content, can be purchased at pharmacies; another, cologne and lotions, in every newspaper kiosk (until August 2006); cleaning substances and bath tonics are available in hardware stores and from certain kiosks under the counter; diluted or pure industrial spirits can be purchased from apartments or private houses. In Voronezh region, for example, there was an advertisement on TV and in the local newspaper: "Protective substance "Maksimka", spirit content of 95%, 23 roubles per litre", with an address and phone number attached. The same spirit is bottled with fake labels of popular vodka brands, such as "Pshenichnaja" or "Kuzmich". So, the consumer in this case has to choose whether to buy "Pshenichnaja" vodka produced from spirit "Maksimka" from a small shop for 70 roubles, or to buy spirit "Maksimka" from a neighbour for 20 roubles. Some anecdotal data suggest that ordinary people prefer to buy this type of spirit for weddings and other big feasts, especially in villages.

Despite enforcement measures which were taken by the regional authorities (e.g., police found and destroyed 400 tonnes of surrogate alcohol in ten Russian regions in 2007; in 2010, 200 tonnes of surrogate alcohol was confiscated in Lipetsk which was sold from apartments and night clubs), surrogate use continues, and according to some prognoses will be increasing as the prices of legal alcohol are growing disproportionally to the

population's income (Research Centre of Federal and Regional Alcohol Markets (CIFRA), 2011).

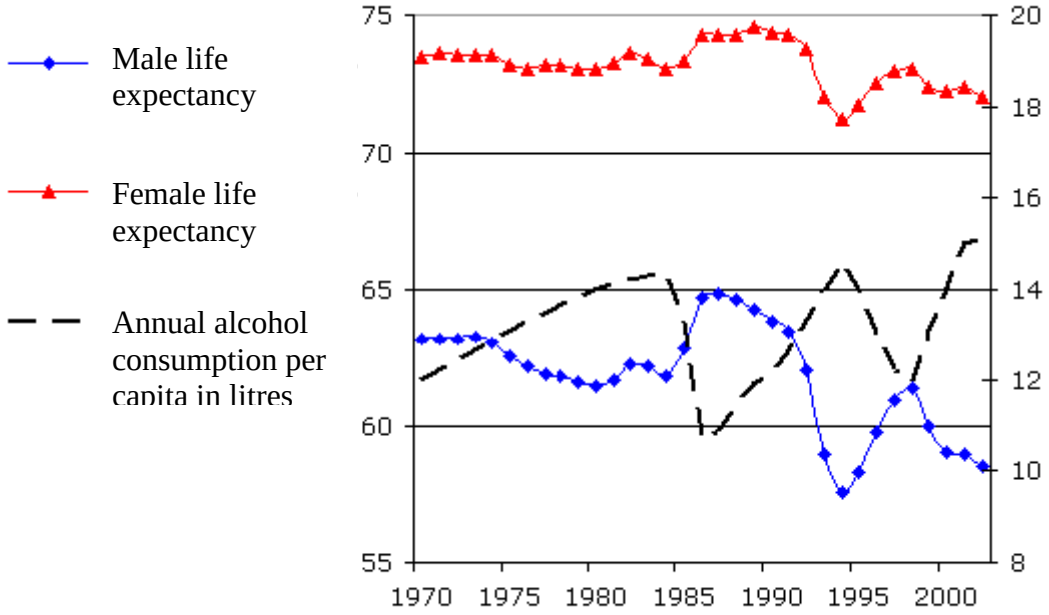
This section highlighted the long history of alcohol consumption in Russia, showing that problem drinking has been a long-term challenge. The next section will show how these patterns of drinking impact people's health, and more specifically Russian mortality rates.

2.2 Alcohol and mortality in Russia

The mortality crisis in Russia that occurred just after the collapse of the Soviet Union attracted the attention of many researchers and demographers. Mortality rates had already been increasing in the Soviet Union since the 1960s, especially among males, leading to a growing gap between the life expectancy of men and women (from 8 to 10 years between 1958 and 1972) (Treml, 1976, Notzon et al., 1998). By the end of the 1970s male life expectancy fell to 62.5 years, which was the lowest among men in European countries, and female to 72.6 (White, 1996). It has been argued that alcohol directly influenced this shift by 20,000 deaths a year, and indirectly caused a loss to the total population between the 1960s and late 1980s of 30 to 35 million people (White, 1996).

The Gorbachev anti-alcohol campaign is often given as an example of how reduction of alcohol consumption influenced mortality. Both mortality and alcohol consumption decreased in the years of the anti-alcohol campaign, and then increased again when it was abolished, as shown in Figure 1 (Chenet, 1998, Notzon et al, 1998). Alcohol-related mortality among men declined by 2.5 during the campaign, and male life expectancy increased from 61.7 years in 1984 to 64.9 years in 1987 (Ryan, 1995). Deaths indirectly related to alcohol, such as suicides and homicides, also declined: suicides with alcohol in the blood by 58%, and homicides under the influence of alcohol by 27% (Nemtsov, 2001). Nemtsov's calculations showed that the decrease in average alcohol consumption per capita by one litre is associated with decrease in mortality by 3% (compared with 1% in Europe) (Norstrom, 2001). Nemtsov also established that about one million human lives were saved by the anti-alcohol campaign. He concluded that alcohol consumption is one of the most important factors influencing mortality in Russia (Nemtsov, 2001, 2002).

Figure 1: Alcohol consumption and life expectancy in Russia, 1970-2002 (Khalturina & Korotaev, 2006).



Shortly after the anti-alcohol campaign was abolished, alcohol-related mortality rose again. Between 1992 and 1996, the direct and indirect death toll attributed to alcohol was 3.5 million people or 32.6% of all deaths (Nemtsov, 2002). The number of deaths from accidental alcohol poisoning reached 43,600 people in 1995 and in 2003 45,000 people, compared with 16,000 persons in 1990. Almost four times more men than women died from accidental alcohol poisoning. The 40-64 age band had the most fatalities (Statistical reports). For comparison, the average number of annual deaths from alcohol poisoning between 1996 and 1998 in USA was only 317 people (Yoon et al., 2003). According to Nemtsov, most cases of alcohol poisoning (70%) happened among alcohol addicts and among people with heavy and hazardous consumption of cheap or toxic falsified alcohol (Nemtsov, 2005). Mortality from chronic liver diseases was two to three times higher than in most European countries, although it is more difficult to estimate due to the underreporting of alcohol liver cirrhosis (Nemtsov, 2001). Nemtsov points out that in Russia, alcohol cirrhosis accounts only for 4.5% of all male cirrhosis and 2.6% of female cirrhosis. By comparison, in Northern Europe this number is 70% and 40% respectively (Nemtsov, 2003).

In 2004, Russia had one of the highest rates of violence in the world, with 1.46 million years of life lost due to interpersonal violence, and 1.30 million lost through suicide (WHO, 2006). It has been estimated that more than half of the homicides in Russia from 1992-1996 were alcohol-related (Nemtsov, 2005). Analysing alcohol consumption and rates of homicide in Russia, Pridemore found that higher rates of alcohol consumption lead to higher rates of homicide (Pridemore, 2002).The same author supported his previous findings relating alcohol consumption and the culture of binge drinking to violence by analysing alcohol poisoning and homicide deaths in Udmurt Republic (Pridemore, 2004). Indirect relationships between alcohol consumption and suicide rates in Russia have also been found (Nemtsov, 2003, WHO, 2005). Suicide rates peaked in 1994 (41.4 per 100,000), when alcohol consumption levels were also high and about 60% of suicide cases had alcohol in the blood. Finally, in the 1996 National Survey of Russian Marriages, domestic violence was found to be significantly associated with alcohol, when the husband drank more than three alcoholic drinks on one occasion (Cubbins and Vannoy, 2005).

Apart from causes directly attributable to alcohol, heavy consumption of alcohol increases the risk of injuries, cancer, high blood pressure, stroke, ischaemic heart diseases, sudden cardiac events, and suicide (Nemtsov, 2003, Chenet, 1998, Leon & Shkolnikov, 1998, Zaridze et al., 2009, Nilssen, 2005, Pridemore, 2004, Miller, 2005, Danaei, 2005, Landberg, 2008, Ramstedt, 2009). The deaths rates started to increase shortly after 1987, with a sharp increase between 1991 and 1994 after the collapse of Soviet Union (Nemtsov, 2000, 2002, Zaridze et al., 2009). Minor improvements in death rates between 1995 and 1997 were lost again in 1999 following the 1998 financial crisis. For example, the premature adult mortality in Russia for men was 29.0 per 10,000 in 2002, which was 10 times higher than in Sweden (Rehm et al., 2007). Again, the life expectancy slightly improved after 2004, but there is some evidence that it is going to decline (Leon et al., 2009, Zaridze et al., 2009b). Cardiovascular diseases, neoplasms, accidents and injuries were the major causes of death in Russia (Leon et al., 2009, Notzon et al, 1998). Though the percentage of neoplasms dropped from 2000 to 2001 to 2.5%, the number of deaths from cardiovascular diseases and external causes such as accidents and injuries grew respectively by 6%, 5% and 10.4%. It is likely that one of the major factors which influenced the rates of injuries and violence is alcohol abuse (Nemtsov 2005, McKee & Shkolnikov, 2001, Zaridze et al., 2009b). For example,

one study that analysed 594 male deaths aged 20-55 in Izhevsk found that among men who died from external causes, 32% were in strong or advanced intoxication (Shkolnikov et al., 2002). Another study showed that in Russia, deaths directly attributable to alcohol, such as alcohol poisoning and cirrhosis of the liver, comprised 18% of deaths among men aged 20-55 (The World Bank, 2005).

Yet, there are still many unanswered questions about the role and magnitude of the influence of alcohol on mortality in Russia. First, there is the apparent contradiction between protective effects of alcohol. The J-shape relation between alcohol intake and mortality is well documented now. Alcohol in moderate amounts is protective against cardiovascular deaths; but heavy drinking has an opposite effect and increases mortality (Puddey, 1999). The levels at which alcohol could be beneficial are different between the studies, and apparently depend on drinking cultures (Rehm, 2000, Tolstrup, 2004).

Second, the levels of drinking in Russia are not well established. Bobak & Marmot questioned the impact of alcohol on cardiovascular deaths in Russia pointing that although the drinking among women is lower than among men, their mortality has undergone similar fluctuations as men in relative terms (Bobak & Marmot, 1999). They also claimed that alcohol consumption per capita is lower in Russia than in some European countries, and that the different patterns of drinking, rather than the amount, might influence sudden cardiac deaths.

A review of cohort, case-control and physiological studies on cardiovascular disease and alcohol endorsed this view, concluding that the association between heavy binge drinking and cardiovascular deaths is likely to be causal (Britton & McKee, 2000). The mechanisms suggested to play a role in these associations include: the lipid profile, which increases the risk of heart diseases produced by binge drinking; increased risk of thrombosis and heart arrhythmias among binge drinkers and chronic alcohol consumers; and a reduced threshold for ventricular fibrillation in binge drinkers (McKee & Britton, 1998, Britton & McKee, 2000).

The evidence so far is mixed. A retrospective cohort study of relatives of 1380 Russians showed that among men who drank vodka more than once a month, or drank at least half a bottle of vodka, and frequent binge drinkers, had more than twice the mortality

increase of those who binged infrequently or never (Bobak, 2003). A prospective study with 13 years mortality follow up in Russia and in the USA found a negative relationship between mortality and low or moderate alcohol intake, but with a higher-than-moderate consumption (more than 24 grams of pure alcohol) mortality increased (Deev, 1998). A case-control study in Izhevsk has shown that mortality from all causes and circulatory disease are positively associated with markers of problem drinking such as extended binge drinking episodes (Leon et al., 2010). A prospective cohort study among 6502 men in Novosibirsk did not find significant association between mortality and binge drinking. However, it did find a more than 1.5 times increase in overall deaths, and a two-fold increase in cardiovascular deaths among frequent heavy drinkers, who, however, accounted for only a small fracture (4.%) of the cohort (Malyutina, 2002).

2.2.1 Other explanations

A number of other explanations have been proposed for the Russian mortality crisis during transition, including nutrition, with low intakes of fruit and vegetables; smoking; socio-economic deprivation; psychosocial stress where alcohol could be a mediator; and a decrease in the quality of medical health care during the transition period (McKee & Shkolnikov, 2001, McKee & Rose, 2000, Leon & Shkolnikov, 1998, Nemtsov, 2005, Walberg et al., 1998, Notzon et al, 1998).

It is likely that socio-economic factors play a primary role. Growing inflation, which in 1992 was 2600%, with a decrease in per capita income by 30%, in addition to the disruption of social services and the absence of other social safety-nets, adversely affected the mental and physical health of many people, most especially the elderly and unemployed (Field, 1995, Bobak et al., 2000). In 1992, 44 million people lived below the poverty level, with an increasing gap between the poor and the rich. Moreover, pensions and wages in the industrial sector were not paid for months, putting people in survival mode.

The health care system after the collapse of the Soviet Union faced a critical situation. Facilities were consistently underfunded, and lacked essential medicines, sterile injecting equipment and, in some areas, water and electricity. The formerly centralized medical supplies to health facilities decreased sharply in the 1990s, and high inflation

resulted in increased prices for medical equipment and drugs, which made them inaccessible to many health providers. There was also a deterioration in emergency services, with an increase in response time of from eight to twelve hours, which could directly increase the number of deaths (Liu et al., 1998, Field, 1995).

A study in seven post-communist countries showed that material deprivation was a predictor of poor self-rated health, which was consistent with high mortality rates in the former Soviet Union (Bobak et al., 2000). However, it was also suggested that poverty and deprivation could influence personal choices, resulting in hazardous health behaviours, including drinking (Bobak et al., 2000, Cockerham, 1997). Moreover, the transition in itself, with reform as "shock therapy", rather than step-by-step, has been named a killer in Russia, as described by the authors who compared the impact of socio-economic transition in Russia and China on health and mortality in those countries (Liu et al., 1998). More than hundred years ago, it was noted that during abrupt changes in the social order, human beings are more inclined to self-destruction, namely suicide (Durkheim, [1897] (1979). It was suggested by several authors that Durkheim's model is a good fit for the Russian context, with implications not just for suicide but for overall mortality, and alcohol mortality specifically (Predimore et al., 2007, Reitan, 2000, Walberg, 1998).

Overall, there is an interplay of multiple factors which underlie the high and fluctuating mortality in Russia, especially in men. Most researchers agree that alcohol is one of the most important proximal factors influence people's health, possibly acting as the mediator between the changing social environment and health.

2.3 Theories of problem drinking

There are multiple theories, or models, which describe human health behaviour and addiction. A conceptual review divided them into five groups (West, 2006): 1) addiction as a choice, 2) the concepts of impulse and self-control, 3) habit and instrumental learning 4) comprehensive theories of addiction, 5) a synthetic theory of motivation (West, 2006). This section will not attempt to provide an overview of all existing models of addiction; rather it will describe the main theories related to alcohol drinking behaviour. Consequently, it will discuss mostly the third and fourth groups of models, with less focus on conceptualization of addiction, stimuli or treatment and recovery.

2.3.1 Theories of rational choice

Until about the 19th century, alcohol use was regarded as "a free choice and people's own responsibility". These views were echoed in 20th century theories of reasoned action and rational choice, which supported the belief that addiction was a choice, and people rationally decided to purchase and consume substances such as alcohol, as they did any other products. Nobody physically forces people to drink or to take drugs to excess. A person simply compares *costs and benefits* of a behaviour (drinking) and chooses accordingly. In this sense, addicts appear as consumers and alcohol as addictive "goods". Acknowledging the risks, drinkers still drink, but they can stop at any point if they consider the risk to be too high. The concept of "loss of control" (from a disease model described below) over drinking is not accepted. For example, Skog in his Choice theory pointed out: "While the decision not to drink is called control, the decision to drink is called lack of control. This asymmetry is ill-founded. Sometimes the actor's motives for abstaining are stronger than opposite motives, and he abstains. At other times the motives for drinking are stronger, and he drinks" (Skog, 2000). He further suggested that people who develop a strong appetite for alcohol are completely informed of their actions, for which they are morally responsible. In relation to treatment Skog mentioned that his theory does not return to the moral blaming of addicted people, but rather provides an opportunity for an addicted individual to take an active part in his fight through addiction and not just to be a passive victim of it.

The Rational Choice Theory of addiction was criticised for its concept of rational choice, and the assumption that people would continuously measure their actions in terms of costs and benefits. What exactly is a rational choice, and are people educated well enough to make an informed choice? In many cases drinking behaviour becomes habitual, which takes calculation about costs and benefits out of the equation. Moreover, many factors could lead to certain behaviour which an individual is unable to control, including drinking itself, which affects risk calculations. As West argued in his book, "Theory of Addiction": "If someone puts a gun to your head and threatens to pull the trigger if you do not drink a large glass of whiskey, it is true that you have a choice but the imperative to do as you are told is frankly so strong that most people would say that they were compelled to do the deed. On the other hand, if someone bursts a balloon in front of your face unexpectedly you would not be able to stop yourself blinking and

would have no choice in the matter." (West, 2006). Nevertheless, the theory provides a simple and clear description of how rewarding mechanisms work and how risk behaviour could be chosen.

2.3.2 The disease model

The first concept of alcohol addiction as a disease appeared in the 19th century alongside the temperance movement, when the emphasis moved from the individual as a responsible being to the substance. Now the substance was evil and not the individual, who instead became a victim. An important argument of the disease model was a recognition that alcoholism is a disease and alcoholics should not be blamed and punished, but should have treatment and help.

In the beginning of the 20th century the second disease model was developed. It proposed that alcoholism was only a disease *of a minority* of people who needed treatment with a focus on total abstinence. Many saw a political motivation behind this disease model, since governments by then recognised that they could earn big profits from alcohol sales. More recently, the disease model included *genetic components* which imply that there are certain genetic predispositions that result in problem drinking (e.g., a boy who has an alcoholic father is more likely to become an alcoholic than a boy whose father is not alcoholic), and *endocrinological aspects* which suggest that different people metabolise alcohol differently (e.g., Asian people metabolise alcohol differently than Europeans, women than men, younger people than older). It is argued, for example, that Russian people have a special predisposition for alcohol-related mortality as they metabolise alcohol differently than European people due to the adh2-2 gene (Nemtsov, 2001).

Within the disease model, Jellinek in the 1960s defined five types and four stages of alcohol addiction (Jellinek, 1960). The stages included: 1) no problem with alcohol; 2) the prodromal stage – characterised by guilt and increasing drunken episodes; 3) the crucial stage – characterised by loss of control; and 4) the chronic stage – mental and physical complications and increasingly lengthy binges. The five types of alcoholism were: alpha, beta, gamma, delta, and epsilon. Jellinek also distinguished heavy drinkers from 'real alcoholics' by their ability to control their drinking. Gamma alcoholics were, according to Jellinek, the only real alcoholics with progressive illness characterised by

loss of control, abnormal *craving* and *withdrawal* symptoms. Further, Edwards and Gross in 1976 defined Alcohol Dependence Syndrome, a collection of seven symptoms (Edwards & Gross, 1976). Three or more of them identified together produced a diagnosis of alcohol dependence.

However, the main features of the disease model, that people either are or are not alcoholics, that once an alcoholic always an alcoholic, and that a recovery possible is only with total abstinence from alcohol, were widely criticized. It was argued that people move out "of periods of troubled drinking behaviour, often without any outside intervention… and people who were 'alcoholics' at one time frequently did not behave like 'alcoholics' some time later" (Davies, 1992). Abstinence as the only treatment goal was also challenged as unachievable, as was the failure to incorporate the concept of relapse into the treatment models (Heather & Robertson, 2000, Ogden, 2004).

2.3.3 Social-learning theory

The social learning theory introduced in the 1970s proposed that addictive behaviour, as any other behaviour, could be learned and unlearned, and is shaped by interactions with the environment, society and individual (Ogden, 2004). People learn historically by imitating each other, since doing as others do is the best way to survive (Heather & Robertson, 1997). A person cannot be an alcoholic "forever", as assumed by the disease model; he/she could have periods of problem drinking but also periods of "controlled" drinking and periods of abstinence. Hence, the abstinence-only oriented treatment is not the only option for people with alcohol problems (Davies, 1992). A person could unlearn a problem drinking pattern and not even necessarily require a specialist's help to do it (Heather & Robertson, 1997).

The social-learning theory includes concepts of classical/Pavlovian and operant conditioning, observation learning, and cognitive processes. *Classical conditioning* defines external and internal conditioned stimuli or cues, which if triggered produce certain behaviours. For example, proximity of a pub (external stimulus), and depressive or happy mood (internal stimulus), could be associated with drinking behaviour. *Operant conditioning* includes concepts of positive and negative reinforcement, or rewards and punishments. The positive reinforcement of feeling sociable and happy could increase the probability of a drinking event. On the other hand, negative

reinforcement, such as the onset of withdrawal symptoms, could also lead to morning-after drinking. *Observation learning* and modelling of behaviour of others could be predictive of excessive drinking as well. Young men are often involved in binge drinking despite the health risks because of existing peer norms. One can be "punished" by exclusion from the social group because of abstaining from a drink. There are many examples of occupational drinking, in the military or in journalism, for instance, where norms are such that one should drink otherwise one would be excluded from the team (Heather & Robertson, 1997).

The cognitive processes include such concepts as self-regulation/self-control, self-image, and expectations. The behaviour is learned and then may become a habit when "repetition becomes so routine that they [habits] become at least partly or fully 'automatic' (West, 2006). Many problem drinkers report that they want to give up heavy drinking but they cannot. It appears that their system of *self-regulation* has become impaired and their behaviour is outside conscious control (Heather& Robertson, 1997). *Self-image and self-identity* take an important role in people's behaviour, too. How people see themselves often determines how they drink, and "heavy drinking is inextricably linked with many people's most personal and cherished views of themselves" (Heather & Robertson, 1997). Alternatively, a change of behaviour could happen when self-image changes. For example, many young people after they get married stop drinking heavily as their new social role is different and their self-image has changed.

Finally, the concept of *expectations* plays a role in how alcohol can influence behaviour and the process of changing behaviour. It has been shown that in different cultures expectations from alcohol drinking are different. In some cultures drinking is a special "time out" and it is expected that people may become aggressive and heavily intoxicated; in other societies drinking is "banalized"; it occurs every day and heavy intoxication is not expected (Room, 2001, Leigh, 1999). With regard to changes in drinking patterns, expectations are linked with a concept of *self-efficacy.* If an individual expects to change, believes that he/she can do it, and expects positive outcomes, the change has more chance of occurring than otherwise. The self-efficacy model was introduced by Albert Bandura in the late 1970s and was related to any type of behaviour (Bandura, 1977). Steven Rollnick subsequently applied this model in alcohol treatment,

relating efficacy and expectations outcome to the recovery process of alcohol addicts (Rollnick, 1982).

The social-learning theory seems to have some advantages over the disease model or models of rational choice. It includes many important variables which were not accounted for in prior models, such as the cue-response-reward pattern or the influence of culture and environment. It introduced a concept of habituation where “rational choice” is not necessarily present and it shifted focus from alcoholism as defined in the disease model to the wider area of problem drinking. However, it was pointed out that although this theory explains elements of addiction it does not provide prediction for addictive behaviour (West, 2006). So far, there is some evidence supporting each of the models, but no single model provides a complete explanation of health behaviour, including drinking. In his *Synthetic Theory of Motivation*, West (2006) integrated the above models describing in detail the processes of motivation, and introduced additional concepts related to human behaviour such as plans, evaluations and unstable mind. He defined addiction as "a chronic condition of the 'motivational system' in which a reward-seeking behaviour has become out of control" where people susceptible to addiction will have unbalanced motivational system (e.g., due to activity such as drinking) and decreasing self-control (West, 2006). He underlined the "chaotic pattern" of human behaviour which can lead to addiction, describe addictive behaviour and the process of change in behaviour.

From this brief overview of some of the existing models related to alcohol it is clear how complicated and multifaceted is the issue of problem drinking. People may drink because they choose to, because they are happy or depressed, because it is their everyday routine or their occupational culture, because everyone drinks around them, because they are genetically predisposed to it or grew up with a heavy-drinker parent, because they experience the withdrawal symptoms, because they do not believe that they can stop drinking, because they see themselves as an adventurous person with a risky lifestyle, because they do not see any certainty in their lives, or because it is simply a habit.

In present research the concepts described above will be used, focusing more on socio-cultural and environmental factors rather than on pharmacological or psychological factors. Because the aim of the proposed study is to describe and to explore *different*

patterns of drinking, the focus will be not on testing any theories of addiction or explaining why some people are addicted to alcohol or cannot control their drinking, but rather to explore social-cultural environments in which different patterns of drinking happen, including hazardous drinking patterns. This theoretical model, according to Marchand, "*conceptualizes the individual embedded in a social environment…defined by social, political, economic, and cultural contexts specific to a given society. The ways people relate to the social environment can be sources of wellbeing, but also sources of suffering that can affect drinking habits*" (Marchand, 2008).

2.4 Drinking patterns

This section describes the theoretical premises for studying drinking patterns used in this research.

Until about twenty years ago, most alcohol research concentrated on levels of alcohol consumption (drinking volume) (Rehm et al., 1996). Annual alcohol consumption per capita was the common measure used in most population-based investigations that studied alcohol intake, health and social outcomes, and that influenced alcohol policies. Virtually all individual-based studies used drinking frequencies and average intakes as the primary exposure measures. However, studies that look at patterns of alcohol consumption, rather than volume of alcohol intake, emerged in the early nineties as it was recognized that the designation of alcohol per capita consumption hid a wide range of drinking and drinking cultures which could influence individuals and society (Room, 2005, Grant & Litvak, 1997). Moreover, in some countries where illegal or home production of alcohol takes place, it is impossible to evaluate the real alcohol consumption based on alcohol sales data.

There is no one single definition of drinking patterns or one standard way to study drinking patterns. However, most researchers emphasise that drinking patterns are showing how and under which circumstances alcohol is consumed, rather than how much was consumed (Single & Leino, 1997). For example, drinking patterns may "refer to several aspects of drinking behaviour, including temporal variations in drinking, the number and characteristics of heavy drinking occasions, the settings where drinking takes place, the activities associated with drinking, the personal characteristics of the drinkers and their drinking confederates, the types of beverage consumed and the cluster

of drinking norms and behaviours often referred to as drinking cultures" (Single & Leino, 1997). Drinking patterns may include frequency of drinking, frequency of heavy drinking, amount of alcohol consumed at one time, path of drinking, whether people drink with meals or without food. For example, there are well-defined differences in drinking patterns in Europe between Nordic and Mediterranean areas. Countries of the Nordic belt, Sweden, Finland, and Norway, with relatively low per capita consumption, are often characterized as "dry", predominately male drinking cultures with episodic drinking but large amounts of alcohol consumed per occasion. This type of drinking is also associated with problems such as violence and homicide (Rossow, 2001, Norstrom, 1998, Landberg, 2008). In comparison, wine-drinking cultures of the Mediterranean area are characterized as "wet" cultures with a high per capita level of alcohol consumption, frequent drinking and fewer drunkenness-related problems (Heath, 1998).

2.4.1 Drinking patterns and their consequences

If average volume of alcohol consumption could lead to long-term negative consequences and chronic diseases in populations (e.g., liver cirrhosis, certain types of cancer), particular drinking patters can also put individuals at increased risk of health and social problems, while some patterns appear to positively affect health (WHO, 2004, Rehm et al., 1996). One example which is often cited to show the limitation of the per-capita consumption measure is the following: a person who has two drinks a day during a week, and a person who has 14 drinks on Saturday, will consume the same amount of alcohol but might experience very different positive or negative outcomes of their drinking (Heath, 1998, Rehm et al., 1996, Bondy, 1996). Consequently, for example, it was shown by a number of studies that given the same volume of alcohol consumed, one drink per occasion within seven days could have a beneficial cardiovascular effect and seven drinks consumed in one occasion can have detrimental effect and lead to coronary heart disease (WHO, 2004, Rehm et al., 1996). Furthermore, a meta-analysis done to look at the risk relationships between alcohol and alcohol-related harm showed that drinking patterns influence accidents, injury, and depression (Rehm et al, 2003). A study in 14 European countries suggested that a binge drinking pattern or an "explosive" drinking pattern leads to high levels of intoxication and increased risk of homicide and suicide (Rossow, 2001, Ramstedt, 2001).

All in all, alcohol consumption in many cultures is associated with sociability, relaxation, and joy. It contributes to the free flow of conversation, to an atmosphere of gaiety and celebration, and makes occasions special and enjoyable (Plange, 1997, Heath, 1998). At the same time, there is wide range of problems that result from drinking, including aggressive behaviour and violence, addiction, family disintegration, homelessness, drunk driving, accidents and injuries, employment problems and suicide (Bondy, 1996). These problems occur when drinking goes out of control, is excessive and has as its aim to get drunk or be intoxicated. Drinking patterns and drinking context, such as where and with whom the occasion takes place, influence drinking consequences (Rehm et al., 2003). For example, drinking large amounts of alcohol in a short time in a group where excessive drinking is encouraged could lead to increased risk for adverse consequences, compared to drinking with family over a meal at home (Plange, 1997).

2.4.2 Measuring drinking patterns

Given the multidimensional nature of drinking patterns, there are different categorical approaches and a multiplicity of classification schemes in describing them (Russell et al., 2004). Because the present study was based in Russia, and focused on hazardous drinking, below are described the categorizations of drinking patterns which were used by research conducted in Russia, including WHO schemes.

Recognizing the importance of studying drinking patterns, WHO started to collect data on alcohol drinking patterns in the early 2000s. The 2nd WHO Global Status Report on Alcohol referred to drinking patterns as "frequency, quantity and circumstances surrounding alcohol consumption", and included four major indicators in describing them:

- Rates of abstainers in the population, i.e., people who have not consumed any alcohol in the last 12 months.
- Problem drinkers, heavy drinkers or high risk drinkers, as defined in the corresponding source as people drinking regularly at a level where there is a high risk of chronic or acute consequences.
- Heavy episodic or binge drinkers, as defined in the corresponding source as people drinking occasionally at a level where there is a high risk of intoxication and acute consequences.

- Rates of alcohol dependence, either in the general population or some sub-population using some internationally-validated instruments such as AUDIT and CAGE, and diagnostic criteria such as those found in the ICD-10 or DSM-IV

In the same report, the average drinking pattern was calculated for countries based on several aspects of drinking: high usual quantity of alcohol per occasion, festive drinking, proportions of drinking occasions when drinkers get drunk, proportions of drinkers who drink daily or nearly daily, drinking with meals, and drinking in public spaces (Rehm et al., 2003). Countries were assigned a score of from 1 to 4, with 4 being the most detrimental pattern (WHO, 2004). In this classification Russia had one of the most detrimental scores.

The recent 3rd WHO Global Status Report on Alcohol equalised the importance of studying per capita alcohol consumption and drinking patterns: "Patterns of alcohol use are as important as per capita consumption in creating an accurate picture of the impact of global alcohol consumption on health. The most influential indicators related to patterns of drinking, which have an inordinate impact on the global alcohol scenario, include abstention and heavy episodic drinking" (WHO, 2011). Besides rates of abstention and heavy episodic drinking, the report included the Patterns of Drinking Score, developed in 2000, which was similar to the average drinking pattern published in 2004 report. The Patterns of Drinking Score was associated "*with the alcohol-attributable burden of disease*" and was "based on an array of drinking attributes", which are weighted differentially in order to provide the PDS on a scale from 1 to 5:

- the usual quantity of alcohol consumed per occasion;
- festive drinking;
- proportion of drinking events, when drinkers get drunk;
- proportion of drinkers, who drink daily or nearly daily;
- drinking with meals;
- drinking in public places.

According to the report, Russia had high patterns of drinking scores, or the most risky patterns of drinking, and consequently the highest proportion of alcohol-attributable mortality with "every fifth death among men … attributable to the harmful use of alcohol" (WHO, 2011, Popova et al., 2007).

In an international report of drinking patterns and their consequences, a particular hazardous drinking pattern was discussed: drinking five or more drinks on one occasion (or 80 grams of pure ethanol) for men and three or more drinks on one occasion for women (or 60 grams of pure ethanol). This report showed that this pattern is highly associated with negative consequences of alcohol consumption (National Institute on Alcohol Abuse and Alcoholism, 2004, Wechsler & Nelson, 2001, Single, 1996, Bondy, 1996). This pattern was studied extensively all over the world, including Russia (Single, 1996, Jukkala et al., 2008, Bobak, 1999, Malyutina 2004, 2002, 2001, Pomerleau et al., 2008). Across different studies this pattern has been called binge drinking, sporadic heavy drinking, or heavy episodic drinking. Moreover, given the high proportion of heavy drinkers in Russia, other measures of hazardous drinking patterns were used. They included: heavy binge drinking or frequent heavy drinking such as drinking more than 120 or 160 grams per occasion frequently, weekly or at least once a month (Pomerleau et al., 2008, Bobak, 2004, Malyutina, 2001, 2002, Carlson & Vagero, 1998); zapoj pattern (‘drink and be drunk for several days’) and consumption of surrogates or/and illegally produced drinks (Tompkins et al., 2007, Pomerleau et al., 2008); drinking alcohol during the working day (Pomerleau et al., 2008) and problem drinking patterns measured by AUDIT and CAGE scales designed to identify alcohol dependence (Bobak et al., Nilssen et al., 2005, WHO, 2004).

Based on previous research, in the present study, a combination of different measures was used to describe drinking patterns in the Russian city Novosibirsk, with special attention given to hazardous drinking patterns such as binge drinking, heavy binge drinking, problem drinking measured by the internationally validated CAGE instrument, and surrogate consumption (WHO, 2004).

2.4.3 Gender, socio-economic status, age and drinking patterns

Drinking patterns are often analysed with relation to gender, age and socio-economic status (Hill & Chow 2002, Heath, 1998, Makinen & Reitan, 2006).

2.4.3.1 Gender

Historically it is known that women drink less than men, due to an interplay of biological and social-cultural factors in different cultures and societies. Biological

factors influencing alcohol consumption include a difference in volume of body waters between the two genders and a different alcohol metabolism. Women have less body water than men, and alcohol enters the bloodstream faster. It is suggested that women have to drink less to achieve the same level of intoxication and, given the same amount of ethanol, will have higher blood-alcohol level (Frezza, 1990, Graham, 1998). It is also shown that women, due to hormonal differences, metabolise ethanol differently, which makes them more vulnerable to liver and brain damage from alcohol (Lieber, 2000). Among social-cultural factors, gender roles, such as proving masculinity for men and family care for women, are often cited. In fact, drinking becomes a symbol of gender roles (Room, 2005, Holmila & Raitasalo, 2005, Nolen-Hoeksema, 2004). Men drink more to show that they are strong, self-controlled and are not afraid of taking risks (Gefou-Madianou, 1992, Wilsnack, 2000). Drinking for men creates opportunities to build social ties, to show comradeship, hospitality and generosity (Holmila & Raitasalo, 2005, MacDonald, 1994). Women, to the contrary, are condemned when they drink and could lose their traditional roles as caretaker and moral agent (McDonald, 1994). In many societies, a drunken woman is often perceived as loose and sexually approachable, as she cannot control her own body (Heath, 1998). Women's family responsibilities, with their maternal and nursing roles, are not compatible with drinking, and make women have more to lose than to gain from it (Room, 1989).

Women not only drink less, but also they drink in less hazardous ways, with less harmful consequences, and less often (Nolen-Hoeksema, 2004, Wilsnack et al., 2000, Fillmore et. al, 1997, Russell et al., 2004). A study conducted in nine European countries showed that the ratio of alcohol consumption of more than 600gr of 100% alcohol per month among men was between five and three times more than among women (Knibbe & Bloomfield, 2001, Ahlstrom et al., 2001). In the US National Health Interview Survey, among 43,809 adults, heavy drinking rates and problem drinking rates were higher among men as well (Russell et al., 2004). A study among 3537 Dutch people revealed that men had more accumulative problems related to drinking, such as work-related problems or problems with the police than women (Bongers, 1998). In the same study, men were three times more likely to be excessive drinkers. Research in Poland during the transition period revealed that men drank four times more than women, and their mortality rate from alcohol poisoning was ten times higher (Wojtyniak et al., 2005).

2.4.3.2 Socio-economic status

It has been shown in several studies that men with lower socio-economic status drink in more hazardous way then men in higher social class. For example, mortality and morbidity associated with alcohol among English and Welsh men aged 20-64 was higher in manual than in non-manual social class and lower in professional class (Drever & Whitehead, 1997). However, alcohol consumption does not follow the same trend. Higher social class men drink more than men in lower social class and lower social class have more abstainers (Marmot & Feeney, 1999). It was suggested that the explanation of such a phenomenon might be in different patterns of drinking and different susceptibility to the effects of alcohol (mainly related to nutrition) between different classes (Marmot & Feeney, 1999). A more recent study among British men and women revealed that less educated men were 1.6 times as likely to be binge drinkers as those who had higher education although there was a reverse picture for women. More educated women were more likely to binge drink than less educated women (Jefferis et al., 2007). The study in Sweden showed the same trend with higher alcohol-related mortality and morbidity among manual labourers, but did not reveal big differences in alcohol consumption which in recent decades equalised between classes (Norstrom & Romelsjo, 1999). The WHO Global Report on Alcohol and Health stated that "in Europe as a whole, inequalities in alcohol-related mortality account for 11% of the difference in mortality among men in different socioeconomic groups and 6% of those among women" (WHO, 2011).

2.4.3.4 Age

With regard to age, it is commonly accepted that problem drinking is quite prevalent among young adults, especially before marriage and parenthood, but then it gradually declines with age (Heath, 1998, Hill & Chow, 2002, Jefferis et al., 2007). Problematic drinking, aggressive behaviour and violence are more likely to be associated with young males, and in cultures with drinking patterns which often lead to high levels of intoxication (Rossow, 2001, Norstrom, 1998). Women usually drink less than men, and the differences increase with age (Room, 1989); and young men drink more and in more risky ways than women or older men (Hill & Chow, 2002). At the same time, a few studies have shown that "older drinkers are more vulnerable to the effects of alcohol",

and drinking frequencies and alcohol use may do not change or increase with age (Russell et al., 2004, Epstein et al., 2007, Bobo et al., 2010).

2.5 Drinking patterns in Russia

Russia is typically described as a dry drinking culture, similar to the Nordic drinking culture, with less frequent drinking but high amounts of alcohol consumed per occasion (Pomerleau, 2005). However, it was recently suggested that some countries in Eastern Europe, including Russia, have a "wet/dry" culture as they "can be regarded as wet in terms of consumption levels [and] also have the characteristics of a dry country in terms of intoxication-oriented drinking patterns and spirits beverage preferences (Landberg, 2008). In contemporary Russia and throughout Russian history, as shown in section 2.1, drinking is a part of everyday life. It plays an important role in socializing and is considered normal, unless it takes the form of alcohol addiction, although there is little or no stigma attached to drunkenness, and tolerance of heavy drinking is quite high (Abbott, 2006, Cockerham, 2006, WHO, 2006). According to Russian traditions, most social events should be accompanied by some kind of alcohol, and it is difficult to imagine a celebration, a major family event or guest visits without drinking.

However, old traditions of drinking during feasts and celebrations are increasingly changing to habitual drinking, not just on calendar holidays but also on ordinary days, without food, "over the newspaper instead of at the table", which makes it a more "wet-dry" culture as described above (Nemtsov, 2001). Some national researchers on alcohol describe current drinking in Russia as "rough" and "uncultured" (Levin, 1998, Nemtsov, 2001). People drink spirits in large amounts with the aim to become intoxicated, which has become a part of a lifestyle, mainly among the male population (Nemtsov, 2001, Cockerham, 2006). Russians prefer spirits, namely vodka, which accounts for over 70% of all consumed alcohol, (Harchenko, 2005, Nemtsov, 2005). Vodka has gained an important symbolic value in forming the Russian cultural identity (Moskalewich & Simpura, 2000). It was recently cited that "Russia" and "vodka" are linked in people's minds like bread and butter (Dalziel, 2006).

In WHO reports on alcohol consumption and patterns of drinking in 2004 and 2011, the Russian cultural drinking pattern was described as "detrimental", irregular and heavy, with a high level of binge drinking and the highest hazardous drinking score (WHO

2004, 2011). The WHO policy briefing on Interpersonal Violence and Alcohol in the Russian Federation pointed out that, "Hazardous patterns of consumption such as regular binge drinking …coupled with a preference for vodka over other types of beverage, may lead to quicker and deeper levels of intoxication, increasing propensity for alcohol-related violence. Similar problems can occur with consumption of home-produced and surrogate sources of alcohol with high ethanol concentration" (WHO, 2006). Another estimates showed that about 20% of alcohol consumers in Russia had hazardous drinking patterns with early and fast development of the addiction (Kharchenko et al., 2005). Studies also have shown that Russia has one of the highest proportions of heavy drinkers, 18.6%, compared with 5.1% in the world (Popova et al., 2007, Cockerham, 2006). It has been estimated that 10% to 12% of Russian people abuse alcohol, and around 5% are alcohol-addicted (Levin, 1998). In one cross-sectional study, Russian men were four times more likely to drink over 100g of vodka per typical occasion than men in Kazakhstan, Belarus or Ukraine (Cockerham, 2006). By analysing the causes of 238,225 deaths in Moscow, Chenet et al found that the highest number of deaths, including cardiovascular causes, took place on weekends and on Mondays, which suggests the effects of heavy weekly binge drinking. That statistic was most significant among men younger than 50 years old (Chenet, 1998). To paraphrase one researcher: "heavy drinking is an inevitable feature of being Russian" (McKee, 1999).

2.5.1 Gender, socio-economic status, and age

2.5.1.1 Gender

With respect to gender in Russia, not only do women drink much less than men, but differences in alcohol consumption between genders are much greater than in other countries, as shown by many studies. In fact, the notorious cultural image of Russians as heavy drinkers relates exclusively to men. One study, conducted in the Russian capital, Moscow, has shown that women report three times fewer drinking occasions than men, and only one per cent of women drink to a high level of intoxication, compared with 19% of men (Simpura & Levin, 1997). In more recent small surveys in three Russian regions, the average annual consumption among men aged 20-59, was 13.0 litres, 16.8 litres, 16.3 litres in Hanty-Mansijsk, Smolensk and Saratov regions respectively, and among women only 3.1, 2, and 3.2 litres (Mihajlova & Ivanova, 2006). In 2001, annual

alcohol consumption by Russian men was six times higher than among women (Pomerleau et al., 2008).

The prevalence of binge or heavy drinking has also been shown to be low in Russian women. One paper which looked at drinking patterns in Novosibirsk at three different time periods found that there was no reported binge or heavy binge drinking at all among women in 1988/89. Binge drinking (at least 80g of ethanol) in 1994/95 on typical occasions was reported by 7% of women and once a month by only 5% of women, and heavy binge drinking (at least 120g of ethanol) was under 2% (Malyutina, 2001). The other study has shown that women were 13 times less likely to report episodic heavy drinking than men (Pomerleau et al., 2008).

These big differences between male and female alcohol consumption remain largely unexplained. One explanation is that women underreport alcohol intake to a greater extent than women elsewhere and than men, and that the real gender differences in alcohol intake are in fact smaller than most data suggest (Laatikainen, 2002, Mustonen, 1997). For example, underreporting by women was also shown to be high in population of women in Russian Karelia (Laatikainen, 2002). There is only one study we are aware of that showed relatively high alcohol consumption among Russian women, with heavy episodic drinking patterns. The study, which was conducted among 413 pregnant women from four Moscow suburbs, revealed that 41% of women drank three or four drinks per occasion in a month around the time of conception, 11% in the most recent month of pregnancy, and 20% drank five or more drinks around the time of conception and about 5% in the most recent month of pregnancy (Chambers et al., 2006). The fact that such levels were shown to exist among pregnant women could be an indication that among non-pregnant women alcohol consumption was even higher.

2.5.1.2 Socio-economic status

Overall, the relationships between socio-economic status and drinking patterns in Russia resemble those found elsewhere. The series of cross-sectional surveys in Novosibirsk found inverse associations between alcohol intake per typical occasion, binge drinking and education among men but no clear differences among women (Malyutina et al., 2004). In a study of 2,372 people from the southern Russian town of Taganrog, heavy drinking (weekly drinking of 160g of pure alcohol or more) was two

times more prevalent in the lowest education group than the highest group, and men in manual jobs reported heavy drinking 1.5 times more than men in non-manual jobs (Carlson & Vagero, 1998). However, in the national sample of Russian men, the frequency of alcohol intake was not associated with education or deprivation, although it was associated with unemployment. About twice as many unemployed male respondents reported drinking alcohol more than once a month than employed men, but this association was not significant among female respondents (Bobak et al., 1999). The same study showed that for female respondents, alcohol intake decreased with decreasing education level. The study in a northern part of Russia has shown that although higher alcohol intake frequencies were found in the higher education group, people with higher education drank less per occasion and were less likely to report binge drinking (Nilssen et al., 2005). In Izhevsk, unemployed men, men with lower education, and men with fewer amenities were more likely to have hazardous drinking patterns (Tomkins et al., 2007). The cross-sectional study in Russian capital found that people with lower education are more likely to report binge drinking (Jukkala et al., 2008).

2.5.1.3 Age

Similarly to patterns elsewhere in the world, in Russia reported drinking, heavy drinking, and problem drinking declines with age, with the lowest proportion of heavy drinkers found in the oldest age groups. In 1996, in a national sample of Russian men and women, a decline with age in frequency and amount of alcohol consumed was reported, which started after 55 in men, and after 35 in women (Bobak et al., 1999). In a Novosibirsk time-series (1985-95), the percentage of weekly drinkers decreased after age 35-44 in both men and women, while mean alcohol intake per typical occasion and during the last week declined among men after 54 years of age, and among women had not changed significantly in the first survey (1985/1986) but showed the same trends as among men in the last survey (1994/1995) (Malyutina et al., 2001). The study included a Russian national random sample, which found an increase with age in abstention rates, mean drinking frequency decrease with age in both sexes, with the highest intake of spirits in young men, episodic heavy drinking being the lowest among the oldest adults, and decrease of drinking occasions per week in both sexes (in men after 49 years of age) (Pomerleau et al, 2005, 2008). In the city of Arkhangelsk, the highest AUDIT scores were found in men and women in the 30-39 age group, and decreased in older age

groups, however, Gamma-glutamyltransferase (GGT) values have not shown this trend (Nilssen et al., 2005). Finally, a study in Moscow found that average amount of alcohol consumed per occasion decreased with age, binge drinking declined with age both among men and women, with the highest proportion of binge drinkers in the youngest group and the lowest proportion in the oldest (Jukkala et al, 2008).

2.4 Conclusions from the literature review and implications for the research described in the thesis

The chapter described the historical background, up to recent times, of alcohol consumption in Russia including its relation to high mortality rates, especially among men. It also provided theoretical assumptions in studying problem drinking and drinking patterns overall, and in the Russian context specifically, with an emphasis on socio-cultural background including gender, age, and socio-economic status.

The review suggests major gaps in existing literature: levels of alcohol intake in Russia are not reliably established, with large discrepancies existing between official sources and survey-based estimates; drinking patterns have not been studied extensively; surrogate drinking remains poorly characterised; and the influence on risk factors for alcohol consumption and particular drinking patterns and practices remain unclear. For several of these gaps, it is not clear what should be asked or measured in epidemiological surveys. For example, there is no uniform understanding of what "surrogate alcohol" is or what the main determinants are of the large gender difference in alcohol consumption.

For these reasons, the present study chose to explore alcohol consumption and drinking patterns in Russia using a mixed method design. The choice of mixed design methodology has been made to allow the study to draw a more comprehensive picture of drinking patterns in Russia by building on the strengths of both quantitative and qualitative research (Burke & Onwuegbuzie, 2004). The quantitative study with a randomly selected large sample of people made the findings generalizable, accounted for confounding, and provided precise numerical data on alcohol consumption and drinking patterns. And qualitative research provided an in-depth description of drinking

patterns, including surrogate drinking patterns which are difficult to detect in surveys. The qualitative study additionally investigated participants' own experiences and perceptions, and explored local contexts and meanings around drinking behaviour. A more detailed description of the methodology and its strengths and limitations is given in sections 4.1 and 6.2.3. To our knowledge, mixed methods design has not previously been used to study drinking behaviour in Russia.

3. Aims and Objectives

This chapter describes the overall aims and it lists the specific objectives of the research described in the thesis.

3.1 Aims

The general aim of the thesis was to explore alcohol drinking patterns in Russia, with a particular focus on hazardous drinking behaviour and on factors influencing drinking of middle and older age men and women.

To achieve this aim, a large cohort of 9,363 men and women in Novosibirsk was used for quantitative analyses of drinking patterns and drinking behaviours. In addition, two sets of qualitative interviews were conducted, one in a sub-sample of the cohort (n=44) and the second in a sample of clients from an alcohol treatment institution (n=40).

3.2 Objectives

The specific research objectives were as follows:

Quantitative study:

- To describe overall alcohol consumption by calculating drinking frequencies, means of annual alcohol intake, number of drinking occasion per year, weekly alcohol intake, and average dose intake per occasion separately for men and women.

- To analyse hazardous alcohol intake drinking patterns (binge, heavy drinking vs. regular drinking, problem drinking and negative social consequences) and the prevalence and distribution of these patterns among men and women.

- To investigate past drinking patterns among current abstainers and among those who reported a decrease in alcohol consumption in the past 12 months.

- To examine the associations between hazardous drinking, socioeconomic factors (education, occupation, depravation score and assets ownership), depression and self-reported health as possible predictors of hazardous drinking behaviour.

Qualitative studies:

- To investigate in-depth aspects of drinking habits, perceptions, beliefs and attitudes about alcohol drinking and Russian drinking culture, including the relatively under-studied phenomenon of surrogate alcohol.

- To explore the gender differences in drinking practices and contexts, identify situations when harmful-to-health practices take place, and the reasons behind such practices.

- To investigate an under-studied feature of Russian problem drinking: surrogate alcohol drinking, with the objective to provide insights into this behaviour, and to generate hypotheses for the future studies.

- Finally, to provide an overview of people's perceptions of alcohol policies in Russia, by analysing participants' attitudes toward alcohol policies and the perceived influence of such policies on Russian drinking culture in general and problem drinking specifically.

4. Research design and methodology

This chapter provides a description of the methodology of the thesis. It describes in detail the three sources of data used in the thesis (one quantitative survey and two sets of qualitative interviews): the collection of the data, and how populations were sampled. It gives details of the statistical analysis of the quantitative data, describes the variables used in the quantitative study, and the themes of interest explored in the qualitative interviews.

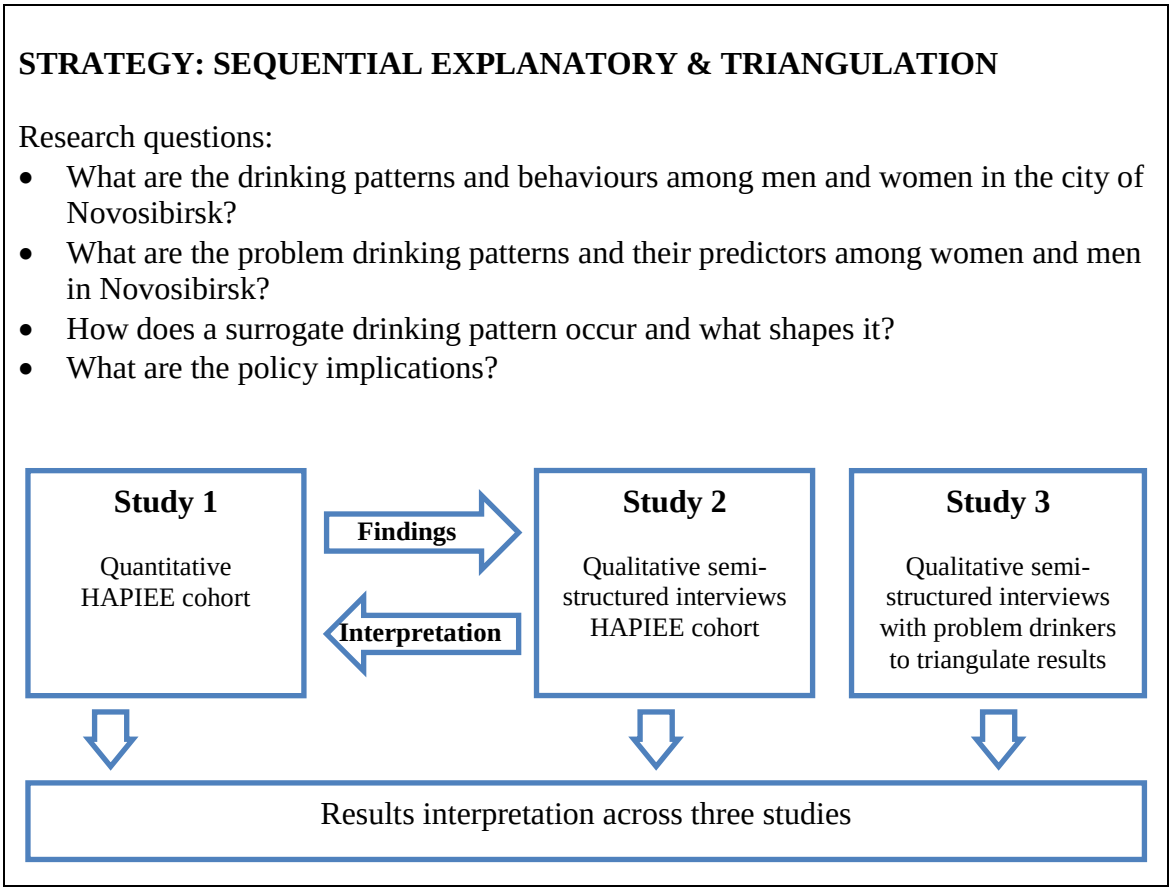
4.1 General methodology-mixed design

The overall aim of this research was to understand drinking behaviours and experiences in Russia, with a specific focus on problem drinking patterns. To investigate this phenomenon comprehensively, a combination of quantitative and qualitative methods was used. This mixed method strategy adopts a pragmatic paradigm position where the use of both quantitative and qualitative studies allows "the best understanding of the research problem", as the goal is not to debate the positivist position of quantitative research or interpretivism of qualitative accounts but rather to use both approaches as means to best address the research question (Creswell, 2003, Cherryholmes, 1992).

Since studying the population of the whole of Russia is impractical, this study focused on Novosibirsk, a typical Russian city, which made findings generalizable to the urban Russian population (described in detail below), and where a long-standing research collaboration had been established. The thesis used three data sources. First, alcohol consumption and drinking patterns were assessed in existing data from the HAPIEE (Health, Alcohol and Psychosocial factors In Eastern Europe) cohort. The study recruited a random sample of men and women aged 45-69 at baseline (n=9363). Secondly, a series of semi-structured qualitative interviews were conducted among men and women sampled from the HAPIEE cohort, in order to explore in depth a variety of drinking occasions and practices. These two studies follow a sequential explanatory design (Creswell, 2003) in which qualitative results assist in explaining and interpreting the findings of a quantitative study. Third, semi-structured qualitative interviews were conducted among clients admitted to alcohol treatment facilities with drinking problems. These interviews focused on problem drinking, including drinking non-beverage alcohol.

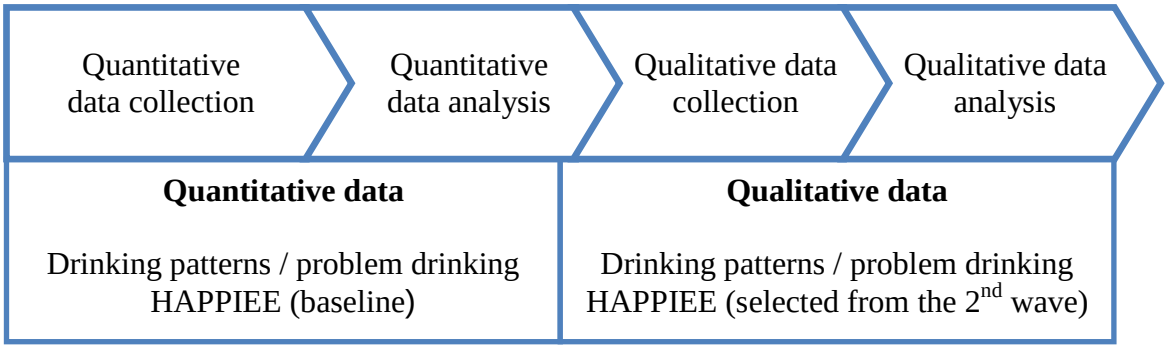
The third study was undertaken with an aim to identify drinking patterns which might be missed in a quantitative survey due to some factors such as age of the participants in the cohort, stigmatization attached to very heavy drinking and surrogates drinking, and resultant underreporting, and non-response among heavy drinkers. A triangulation strategy (Creswell, 2003) was used and the results of the two methods combined during the interpretation phase. Figure 2 illustrates the overall methodology strategy and relationships between the three studies.

Figure 2: Mixed methods methodology



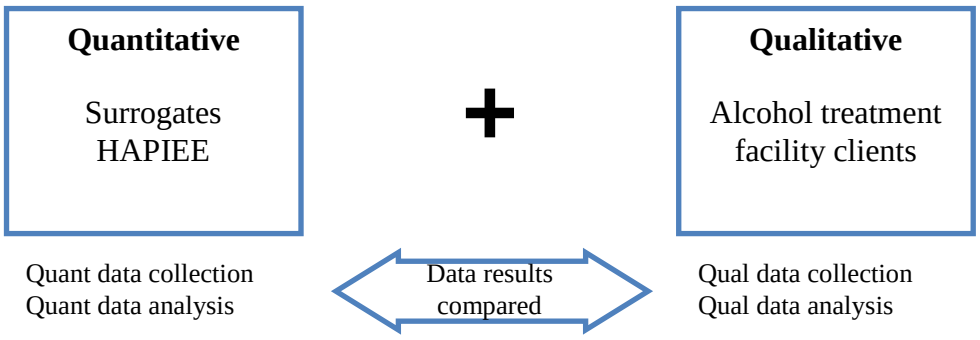
The sequence of collection and analysis of quantitative data and qualitative data of the three studies are shown in Figure 3:

Figure 3: Mixed methods sequential explanatory approach



The three types of data, the selection process and detailed description of the analysis are described below (Figure 4).

Figure 4: Mixed methods triangulation



4.2 Setting

The study was based in the city of Novosibirsk which is located in Western Siberia (Figure 5). Novosibirsk is a typical Russian city with the population comparable to the Russian urban population according to Russian Population Census (Table 4). Furthermore, the number of people registered in alcohol treatment facilities with alcohol-related disorders and women/men ratio of people registered as alcoholics in Novosibirsk is comparable with average Russian rates (National Addiction Research Centre, 2006). Studies also have shown that mortality rates in Novosibirsk are typical for the urban Russian population (WHO MONICA, 1998).

Table 4: Urban population characteristics in Russia and Novosibirsk region from All-Russia Population Census, 2002

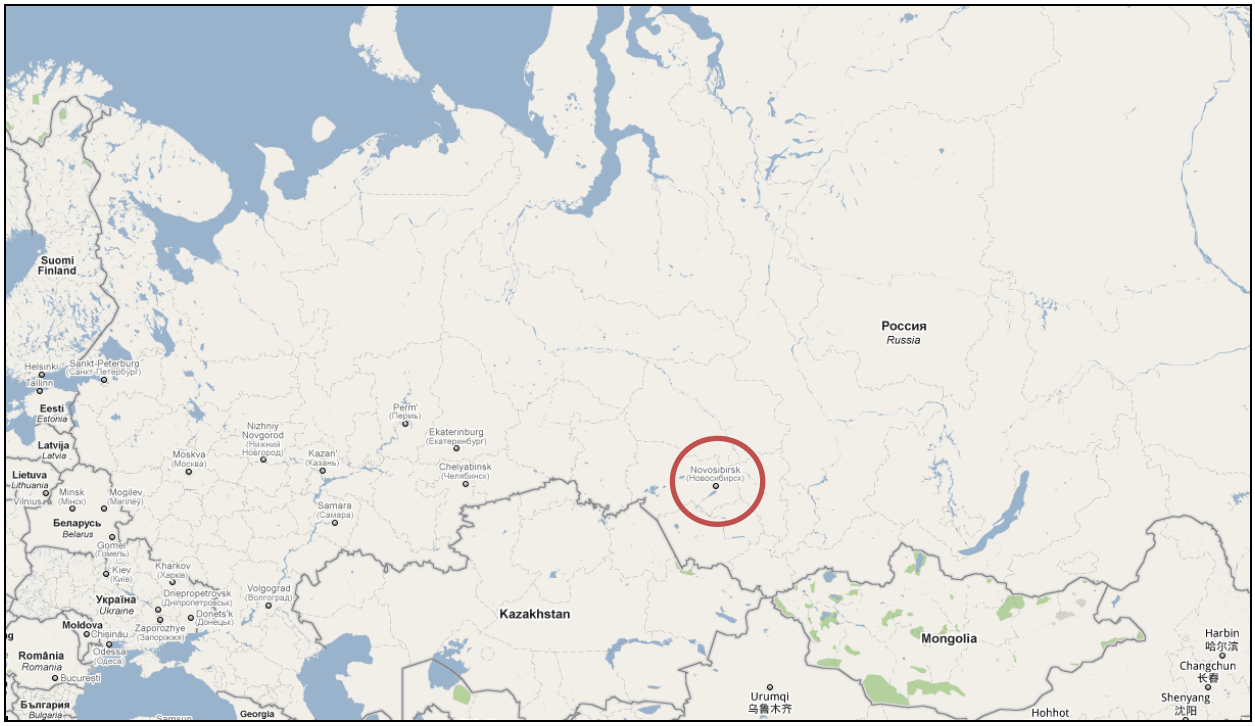
	Russian census urban population 2002, %	Novosibirsk region urban population, %
Age		
45-49	8.2	8.4
50-54	7.2	7.1
55-59	3.9	3.7
60-64	5.4	5.4
65-69	4.1	4.5
Marital status		
Married	68.8	70.7
Single	31.2	29.3
Education		
Primary and less	6.7	6.0
Secondary	26.8	23.0
Vocational	41.4	46.2
Higher	25.1	24.8
Occupation		
Professional	32.1	27.7
Technical	15.0	13.0
Military	0.5	0.9
Professional manual	31.2	30.3
Manual	11.5	10.6

The study also had lengthy and strong collaboration with the Novosibirsk Research Institute of Internal Medicine of the Siberian Branch of Russian Academy of Medical Sciences which was participating in WHO MONICA (Multinational MONItoring of trends and determinants in CArdiovascular disease), a project running a longitudinal study on cardiovascular mortality and disease. The Russian MONICA project, consisting of separate cross-sectional surveys, myocardial infarction (MI) and stroke register, and mortality registration has been conducted in Novosibirsk since the early 1980s. A wealth of information on the health (including alcohol intake) of the Novosibirsk population is therefore available.

The city has a population of about 1,500,000 people and is considered to be the third largest city in Russia, after Moscow and Saint Petersburg. It is also the largest city in Siberia and the administrative centre of the Siberian Federal District. Despite its

location, Novosibirsk is a European city with a rich cultural and academic life. It is an industrial centre, and home to the biggest banks in Siberia. In 2008, it took third place in the list of Russian cities most attractive to business. However, due to the overall economic situation in Russia about one in five people in Novosibirsk region lives below the poverty line.

Figure 5: Location of the study setting.



Source: Google Maps

4.3 Quantitative data

4.3.1 The HAPIEE cohort

The HAPIEE project includes four cohorts of random samples of men and women selected from a population register aged 45-69 in Novosibirsk (Russia), Krakow (Poland), six Czech towns, and Kaunas (Lithuania), stratified by gender and five age groups. The project explores the cardiovascular disease and mortality and investigates determinants of health in these populations. Socio-economic, psychosocial factors, nutrition and alcohol consumption, genetic and biological factors are among the main determinants studied. The full details of this cohort study have been described by Peasey et al, 2006 (Appendix 1).

The baseline survey in Russia, Poland and Czech Republic was conducted between 2002 and 2005 and in Lithuania between 2006 and 2008 (the questionnaire of the baseline survey is provided in Appendix 2). There were in total 36,077 people examined at the baseline. The second wave (re-examination) of the cohort study in Russia, Poland and Czech Republic was conducted in 2006-2009. The re-examination included, in addition to most topics covered in the baseline survey, measures of healthy ageing such as cognitive, physical and social functioning, and economic well-being of the respondents.

Quantitative data used in this thesis are taken from the Novosibirsk cohort. There were in total 4,269 women and 5,094 men interviewed at the baseline, with a response rate of 61%.

4.3.2 Data Collection

Baseline data were collected by questionnaire, short medical examination, and a venous blood sample; participants are being followed-up for mortality and non-fatal cardiovascular events.

The selected participants were invited to a clinic with a postal invitation that provided a detailed description of the study and its purposes. The invitation specified a date and hour for the visit; in case that the appointment was inconvenient, participants could ring the research site to be given a suitable appointment. During the visit, participants were given an information sheet and signed an informed consent.

The examination included measurement of blood pressure, heart rate, anthropometry (height, weight, trunk length, waist and hip circumference), lung functions and cognitive functions (memory, concentration, and verbal skills). During re-examination of respondents, work speed, chair rise and grip strength were measured in addition to cognitive functioning. Blood samples were processed, divided into aliquots and stored frozen (including DNA samples). A number of biochemical parameters, such as lipids and vitamins, were measured in a sub-sample of 1,000 participants.

The follow-up collected data on all cause and CVD mortality and non-fatal cardiac events, using 1) the death register which include both the register of medical death certificates and the register of population registration bureau (ZAGS), and 2) registers of stroke and myocardial infarction (MI). These data have a complete coverage of the study population. In addition, non-fatal events are being ascertained by postal questionnaires mailed to the respondents every 2-3 years. The follow-up data, however, are not yet complete and will not be used in the thesis.

4.3.4 Questionnaire

The structured questionnaire covered the following major areas: social status, health, physical functioning, psychosocial factors, economics, retirement, quality of life, community and social capital characteristics. More detailed description of questions and measures used in this study are described on pages 59-71. The full questionnaire is provided in Appendix 2.

The questionnaires were translated into Russian. Forward translation was done by the local HAPIEE team, unless a particular question or instrument had already been translated and used in field previously (see below). Back translation of all questions was done by a native speaker with no previous knowledge of the questions in any language. The original English and back translation were compared for inconsistencies by the UCL HAPIEE team, and discrepancies discussed by the back translator and UCL team in coordination with the local HAPIEE site team.

Many questions, such as most of the health section and the psychosocial section questions were piloted and their reliability and validity checked on the Novosibirsk population for the MONICA project (WHO MONICA project, 1998). The re-examination questions on healthy aging and economics were made comparable with the English Longitudinal Study of Aging, the Study of Healthy Aging and Retirement in Europe, and the Health and Retirement Study in the USA. This additional subset of questions and instruments was piloted in Novosibirsk between November 2005 and April 2006, their reliability checked, and questions adjusted accordingly.

Both the baseline examination and questionnaire were completed in clinic by trained female nurses in Russian. Data entry of baseline examination data was done using Epi-Info 6 software (CDC, USA) with some proportion of double-entered data for quality reassurance. Re-examination of the cohort was done face-to face using Computer Assisted Personal Interview (CAPI), Blaise 4.6 software (Statistics Netherlands).

4.4 Questions and measures used in the study

4.4.1 Demographics

Age, sex, and marital status are the basic demographic variables used in this study. All participants were asked their date of birth. Age was calculated by subtracting date of birth from the date of the examination which was recorded by the nurse. Five-year age groups (45-59, 50-54, 55-59, 60-64, 65+) were calculated. Marital status was recoded from five into three groups: single/divorced, widowed, and married/cohabiting because of low frequency in Single and Cohabiting categories (Table 5). In the further analysis we reduced marital status to two groups because there was low prevalence of Widowed group among men (4%), and among women there were no differences between the Single/Cohabiting and Widowed groups in drinking behaviours.

Table 5: Marital status

Initial	%	Recoded	%
Single	3.7	Single/divorced	14.2
Married	70.6	Married/Cohabiting	72.3
Cohabiting	1.8		
Divorced/Separated	10.4		
Widowed	13.5	Widowed	13.5

4.4.2 Socioeconomic status

Education and occupation were used in this study as primary variables to assess participants' SES. In addition, material position and ownership of household assets measures were used to explore respondents' financial wellbeing.

Education

Education was categorized in five groups: incomplete primary, primary, secondary, vocational, university. These categories were collapsed into four groups: primary and lower, secondary, vocational and technical, and higher (Table 6).

Table 6: Education

Initial	%	Recoded	%
Incomplete primary	1.2		
Primary	9.3	Primary <	10.5
Secondary	34.2	Secondary	34.2
Vocational	26.5	Vocational	26.5
University	28.9	University	28.9

Occupation

Two measures of participants' occupation were used. First, participants' occupation was measured by the question **"What was your main life-time occupation?"** as some participants were at the time of examination out of the workforce, but one can argue that health behaviours related to occupation could influence current drinking behaviour among those who were no longer working. Second, participants were asked to name their current occupation.

Occupation coding was based on International Standard Classification of Occupations: ISCO-88 (International Labour Office, 1990) with some alterations made according to frequency distributions. For example, "skilled agricultural and fishery workers" option was omitted as Novosibirsk is a big industrial city with no fishing industry. Given the sometimes incomplete description of occupation in the data (i.e., full text variables), occupational groups were collapsed in seven categories: professional, technical, clerks, services, professional manual, manual, and military.

Preliminary analysis has shown that certain professional groups had a strong gender bias. Therefore, different categorizations were established for male and female participants (Table 7, Table 8). A separate category within male occupations was given to Drivers and Construction workers, as it was found during pilot interviews with key informants and clients of the alcohol treatment facility (described below) that these occupations may have a particularly hazardous drinking culture.

Furthermore, a different categorization was developed for the current job for male participants. At the time of the first examination 42% of respondents were already retired and not employed, 4% unemployed, and the distribution of types of jobs in the

rest of the cohort among male participants was different from the main life-time occupation (Table 7). For example, among men, military occupations decreased from 6% to 1% mostly due to retirement. The majority of military retirees who continued working after retirement became either watchmen or guards (about 37%) or moved to different types of managerial positions (44%), changing the proportion of people in Services and Professional types of occupations. At the same time, Manual and Services current occupations increased more than twice because of increasing number of retirees working as guards, cleaners, and watchmen. In fact, more than half of men in current Manual and Service types of occupations were retirees.

Table 7: Distribution of main life-time occupation and current occupation among men

Main life-time occupation	%	Main life-time occupation Recoded	%	Current occupation	Current occupation Recoded	%
Professional	21.1	Professional	21.1	25.8	Professional	31.7
Technical	9.2	Technical	13.0	4.8		
Military	6.0	Military	6.0	1.1		
Clerk	0.4			0.8		
Services	3.4			8.7	Services	9.5
Driver	13.6	Drivers	13.6	8.6	Drivers	8.6
Professional manual	30.8	Professional manual	34.8	32.4	Professional manual	32.4
Construction workers	11.4	Construction workers	11.4	8.7	Construction workers	8.7
Manual	4.0			9.2	Manual	9.2

For women, the same recoding was used for main life-time occupation and current occupation (Table 8).

Table 8: Distribution of main life-time occupation and current occupation among women

Main life-time occupation	%	Main life-time occupation Recoded	%	Current occupation %	Current occupation Recoded	%
Professional	22.1	Professional	22.1	26.6	Professional	26.6
Technical	14.2	Technical	14.6	8.5	Technical	9.0
Military	0.4			0.5		
Clerk	11.5	Clerk	11.5	10.9	Clerk	10.9
Services	23.6	Services	23.6	21.0	Services	21.2
Driver	0.5			0.2		
Professional manual	12.7	Professional manual	16.9	9.7	Professional manual	11.6
Construction workers	4.2			1.8		
Manual	11.3	Manual	11.3	20.8	Manual	20.8

Household assets

The ownership of 12 households assets were selected on the basis of variables distribution as an additional measure of SES. Participants were asked whether they own the following amenities: telephone, mobile phone, TV, cable TV, freezer, video recorder, washing machine, car, cottage, dishwasher, VCR. The answer options: “Yes”,

"No, I do not want it", "No, I cannot afford it," were dichotomized to "Yes"/"No" options ("No, I do not want it" and "No, I cannot afford it" options were combined), and a twelve point score was calculated. The score was further categorized into three groups from lowest to highest number of household items possessed and used in the further analysis.

Material position

The three following questions were used to assess material position:

"*How often do you not have enough money for the food you and your family need?*"
"*How often do you not have enough money for the clothing you and your family need?*"
"*Do you have difficulties with paying bills (for housing, electricity, heating, etc.)*?"

There were five response options: (i) all the time, (ii) often, (iii) sometimes, (iv) rarely or (v) never, each of which were attributed 0 to 4 points. Then a total score from zero to twelve was calculated for the three questions. Furthermore, the score was categorized into four groups from lowest to highest deprivation and used in the further analysis

4.4.3 Self-reported health/depressive symptoms

Depressive symptoms

Depressive symptoms were assessed by the Center for Epidemiological Studies-Depression (CESD) scale (Radloff, 1977). The scale consists of 20 questions and includes a range of psychological and physical symptoms. Participants were asked how frequently in the last week they experienced each of them: less than one day, 1-2 days, 3-4 days, or 5-7 days. Each response was given a score from 0 to 3. Using the sum of the scores a total score was calculated. Respondents with a total score of 16 and more were classified as having depressive symptoms. This score was shown to be predictive of depressive disorders in previous studies (Beekman et al., 1997, Lyness et al., 1997, Roberts &Vernon, 1983).

Self-reported health

Health could be one of the major factors influencing people's drink habits. People with poor health often drink less or even totally abstain from drinking. On the other hand, heavy drinking during a long period of time could have negative health consequences.

Self-reported health over the last 12 months was categorized into five categories: very good, good, average, poor, and very poor. It was recoded according to frequencies distribution (too few people answered Very good or Very poor) into three categories: very good/good, average, poor/very poor (Table 9).

Table 9: Over the last 12 months, would you say your health has been:

Initial	%	Recoded	%
Very Good	0.2		
Good	10.1	Good	10.3
Average	67.2	Average	67.2
Poor	20.9	Poor	22.5
Very poor	1.6		

4.4.4 Questions related to alcohol consumption

Questions on alcohol included 1) weekly intake of beer, wine and spirits (asking about a usual week at the base line and the last week during re-examination); 2) the graduated frequency questionnaire (Greenfield, 2000, Appendix 1); 3) the largest amount of alcohol consumed on a single occasion in the last month; 4) frequency of intoxication; and 5) alcohol related problems in the last year.

4.4.4.1 The graduated frequency questionnaire

The graduated frequency (GF) questionnaire asked about the amount of alcohol in local units of beer, wine or spirits and the number of times it was consumed in the past 12 months (Appendix 3). The amount of alcohol ranged from about half a drink to 10 or more drinks. One drink was defined as 500ml of beer, 200ml of wine or 50ml of spirits. The number of times alcohol was consumed was categorized into nine mutually exclusive options: every day or almost every day, 3-4 times per week, 1-2 per week, 2-3 per months, about once a month, 6-11 in past year, 3-5 in past year, 1-2 in past year, never in past year. An example of the highest consumption row is shown in Figure 6.

Figure 6: Example of the highest consumption row in the Graduated Frequency questionnaire.

	Every day or almost every day	*3-4 per week*	*1-2 per week*	*2-3 per month*	*About once a month*	*6-11 in past year*	*3-5 in past year*	*1-2 in past year*	*Never in past year*
1. How often in the last year did you have 10 drinks or more during one day?									
10 drinks or more 5 l (10 x 0.5 l) of beer or 2 l (10 x 2 dl) of wine or 0.5 l (10 x 5 cl) of spirits	☐	☐	☐	☐	☐	☐	☐	☐	☐

The GF was used to assess the patterns of drinking during the last 12 months, the annual number of drinking occasions, the annual intake of alcohol, the mean dosage of ethanol for drinking occasion, and binge drinking (see below). Alcohol intake was calculated in grams of ethanol in following way: litres of beer x 0.04; litres of wine x 0.01; litres of vodka x 0.40.

4.4.4.2 The largest amount of alcohol in the last month and frequency of intoxication

The largest amount of alcohol in the last month was assessed by asking the question: "*What was the largest amount of alcohol you had **on a single occasion** during the last 4 weeks?*" Respondents then were asked to identify number of units they consumed in each of the following options: 0.5L bottles or glasses of beer AND; 2 dl glasses of wine AND; 5 cl glasses of spirits (double shots). The total consumption was calculated in grams of ethanol as described above.

The frequency of intoxications was assessed by the question: *"During the **last 12 months**, how often did you drink enough to feel drunk?"* Following answer options were suggested: every day or at least 5 times a week; about 1-4 times a week; about 1-3 times a month; 3-11 times a year; once or twice a year; and never in the past year.

4.4.4.3 Hazardous drinking variables

The hazardous drinking variables were set as binge drinking in the past 12 months, heavy binge drinking in the past 12 months, problem drinking, negative consequences of drinking, and surrogate consumption.

Binge and heavy binge drinking

Binge drinking was defined as drinking five or more drinks per session at least once a month for men (which is equal to 100 grams of pure ethanol) and three or more drinks per session at least once a month for women, an equivalent of 60 grams of pure ethanol. A similar cut-off point for men was previously used in many studies on different populations including Russia and Novosibirsk (National Institute on Alcohol Abuse and Alcoholism, 2004, Wechsler & Nelson, 2001, Malyutina, 2001, 2002, Bobak 1999, 2004). For women, many studies consider binge drinking as four or more drinks per occasion (International Centre of Alcohol Policies, NIAAA, 2004). Because our study used the GF questionnaire in establishing alcohol intake where three and four drinks are combined in one category, three or more drinks was defined as the cut-off point for women.

Heavy binge drinking was defined as having ten or more drinks in one session at least once a month for men (which is equal to 200 grams of pure ethanol). These cut-off points were used taking into account the high prevalence of binge drinking in Russia, especially among men. This definition was previously used in several studies in Russia (Malyutina, 2001, 2002, Bobak 1999, 2004)

These measures were calculated from the graduated frequency questionnaire described above and in Appendix 3.

Problem drinking and negative consequences of drinking

Problem drinking was measured by the CAGE questionnaire (Ewing, 1986), and alcohol related problems were measured by asking whether alcohol affected the life of the individual in some negative way.

Eight questions were asked to assess possible negative consequences from alcohol: 1) problems with marriage/partner or home life; 2) friendship or social life; 3) work; 4) police or other authorities; 5) physical health; 6) any injury or accident; 7) psychological or mental health; and 8) financial circumstances. There were Yes/No answer options for each of the questions. Each positive answer was assigned a point. A

scale from zero to eight points was then created and used in further analysis. In addition, dichotomised variables were created by assigning negative consequences of drinking if two or more positive answers on the scale were given.

Problem drinking was assessed using the CAGE questionnaire (Ewing, 1984). CAGE is an acronym derived from the first letters of the key words in following four questions: "Have you ever felt you should **C**ut down on your drinking?", "Have people ever **A**nnoyed you by criticising your drinking?", "Have you ever felt bad or **G**uilty about your drinking?", "Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover **(**as an "**E**ye opener")?" Each positive answer was assigned a point. Then 0-4 score was calculated using the sum of the points. As persons with two or more positive answers are usually considered problem drinkers, a dichotomised variable was created by recoding the scales and assigning problem drinking if two or more positive answers on the scales were given.

Surrogate consumption (drinking non-beverage substances)

Additional questions on drinking frequency including drinking non-beverage substances (surrogates) in the last year were added during re-examination of the cohort (Table 10). Participants were asked whether they "consumed substances which are not intended to be drunk in the last 12 months" such as cologne or antifreeze. If the answer was positive, the frequency of consumption was asked with following answering options: every day or almost every day, about 2-4 times per week, about once a week; about 1-3 times a month; less than once a month; never in the past year.

The data from the baseline and re-examination data were merged into a final dataset which included all alcohol related variables.

Table 10: Drinking measures

	Baseline data	*Re-examination data*
Graduated frequency questionnaire in the last 12 months	From half of a drink per day to 10 or more drinks per day	From half of a drink to 5 or more drinks per day
How much beer/wine/spirits	Do you usually drink per week	Did you drink in the last week
The largest amount of alcohol (beer/wine/spirits) on a single occasion during the last 4 weeks?	+	-
How often did you drink enough to feel drunk in the past year?	+	-
Surrogates People sometimes drink alcoholic substances NOT intended to be drunk. Have you drunk anything like this in the last 12 months? For example lotion, cologne, antifreeze	-	+
Surrogate drinking Patterns 1) How often did you drink alcoholic substances NOT intended to be drunk? 2) On which day of the week did you drink alcoholic substances NOT intended to be drunk?	-	+
For abstainers last 12 months only: How often did you drink when you used to drink more frequently? How much did you drink during one session when you were drinking most often? Why did you cut down on your drinking or stop drinking?	+	-
Problem drinking In last 12 months, did your drinking cause you difficulties with the following aspects of your life? (aspects: health, social and family life, finances, police)	+	-
CAGE past 12 months	+	+

4.4.4.4 Change in drinking over time

Change in drinking patterns over time was assessed by: 1) asking directly whether respondents drank more often than in the past year, and their drinking frequencies when they drank most; 2) analysing drinking patterns across different age groups at one time; 3) exploring drinking patterns at the baseline and at the time of re-examination using the

GF questionnaire, and 4) comparing problem drinking (CAGE) at the baseline and at the time of re-examination.

Drinking patterns in the past among abstainers

People who reported "Never in the past year" to each of the six options of the GF were defined as abstainers in the past 12 months. They were asked questions on the frequency and amount of drinking in the past, and reasons for quitting drinking. The frequency of drinking in the past was related to "the most frequent drinking period" in the respondent's life. The answer options were: several times a year, but not every month; once or twice a month; once a week; 2 to 4 times a week, and 5 to 6 times a week. Furthermore, the amount of alcohol during the period when respondent drank most often was asked in local units. The reasons for quitting alcohol included both health related such as CVD, liver disease, stomach ulcer, and not-health-related reasons such as problems with family, age, work.

4.5 Statistical analysis

The data were analysed in several steps.
First, the means of drinking occasions per year, drinking amounts per week by beverage type, drinking amounts per occasion, the largest amount drunk, and the amount of pure ethanol consumed in the last 12 months were calculated. The drinking frequency patterns in the last year for both genders were analysed using the graduated frequencies.

Second, for participants who reported abstinence in the past 12 months, the amounts of alcohol consumed in a usual week in the past and reasons to abstain were examined (to confirm their abstainer status). Chi-square tests were used to compare those abstaining from alcohol to non-abstainers by socio-demographic variables (age, marital status, education, material circumstances) and self-reported health variables (self-reported health, history of CVDs, stomach ulcer, gallbladder disease and depressive symptoms).

Third, the frequency distributions of outcome variables (binge, heavy binge drinking, problem drinking and negative consequences of drinking) was used to describe the study population by age, marital status, SES, self-reported health and depressive symptoms.

Fourth, the age-adjusted associations between binge and heavy drinking patterns and predictor variables were summarized by using odds ratios (OR) and corresponding 95% confidence intervals (CI) in univariate logistic regression. Test for trend was used to look at linear trends in drinking across age, educational and occupational groups.

Finally, to adjust for multiple predictors simultaneously, multivariate logistic regression was performed (Pagano & Gauvreau, 2000). More specifically, we were determining whether the observed relationships with problem drinking were independent of different measures of SES, measures of self-reported health and depressive symptoms. In all models we adjusted for age.

All analyses were performed separately for men and women as they had very different drinking patterns as well as different definitions for binge drinking. We adjusted for age in both univariate and multivariate analysis. SPSS and STATA programs were used to analyse the data.

4.6 Qualitative data

The aim of the two qualitative studies is to produce detailed descriptions of drinking patterns from the perspectives of men and women selected from the Novosibirsk population, as well as from the perspective of problem drinkers and persons drinking surrogate alcohol or drinks not intended to be drunk. The study undertook semi-structured interviews, as individual interviews are the best way "to provide an undiluted focus on the individual... and the opportunity for detailed investigation of people's personal perspectives, for in-depth understanding of the personal context within which the research phenomena is located" (Ritchie and Lewis, 2003). The advantage of qualitative face-to-face interviews over a survey approach is that they are more flexible in nature, and give plenty of opportunities for participants to describe drinking behaviours in their own words, and provide some meanings behind those particular behaviours. Interviews can also clarify and elucidate some issues which are difficult to pick up in surveys. For example, what does five portions of alcohol per day mean? Is it 250ml of vodka consumed in an hour without food, leading to rapid intoxication, or was it spread over eight hours of a social event with a lot of food, so that the consumer was not intoxicated at all. Does abstinence in the last 12 months mean that a person does not consume big portions of alcohol but might consume one or two portions "symbolically"

on major holidays which "do not count"? What do people consider as surrogate alcohol? For example, pilot interviews showed that spirit is often not counted as a non-beverage drink as it could be used to produce vodka.

4.6.1 Pilot and key informants interviews

Prior to the main qualitative study, pilot interviews with key informants and four respondents from alcohol treatment facility were undertaken. Key informants first were approached by e-mail, and then in person, and included alcohol field professionals at federal, regional, and municipal levels (Figure 7). These pilot interviews served three purposes. First, they provided background information on the current state of alcohol problem drinking in Russia in general, and in Novosibirsk specifically. Second, they helped facilitate access to patients in the treatment facility, including arranging permission for interviewing, selection of the facility, provision of space and ensuring the safety. Third, they helped to refine the initial topic guide and investigation questions. For example, to understand the types of non-beverage alcohol that exist and are consumed in Novosibirsk, we first interviewed alcohol treatment providers and researchers who work in the area of alcohol in Russia and conducted pilot interviews with consumers of surrogates. We found, in these pilot interviews, that it is better to ask concrete questions about a particular non-beverage alcohol as, for example, diluted industrial spirit is often not perceived as being a non-beverage alcohol because it is sold for drinking. Moreover, the question "Have you ever consumed surrogates?" was interpreted variously by participants. Most persons understood surrogates as being poor-quality products that could be bought in legal outlets. When participants were asked whether they consumed surrogate alcohol, most answered, "What do you mean? Of course, now everything is surrogate: wine, mineral water, vodka." In the main study, therefore, we asked about specific substances that were cited most often in interviews and research literature, such as Boyaryshnik or spirit, but we also asked about "other substances which contain alcohol but which are not intended to be drunk." Therefore, our definition for surrogate alcohol matched the definition used in the review on surrogate alcohol by Lachenmeier, Rehm, and Gmel (Lachenmeier et al., 2007), which includes both legally sold non-beverage alcohols and illegally produced alcohols. The list of key informants is provided below.

Figure 7: Key informants

- Prof. Nemtsov A, MD, PhD. Leading researcher. Moscow Research Institute of Psychiatry.
- Prof. Koshkina E. MD, PhD. The head of epidemiology department at National Research Center on Addictions, Ministry of Health and Social Development of the Russian Federation. Moscow, Russia.
- Prof. Korolenko C. MD, PhD. Leading researcher, psychiatrist. Novosibirsk State Medical Academy, Department of Psychiatry, Novosibirsk, Russia.
- Terkulov A. MD. The chief narcologist and the head of Drug and Alcohol Treatment Services in Novosibirsk region. Novosibirsk, Russia.
- Bukin V. MD. The chief narcologist and the head of Drug and Alcohol Treatment Services in Novosibirsk city. Novosibirsk, Russia.
- Kurilovich S. MD, PhD. Leading researcher. Institute of Internal Medicine, Siberian Branch of the Russian Academy of Medical Sciences, Novosibirsk, Russia.
- Tsarev S. MD, PhD. Specialist in drug and alcohol treatment, Chapaevsk, Russia.
- Karpets A. MD, PhD. Specialist in drug and alcohol treatment, Orenburg, Russia.

4.6.2 Key themes of interest

A topic guide was developed as a means of generating in-depth discussion and conversation with interviewees on key areas of interests (Figure 7). Some examples of questions are given below. The following themes were explored:

1. *Drinking patterns and habits*

Drinking habits and patterns were explored by asking participants to describe in detail particular situations when drinking occurred. Participants were prompted to describe different types of situations: drinking during major holidays such as New Year and birthdays, drinking with colleagues, friends, on vacation, during work, after "banya". To depict a holistic picture of how drinking in particular situation occurs, the questions were asked about when, where, with whom drinking took place, what the pace of drinking was, what the amount of alcohol consumed was, whether food was present, and how drinking was controlled. Participants' personal drinking patterns were explored as well as the drinking pattern of their peers and associates. Not all of the above issues were asked; many of them emerged during the conversation without any prompts.

2. *Gender differences in drinking*

Gender differences in drinking were studied by comparing reported patterns and amounts of alcohol consumed between genders, as well as by asking male and female respondents directly about their opinions of how men and women drink. For example: are there any differences, what kind of differences are there, and what is the reason for them. Prompts were given to describe drinking occasions where only men or women are present (e.g., fishing, "devichnik", hunting). Both male and female respondents were asked to describe the drinking behaviours of their significant others, relatives, and peers of the opposite sex. Traditional values, social contexts and social roles between genders were explored in the course of the interviews.

3. *Problem drinking*

Russian drinking is often described as hazardous and problem drinking. We explored participants' own perceptions of the drinking culture in Russia either through their own experiences of drinking or/and from their observations. Questions and issues which were discussed within this theme included: the Russian culture of drinking, what constitutes problem drinking, what the differences between socially acceptable and unacceptable drinking behaviours (also between genders), heavy and moderate drinking, how tolerant society is towards problem drinking, public attitudes towards heavy drinkers, "pianitsa" and "alcoholics", what patterns exist for problem drinking (e.g., drinking bouts "zapoj", drinking in the morning, at work), and what the causes of problem drinking are. Participants who identified themselves as problem or excessive drinkers were asked to describe in detail the occasions of heavy drinking episodes, what triggered them and how drinking went out of control (in the case of drinking bouts).

4. *Surrogate drinking*

Surrogate drinking is an exceptional phenomenon in Russian drinking culture. Although it is unclear how prevalent this type of behaviour is, it is often attributed to people with fully developed drinking problems. In this study we explored this phenomenon in both the general population, amongst people with problem drinking and amongst those with experience of surrogate drinking. Themes explored included most of the themes in "Patterns and habits of drinking", such as detailed descriptions of occasions when surrogate alcohol was consumed (where, with whom, why). Moreover, respondent surrogate consumption was placed in the context of their life events and their drinking career in general. Additional questions included: initiation to alcohol drinking, history

of drinking in a family, first episodes of heavy drinking, episodes of "zapoj" (if such took place), life events which triggered heavy drinking episodes or led to abstinence from alcohol, perceptions of future, feelings of certainty in present and future, understanding the risks to health from surrogate alcohol consumption, and attitudes to one's own health. The inclusion of the above additional information helped to put surrogate drinking in the context of participants' whole life and drinking history. In addition, evidence shows that "problem" drinking, which most of our respondents would have (on the premises that problem drinking is why they are in an alcohol treatment facility), could be linked to risk taking, particular life events that could "trigger" the heavy drinking episodes such as loss of a job, divorce or bereavement, feeling of uncertainty in life, and self-image and self-identity as "heavy drinking is inextricably linked with many people's most personal and cherished views of themselves"(Heather & Robertson, 1997).

5. *Influence of alcohol policies on alcohol consumption*

One of the aims of qualitative research is to study people in the context of culture and society. As pointed out by D. Heath, an alcohol anthropologist: "When one attempts to understand the interactions of alcohol and human behaviour one has to acknowledge that social and cultural factors must be taken into account together with physiological and psychological factors" (Heath, 1987). It is argued by many researchers that Gorbachev's alcohol policy considerably decreased the official alcohol consumption in Russia in the late 80s. At the same time anecdotal reports suggest that these policies led to an increase in home-made and surrogate drinking. Moreover, the de-monopolization of the alcohol industry after the Gorbachev campaign was abolished led to increased surrogate alcohol on the market and an increase in overall alcohol consumption. In addition, the major socio-economic changes occurring at that time could have led to increased alcohol consumption and surrogate consumption. Although this study does not aim specifically to look at alcohol consumption during the transition period, the participants' history of alcohol consumption and its particular links to the surrogate consumption was explored.

Figure 8: Topic guide

1. PRESENT CIRCUMSTANCES
    - Age
    - Current activity (work)
    - Education
    - Marital status
    - Household circumstances (with whom the respondent share house/apartment)
2. DRINKING PATTERNS AND HABITS
    - Self-description of personal drinking experience
    - Last drinking occasion (detailed description: where/how/what/why)
    - Drinking on State holidays
    - Drinking at work/after work
    - Drinking during life-spent (is it changed/how/why)
3. GENDER DIFFERENCES IN DRINKING
    - Perception of how men and women drink in Russia
    - Usual amounts and type of alcohol consumed by men and women
    - Reasons for gender differences (if there are some) in drinking
    - Personal observations/examples of gender differences in drinking (colleagues of opposite sex, spouse, family members, friends)
    - Attitudes towards men/women drinking (what is "appropriate" way to drink for women and men)
4. PROBLEM DRINKING
    - Perception of what constitutes problem drinking
    - Personal experiences (if any) of problem drinking
    - Attitudes towards problem drinkers
    - Problem drinking in a context of Russian drinking culture
    - Gender and problem drinking
5. SURROGATE DRINKING
    - Perception of surrogate drinking
        i. What are the surrogates
        ii. Who drinks surrogates
        iii. Why people drink surrogates
    - Personal experience in surrogate alcohol drinking (detailed description: where/how/what/why)
        i. Initiation to surrogate drinking
        ii. Places where surrogates purchased (from whom)
        iii. Reasons for drinking surrogates and not taking drinking alcohol
        iv. Perception of risk for health from surrogate drinking
        v. Attitudes towards surrogate drinking (self and others)
6. INFLUENCE OF ALCOHOL POLICIES ON ALCOHOL CONSUMPTION
    - Russian culture of drinking and what forms it
    - How did Gorbachev's anti-alcohol campaign changed the drinking
    - De-monopolization of alcohol market during the transition period and drinking
    - Alcohol policies and surrogate drinking

4.6.3 Semi-structured questions

The examples of questions listed below were used to explore the topics indicated in the Topic guide.

- *Please describe different drinking occasions you had during the last 12 months.*

How	*Typical day (+after work)* *Typical week (+weekend)* *Typical month (+salary day)*
What	*During the last year:* *Holidays (vacation)*
Where	*State/family holidays (New Year, birthdays)* *Friends' visits*
Why/Why not	*Business meetings* *Conferences/business trips* *Drinking with colleagues* *Drinking at the games (e.g., football matches)*

- *Have you ever drunk substances not intended for drinking (surrogates). What are the reasons for drinking these solutions?*
- *How do Russian women drink? How is it different from men drinking? Why do women drink in such way? Describe drinking of spouse (frequency, pattern, beverage etc.).*
- *What are the reasons for drinking underestimation among men and women?*
- *What do you think of other men / women who drink a lot / not at all*
- *In your opinion, what should be done in order to reduce negative consequences of drinking?*

4.6.4 Study participants and sampling

The qualitative studies were conducted in two different population groups in Novosibirsk. The first group comprised a specifically-selected sample of men and women from HAPIEE cohort (N=44). The second group was selected from the clients of alcohol treatment facilities (N=40).

4.6.5 Justification of the sample size

In qualitative research small sample sizes are typically used as the purpose is not to provide significant estimates of distributions or prevalence but rather to provide variety and depth of studied phenomena. However, sample sizes should be big enough to show the range and variety of perceptions. "An adequate sample size in qualitative research is one that permits – by virtue of not being too large – the deep, case-oriented analysis that is a hallmark of all qualitative inquiry, and that results in – by virtue of not being too

small – a new and richly textured understanding of experience" (Sandelowski, 1995). The sample size of 30-50 is usual for qualitative interviews which gives an opportunity to "reveal the full range (or nearly the full range) of potentially important perceptions" (DePaulo, 2000). Hence, in this study we aimed to conduct around 44 in-depth interviews among the general population and around 40 interviews with people who have experience in surrogate drinking.

4.6.6 Recruitment from general population sample

The study initially planned to include a purposive sample of 44 men and women from the HAPIEE-cohort, but convenience sampling was used as a more feasible approach. It was planned to recruit an equal proportion of people with moderate, low and heavy drinking patterns (based on HAPIEE participants baseline report of alcohol consumption) to provide a wide range of drinking behaviour. However, when the fieldwork had started, it became obvious that convenience sampling would be a more feasible approach. Potential participants were approached by the author at the clinic where the second wave of HAPIEE data collection took place after participants had finished their examination. Participants were invited to participate in tape-recorded interviews to explore drinking patterns in Russia, and those who provided the consent were recruited to the study (Information Sheets and the Consent form are provided in Appendices 6-8). The qualitative sub-study was perceived by participants as a continuation of the survey and the examination procedure. Participants were interviewed by the author in a private room at the clinic, and the author was perceived to be a member of the HAPIEE local clinic team due to wearing a white clinic coat, in common with local team of clinicians and nurses. At the end of the interview the author accompanied the participants to the study registrar where they were given information about their medical tests results and a small monetary bonus for participation in the HAPIEE study.

There were no refusals to participation. The data was collected in several instalments between January 2007 and June 2008.

Subjects with the following drinking patterns were recruited for the study: four women and 11 men with binge/heavy drinking patterns; 14 women and 11 men with low/moderate drinking patterns, and two men and two women abstainers during last 12 months. After preliminary coding, these patterns were further subdivided into more categories (Table 11). The low representation of women in the binge/heavy binge category, despite sub-sampling from the baseline data, could be explained by very low prevalence of reporting these patterns in the general cohort: only 0.3% of women reported heavy binge and 1.4% binge patterns.

Table 11: Drinking patterns among men and women

Characteristics	Women (n=20)	Men (n=24)
Drinking category		
Life abstainers	1	0
Ex-drinkers	1	2
Infrequent light	10	2
Frequent light	2	1
Infrequent moderate	-	1
Frequent moderate	2	7
Infrequent heavy	1	5
Frequent heavy	3	6

4.6.7 Recruitment of population with surrogate drinking experience

As mentioned above, clients from the alcohol treatment facility were recruited to explore hazardous and surrogate drinking patterns in greater depth. Participants were approached at their rooms in the narcology clinic and invited to participate in the study. Those who agreed were invited to a private room (a psychologist office) in the clinic, explained the purposes and details of the study, and given an information sheet and consent form to sign (Appendix 6, 7). They were interviewed by the author in a relaxed atmosphere with tea and cookies. Because the study was conducted in clinical settings the author was required to wear a white coat. However, the atmosphere remained informal; before the interview the author explained that she was a student and not a clinician. In total, seven women and 33 men aged 21-61 years were interviewed with heavy infrequent and heavy frequent patterns of drinking.

Interviews lasted between 50 and 90 minutes, and all were tape-recorded with participants' consent. All tape-recorded interviews were transcribed in Russian verbatim (word-for-word).

4.6.7.1. Setting

Potential participants were identified at one of the in-patient alcohol treatment facilities in Novosibirsk. The approval to use this particular facility for the study was received from regional and city health officials (and also approved at the Federal level by the National Research Institute of Addictions). This selected State-run alcohol treatment facility provides psychopharmacologic in-patient treatment to patients with developed alcohol and drug use problems. It is a closed facility (with bars on windows, and with no one allowed outside without permission), with 25 beds, about half of which were taken by patients with alcohol problems. On average, patients spent about two weeks in this facility. Most patients spent time in their rooms, on the beds, apart from meals, visits, and medication-taking times which made everyone very willing to participate in the study as it broke the usual routine.

4.6.7.2 Participants

All individuals in treatment at the time, with six consecutive visits, were approached by me individually in a private place (a psychologist room) as described above. There were between 4 and 10 patients in the alcohol user treatment facility present at each visit. Three patients were admitted repeatedly to the service during the study time period, but were approached only once. One patient reported not feeling well and refused to participate in the study. All participants signed a consent form. No personal information was recorded during the study. The study was approved by the UCL Ethics Committee and the Russian National Research Institute on Addictions.

4.6.7.3 Visits to surrogate alcohol selling places

Between May 2006 and September 2007, several surrogate sales places were visited in order to purchase non-beverage alcohol reported by the participants. In addition to purchasing the products, photos were taken of the sale locations; and in legal outlets such as kiosks and pharmacies questions were asked about the products, their buyers, and policies which allowed such products to be sold. The information received during these visits was used in interviews (e.g., after certain policies were adopted by the city mayor, some products had to be removed from sale, so participants were asked whether this was really done) as well as in the presentation of the qualitative data results.

4.6.7.4 Media and internet resources review on surrogate alcohol consumption

During the course of the study media and internet resources were reviewed to get additional information on issues related to alcohol surrogates consumption (e.g., types of surrogates consumed, policies related to surrogate use, surrogate alcohol poisoning) in Novosibirsk and other Russian regions. This information was used in several sections of the present thesis. The list of the websites which were systematically reviewed is listed in the Table 12.

Table 12: Electronic resources used

Demoscope Weekly	http://demoscope.ru
International center of alcohol policies	http://www.icap.org
Federal agency on Regulation of alcohol market	http://www.fsrar.ru/
Research center of federal and regional alcohol markets	http://www.alconews.ru/cifrra/
	http://www.alcoexpert.ru/
Alcohol Portal	http://www.alcohole.ru/
Informational agency REGNUM	http://www.regnum.ru/
Agency of medical information	http://www.ami-tass.ru
Rossijskaya Newspaper	http://rg.ru
Novaya Newspaper	http://novayagazeta.ru/
Komsomolskaya Pravda (newspaper)	www.kp.ru
Informational agency Grani	www.grani.ru
The Moscow times	http://www.themoscowtimes.com/index.php
Rambler Media	http://www.rambler.ru/
Russian news	www.newsru.com
Informational agency Nakanune	http://www.nakanune.ru/articles/alkogol

4.7 Qualitative data analysis

The data were analysed using the framework approach (Ritchie and Spencer, 1994, 2003). Inductive and thematic techniques were used to allow frequently-reported patterns to emerge from the raw data. The stages of such analysis are presented in

Figure 9. The transcripts were read several times and the main themes and categories were identified by the author of this thesis (e.g., gender and drinking, occupation and drinking). Then a coding frame was developed by the author and another experienced local qualitative researcher (Darja Malyutina). After discussion and agreement between us on two levels of coding, all interviews were coded. The first level codes were broad and descriptive, closely resembling the key themes of the interview guide (e.g., gender, perceptions of alcohol policies). The second-level codes emerged from the data analysis and were more specific as well as more conceptual in nature (e.g., alcohol drinking as part of male identity). During the coding procedure short descriptive memos were written near the main categories depicting and interpreting the links and relationships between segments of text. The last interpretation stage included searching for patterns, associations, concepts, and explanations of the coded data. The data were also read horizontally to allow particular identified themes to emerge across the interviews. In addition, the data were also explored and compared across sub groups such as male and female or surrogate drinkers/non-surrogate drinkers. During the last stages of the analysis, an auditor from Novosibirsk (Prof. Sofia Malyutina) was participating to ensure objectivity and to minimize selectivity of the interpretation.

Figure 9: The steps of the analyses:

- Familiarization with the data (rigorous reading of the data)
- Thematic analysis to develop a coding scheme (the themes in the data becomes the labels for codes)
- Applying codes to all the data
- Charting and rearranging the data according to this thematic content – either case by case or by theme
- Interpretation (looking at relationships between codes = mapping and interpretation)

(*Ritchie* & *Lewis, 1994, 2003*)

4.8 Quality evaluation

In place of widely-adopted external and internal validity and reliability criteria to evaluate the quality of quantitative research, alternative criteria proposed by researchers in qualitative field include: credibility, dependability, confirmability and transferability (Lincoln & Guba, 1985, Flick, 2007, Seale, 2000).

Credibility is a criterion which corresponds to validity in statistical research (Lincoln & Guba, 1985). Credibility assures trustworthiness of the research, identifying whether the findings are supported by credible evidence and whether they accurately depict the phenomena under study (Ritchie & Lewis, 2004). According to Lincoln & Guba, credibility is built up through prolonged engagement in the field, persistent observation, member checks, peer debriefing, negative case analysis and triangulation processes, giving the most important attention to member checks (Lincoln & Guba, 1985). This study included peer debriefing and triangulation processes on preparation and implementation periods of the study as well as member checks by providing a short version of the final report to several participants. Negative case analysis was part of the analysis phase as well.

Transferability refers to the extent to which findings can be generalized from a sample to other respondents or be replicated in other contexts. In quantitative studies generalization is achieved by using random sampling and probabilistic reasoning. In qualitative research this is not possible. Instead, "delineation of the physical, social, and interpersonal contexts within which data are gathered enhances the replicability of ethnographic studies" (LeCompte & Goetz, 1982). Transferability in qualitative research can be achieved through detailed description of the study process, setting, sample, and time when study was performed (Lincoln & Guba, 1985, Seale, 2000). The present study provides thick description of the above in the Methods, Results, and Limitations sections of the thesis.

Dependability corresponds to reliability criteria in quantitative research; it provides an answer to the question "would be the findings of the study be similar if it was repeated with the same respondents in the same context?" Dependability can be achieved, first of all, by auditing, a process which includes systematic revisions of data documentation, methods and procedures of the research (Lincoln & Guba, 1985, Seale, 2000). Second, dependability can be achieved by providing the reader information about the research process or "by providing the audience of research studies as much as is possible of the procedures that have led to a particular set of conclusions" (Seal, 2000, LeCompte & Goetz, 1982, Ritchie & Lewis, 2004). In the present study the supervisor of the research served as an "auditor" to confirm the adequacy of the research. During the analysis phase a peer auditor from the city where the study was undertaken was also involved.

Finally, *confirmability* refers to objectivity and neutrality of the data answering the questions, the data are confirmable, how objective the author was during the research process, and whether adequate distance between observer and observed was maintained (Lincoln & Guba, 1985). As with dependability, an auditing process and triangulation exercises (to assess logic, analytic techniques used, inquirer bias, and quality of interpretations) can ensure confirmability. Both techniques were used and described above. In addition, to avoid selectivity and anecdotalism, usual criticisms of qualitative inquiry, *constant comparative method* and *negative/deviant case analysis method* were used during the analysis stage which helped to assess categories structure fit to the data and to compare findings and interpretations throughout the data (Lincoln & Guba, 1985, Ritchie & Lewis, 2004, Flick, 2007, Glaser & Strauss, 1967).

4.9 Student's role in the study

Quantitative research

I joined the HAPIEE team during the phase of preparation for the second wave data collection. I was personally involved in back translation of questionnaires, in piloting of the new survey instruments, in making decisions about survey questions with the HAPIEE team, and in supervision of second wave data collection in Russia and Lithuania. Although I was not involved in the initial stages of the HAPIEE study and the baseline data collection, I was personally conducting the statistical analysis, including cleaning the data, categorizing and recoding the variables, cross-tabulating, and running the regression models.

Qualitative research

The qualitative part of the study, including its design, analyses, and interpretation was conducted by me, with advice from my supervisors and field experts. I also received help from Russian colleagues transcribing the interviews and coding the collected data. Furthermore, in order to conduct the study in alcohol treatment facility I obtained permission from local district, city and Russian Federal health authorities, and I requested and received ethical approval. I conducted and collected all observational data, interviews with key informants, pilot and actual interviews during multiple visits to Novosibirsk.

Finally, during the study, I drafted and published with co-authors two articles in peer reviewed journals which resulted from this research (Appendix 4-5).

4.10 Summary of the chapter

This chapter described the method strategy and design of the research. This research uses mixed method methodology with sequential explanatory and triangulation designs comprising one quantitative and two qualitative studies. The chapter also provided detailed description of data collection, analysis and the evaluation.

5. Results

The chapter presents first the analysis of the quantitative data, and then the results of the qualitative study conducted among HAPIEE participants followed by qualitative findings from the data collected in an alcohol treatment facility.

5.1 Results from quantitative data

This section, presenting the results of quantitative data, has the following structure. First, after presenting the socio-demographic characteristics of the study population, it describes current drinking patterns among HAPIEE participants including drinking frequencies, drinking volume, largest dose per occasion, and types of beverages consumed. Second, this section shows the distribution among men and women of hazardous drinking patterns, which include: binge drinking, heavy binge drinking, problem drinking, negative consequences of drinking, surrogate consumption, and frequency of intoxications. Third, it presents the variation of drinking patterns across different age groups, and shows drinking patterns in the past and how they differ from current drinking patterns. Fourth, past year abstainers from alcohol are analysed, using data on demographics, self-reported health, past drinking patterns and reasons for abstaining. Fifth, the comparison of patterns of drinking in the baseline survey and at the re-examination is presented. Sixth, hazardous drinking variables were analysed against possible predictors: marital status, education, main life-time and current occupation, employment status, material situation, self-reported health and depressive symptoms. For each of these predictors frequency distributions and the results from age-adjusted and multivariate logistic regression models were shown. Finally, odds ratios and differences in drinking indices between men and women were presented in age-adjusted and fully adjusted models.

5.1.1 Socio-demographic characteristics

In total, 4,269 men and 5,094 women were included in the study. The mean age of respondents was 58 years (range 45-69).

There were some differences in the socio-demographic characteristics of men and women (Table 13). More men than women were married, and more women than men were widowed (21% vs. 4%), reflecting the higher life expectancy of women. Although

there was no large difference in the proportion of men and women in secondary and primary education groups, more men than women were in the vocational category and there was a slightly higher proportion of men with higher education. With regard to occupation groups, as was shown on pages 61-62, some occupation types were gender specific. For example, in main life-time occupation, there was a very small percentage of military, drivers, and construction workers among women (0.4%, 0.5%, 4% respectively), and clerks and people in the service industry among men (0.4%, 3%). The proportion of people in professional and technical occupations was about the same in both genders; however, there were significantly more men than women in professional manual occupations (35% vs. 17%), and more women than men in manual occupations (11% vs. 4%). More women than men were in the most deprived category, and in the group with the lowest number of household amenities. Although the proportion of unemployed was about the same in both genders, more women were currently pensioners than men. Finally, more women reported having poor health and depressive symptoms.

Table 13: Characteristics of study population in the HAPIEE cohort

	Men (n=4269)	Women (n=5094)	p-value
Age, mean (SD)	57.8 (7.0)	57.6 (7.1)	0.071
Marital status, %			
Married / cohabiting	87.8	59.4	
Single	8.2	19.2	
Widowed	4.0	21.4	<0.001
Education, %			
Primary	11.4	9.6	
Secondary	35.0	33.6	
Vocational	21.7	30.5	<0.001
Higher	31.9	26.3	
Occupation types*			
Material measures			
Number of household amenities			
1 (lowest)	26.0	37.6	
2	34.1	33.5	
3(highest)	39.9	28.9	<0.001
Deprivation, %			
1 (lowest)	37.4	20.0	
2	15.4	14.5	
3	20.8	26.5	<0.001
4 (highest)	26.4	39.0	
Depressive symptoms, %	11.0	33.0	<0.001
Self-reported health, %			
Good	15.7	5.8	
Average	67.3	67.0	
Poor	17.0	27.2	<0.001

5.1.2 Current alcohol drinking and drinking patterns

5.1.2.1 Frequency and volume of drinking during last 12 months.

The distributions of alcohol drinking variables by gender are given in Table 14. 7876 (84.1%) respondents reported drinking during the last 12 months, while about 18% of women and 13.5% of men reported abstaining from alcohol for the last year. There was a very different pattern of frequency of drinking between the two genders. For example, among drinkers, almost 80% of men reported drinking at least once a month and 52.0% reported drinking at least once a week; these numbers were 32% and 9.5% among women, respectively. Conversely, 68% of women and 20% of men reported drinking

* Occupations types were very gender specific in this sample, and reported on pages 61-62.

less than once a month. The most common frequency of drinking reported by men was drinking 1-2 times a week, compared with 6-11 times a year and among women.

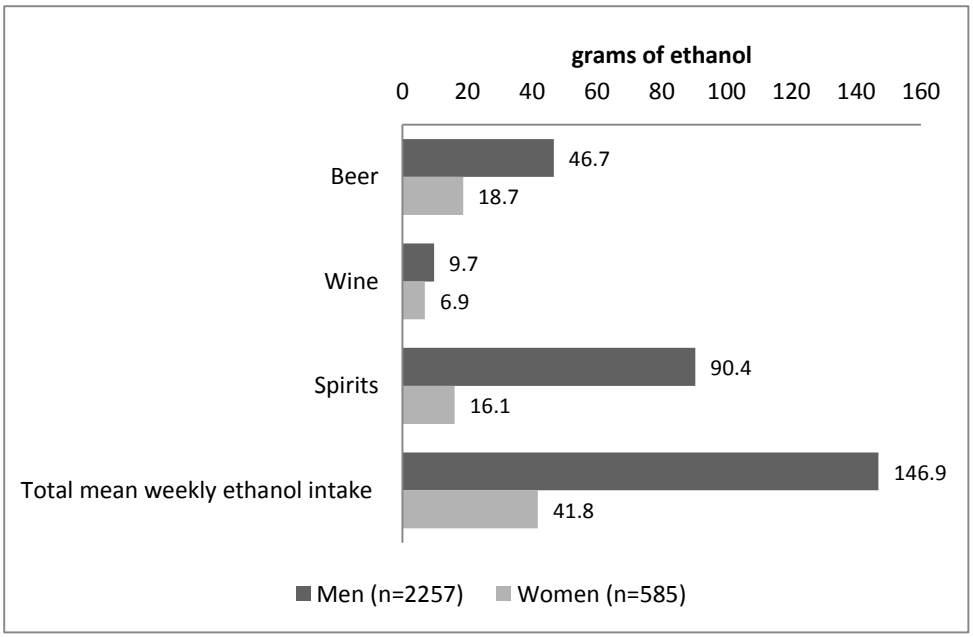
The average number of drinking occasions in the last year also differed between men and women: women reported, on average, four times fewer occasions than men. Women also reported lower total intake of pure alcohol per year (0.6 litres versus 5.8 litres) and lower intake of pure alcohol per week then men (6 grams versus 90 grams). The average dose per occasion was 63 grams of pure ethanol for men and 22 grams for women.

Table 14: Frequency of drinking and other characteristics of alcohol consumption by gender during last 12 months

	Men (n = 4269)	Women (n = 5094)
Frequency of drinking in the last 12 months	%	%
Never	13.5	17.9
1-2 times per year	2.0	7.7
3-5 times per year	4.3	18.3
6-11 times per year	11.4	29.5
Once a month	13.4	13.6
2-3 times a month	10.7	5.2
Once or twice a week	32.3	6.9
3-5 times a week	7.3	0.5
5+ times a week	5.1	0.4
Continuous variables, among drinkers	Mean (SD)	Mean (SD)
Average number of drinking occasions in the last year	92.3	21.7
Average dose per drinking occasion (grams of ethanol)	63.1 (43.8)	25.9 (15.9)
Average intake of pure alcohol per year (litres)	5.8 (8.8)	0.6 (1.8)
Average intake of alcohol per week (grams of ethanol)	89.7 (154.8)	5.9 (23.5)

Among those men who reported drinking in a typical week (60% among past year drinkers), spirits constituted the largest proportion of ethanol intake which was followed by beer, with wine constituting the smallest proportion (Figure 10). Only 14% of women reported amounts of alcohol consumed by beverage type in a typical week as the majority of them do not consume alcohol weekly. The largest proportion of ethanol consumed in a typical week among women came from beer followed by spirits and wine (Figure 10).

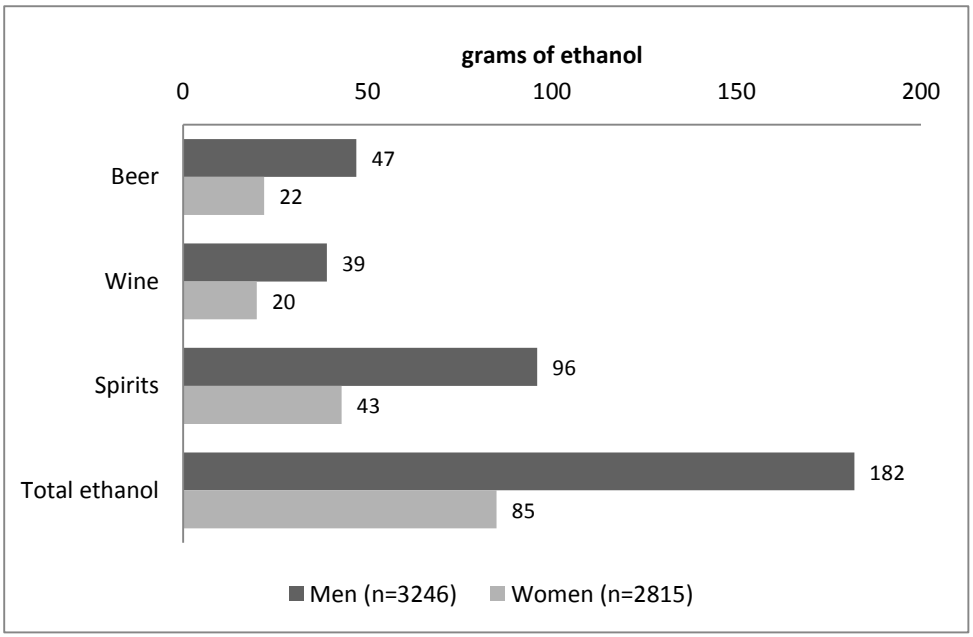
Figure 10: Participants' weekly ethanol intake by beverage type



5.1.2.2 Largest dose per occasion during the last four weeks

About 90% of men and 70% of women (not abstainers in the last 12 months) reported the largest amount drunk per occasion during the last four weeks. The mean reported largest amount among men was 182 grams and among women 85 grams (Figure 11). Among men, as it was reported in weekly drinking, spirits were the preferable drinking beverage when the largest amount of ethanol per occasion was consumed. Among women, the highest amount of ethanol came from spirits as well. All in all, in the past four weeks for both men and women, spirits accounted for the highest proportion of ethanol consumed when the largest dose per occasion was concerned.

Figure 11: The mean largest pure alcohol intake on a single occasion during last month by beverage type



5.1.3 Hazardous drinking

The distribution of hazardous drinking variables is shown in Table 15. Among those who reported drinking, 34.5% of men and only 1.4% of women reported drinking five drinks (100 g) or more on a single occasion at least once a month. Drinking three drinks (60 g) or more at least once a month was reported by 7.4% of women. Having ten drinks (200 g) or more on one occasion at least once a month was reported by 13.9% of men and 0.3% of women (Table 15).

Very few women reported influence of alcohol on selected measures (difficulties score), with only 0.9% of them reporting having two or more problems related to alcohol in the last 12 months. Among men, 9.5% reported having two or more difficulties related to alcohol (Figure 12). The most reported difficulties with alcohol drinking were related to physical health (12.8%), marriage (10.2%), and finances (7.2%). A similar gap between men and women emerged in the distribution of problem drinking measured by CAGE: only 1.5% of women had two or more positive answers compared with 21.1% of men (Figure 13).

Table 15: Distribution of hazardous drinking among men and women reported drinking in the last 12 months

	Men n = 3694	Women n = 4182
Binge drinking		
Drinking 3-4 drinks or more at least once a month (women's binge)		7.4
Drinking five drinks or more at least once a month	34.5	1.4
Drinking ten drinks or more at least once a month	13.9	0.3

Figure 12: Distribution of negative consequences of drinking among men and women reported drinking in the last 12 months

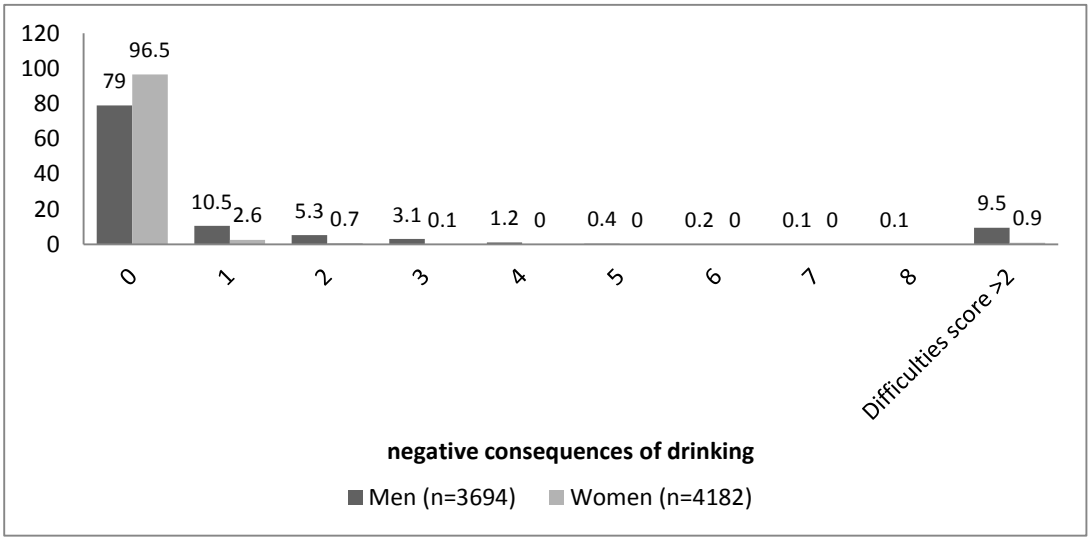
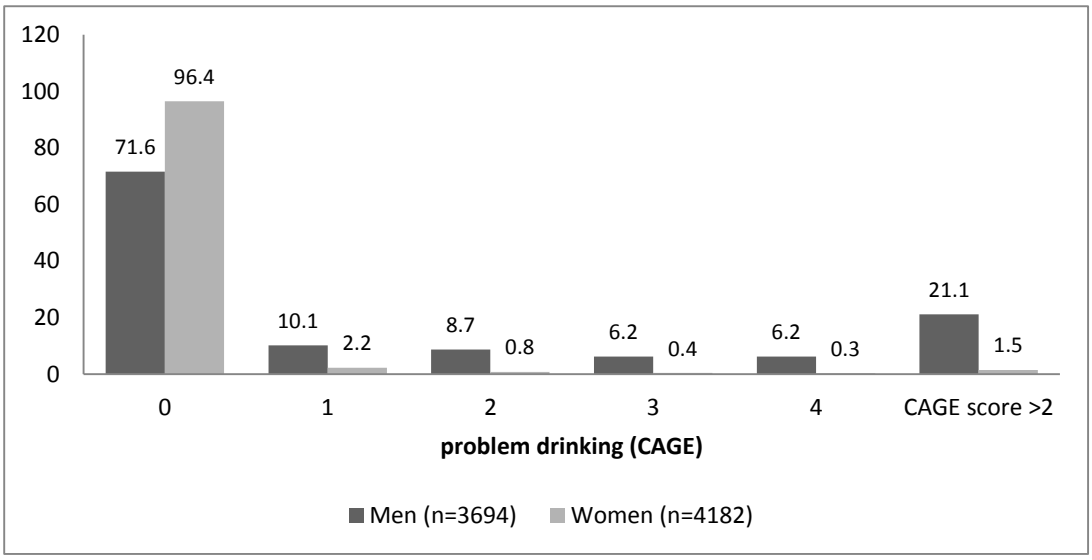


Figure 13: Distribution of problem drinking among men and women reported drinking in the last 12 months



5.1.3.1 Surrogate drinking

Only 32 men and three women reported surrogate drinking in the last 12 months. Although this number is very small for any meaningful analysis, we give below some of their socio-demographic characteristics and drinking patterns. The majority of surrogate drinkers were married, had a secondary or lower educational level, and reported good or average health. Half of them were working pensioners at the time of the interview, and 60% of them reported manual and professional manual occupations as their main life-time occupation. Nineteen persons reported having financial problems during the last 12 months.

About 70% were drinking at least once a week (n=23), reported drinking five drinks or more per occasion at least once a month (n=26), and reported problem drinking (n=25).

5.1.3.2 Frequency of intoxications during last 12 months

The majority of female respondents reported that they had never been drunk in the last 12 months and about 5% reported being intoxicated once or twice a year (Table 16). Among men, 65% reported never being drunk, about one third reported being intoxicated at least once a year, 11.6% reported 3-11 times a year, and almost 8% reported being drunk at least once a month.

Table 16: Frequency of intoxications in the last 12 months

	All N=9363	Men N = 4269	Women N = 5094
Frequency of intoxications (drink until feel drunk) in the last 12 months	%	%	%
every day or at least 5 times a week	0.4	0.6	0.2
about 1-4 times a week	0.7	1.5	0.02
about 1-3 times a month	2.9	5.6	0.5
3-11 times a year	6.1	11.6	1.4
once or twice a year	9.6	15.3	4.8
never in the past year	80.4	65.3	93.0

5.1.4 Patterns of drinking in different age groups.

Table 17 illustrates the differences in frequency and amount of drinking between five age groups among men. There were almost no differences in the percentage of never drinkers among male participants, but there was a steady increase in drinkers who reported drinking "less than once a month" with increasing age and a decrease in weekly drinkers with age.

Table 17: Drinking frequency by age among men

Men	45-49	50-54	55-59	60-64	65+
Frequency of drinking in the last 12 months	%	%	%	%	%
Never	13.7	13.7	14.2	11.8	13.8
Less than once a month	11.5	13.7	15.9	19.0	25.7
1-3 times a month	22.7	22.0	24.5	24.1	26.6
1-5 times a week	46.0	45.4	39.4	40.4	30.0
5+ times a week	6.2	5.3	5.9	4.8	3.9

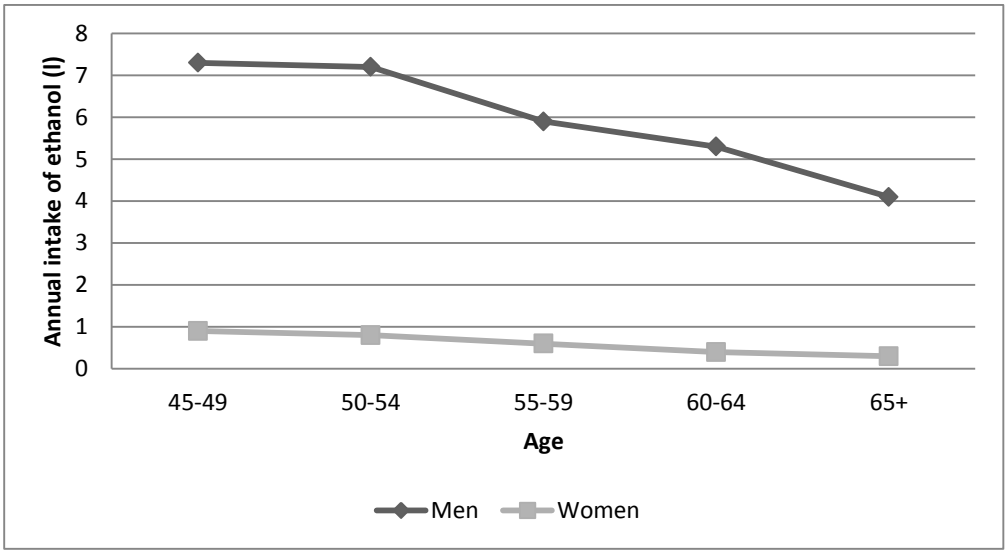
Among female respondents there was steady increase in those who reported "Never" drinking in the last 12 months with age, with a difference of about 20% between youngest and oldest age groups (Table 18). There was almost no change in the most commonly-reported drinking frequency of "drinking less than once a month", but a sharp decline with age in the proportion of those who reported drinking at least 1-3 times a month.

Table 18: Drinking frequency by age among women

Women	45-49	50-54	55-59	60-64	65+
Frequency of drinking in the last 12 months	%	%	%	%	%
Never	8.3	13.9	15.5	19.7	29.5
Less than once a month	52.5	50.9	55.2	60.6	57.6
1-3 times a month	27.2	24.6	19.7	14.7	10.1
1-4 times a week	11.3	10.2	9.3	4.8	2.6
5+ times a week	0.7	0.4	0.3	0.2	0.2

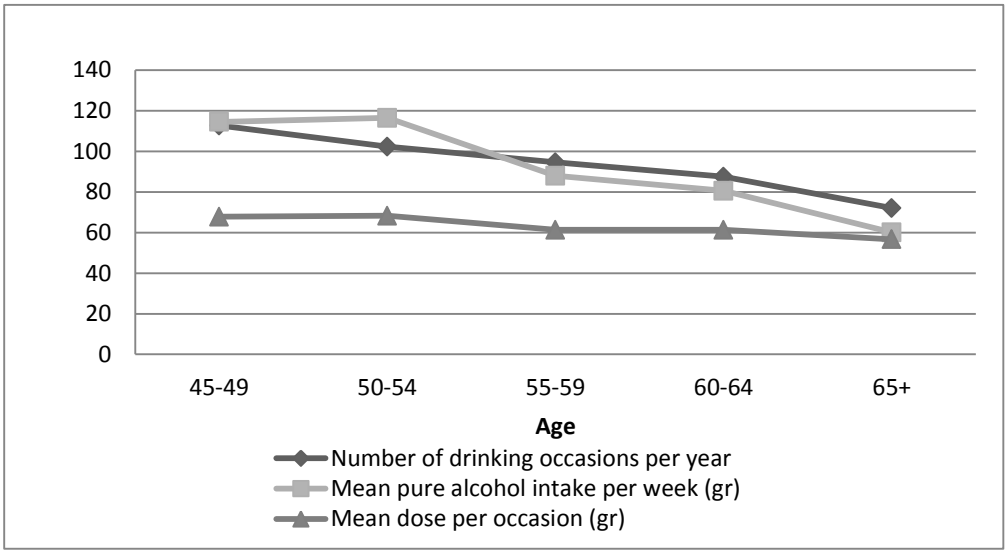
There was a decline in average pure alcohol intake with age in both genders (Figure 14). Among male respondents, there was 3.2 litres per year difference in pure alcohol intake between the youngest and oldest age groups and 0.6 litres difference among female respondents.

Figure 14: Decline of annual pure alcohol intake with age



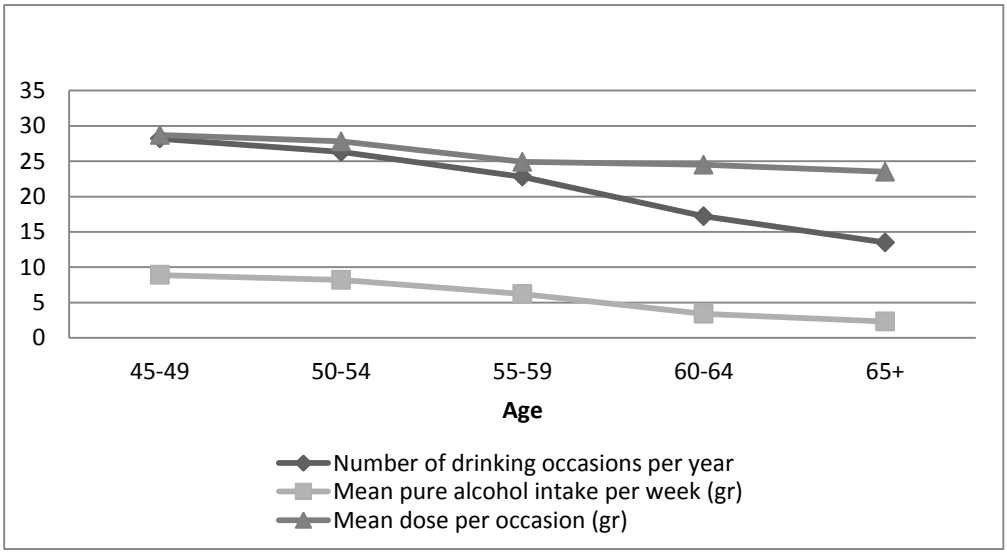
There was also a decline with age in the mean alcohol intake per typical week among men (almost twice less between the youngest two and the oldest age groups) and a steady decrease in the number of drinking occasion per year. There was almost no difference between the mean dose of pure alcohol intake per occasion between 45-49 and 50-54 age groups followed by a gradual decline from 55 years of age onwards (Figure 15).

Figure 15: Decline of drinking with age among men



Among female respondents all three measures of alcohol intake in the last 12 months decreased with age (Figure 16).

Figure 16: Decline of drinking with age among women



5.1.5 Past drinking patterns

There were 26% of women and 37% of men who reported drinking more often in the past than currently (excluding those who reported no drinking at all in the last year, whose past drinking patterns will be discussed in section 5.1.6.2). Similar to prior year

patterns, slightly more than a third of female respondents reported drinking several times a year, and only a few reported drinking once a week or more often. However, the percentage of those who reported drinking about once or twice a month was more than 50%. Among men, 11% reported drinking daily or at least five times a week, about one third drinking 2-4 times a week, and 26% reported drinking several times a month. Only 7.7% of men reported drinking several times a year. When drinking more often, women reported drinking from one to three drinks per occasion, and men from four to five drinks per occasion.

The distribution of past and current drinking frequency is displayed in Figure 17 and Figure 18. Among men, although there was a decrease in the most prevalent drinking pattern (1-4 times a week) it still remained the most prevalent frequency of drinking in the last 12 months. Among women there was a shift between most prevalent frequency: from 1-3 times a month to less than monthly. In both men and women, there was a substantial increase in least frequent drinking (less than monthly) and decrease in 1-4 times a week frequency. In women, there was an almost 50% decrease in 1-3 times a month frequency whereas in men this frequency slightly increased, the 5+ times a week frequency decreased substantially among men, and remained at the same low proportion among women.

Figure 17: Men's past and current drinking frequencies

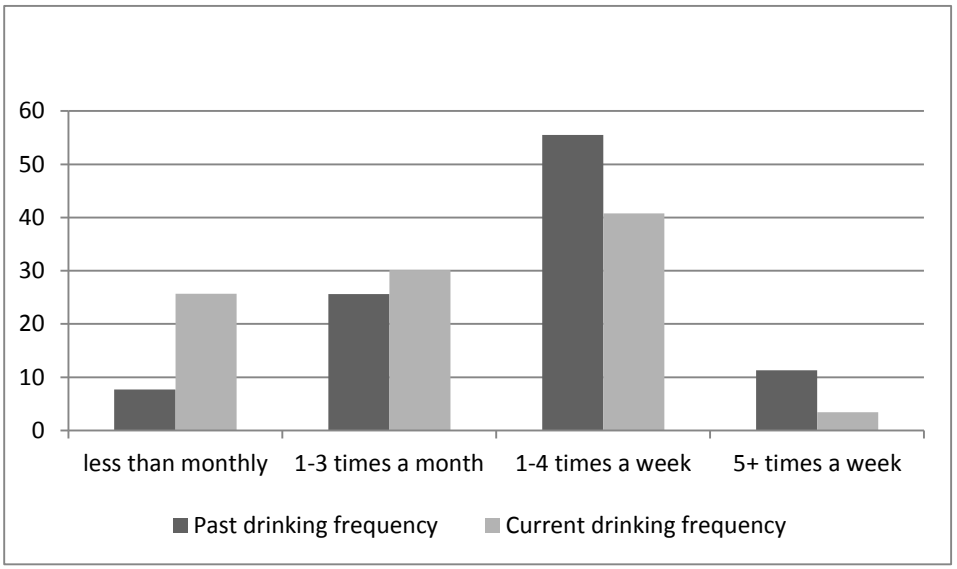
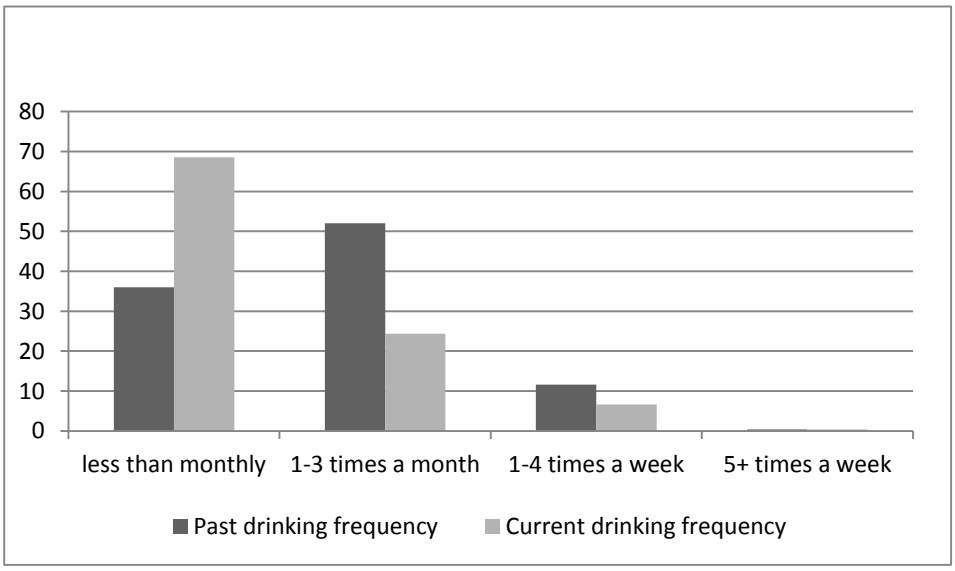


Figure 18: Women's past and current drinking frequencies

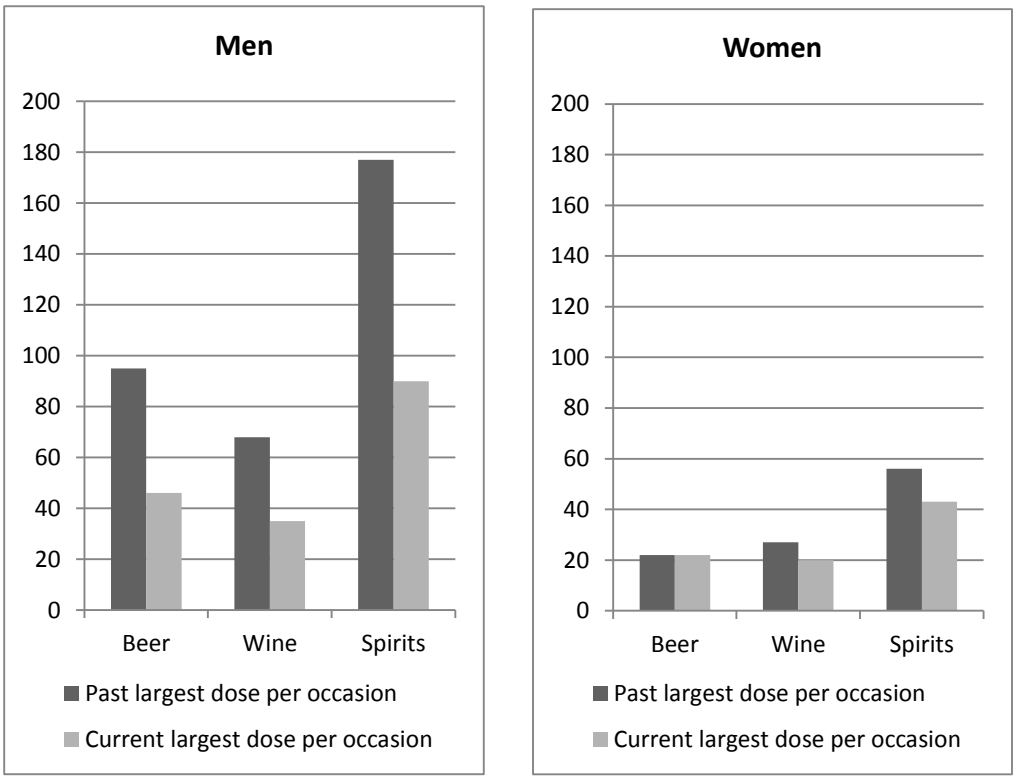


The amount of ethanol consumed during one drinking session in the past (when participants drank most often) is shown in Table 19. If we compare these amounts with reported largest dose consumed on one occasion in the last month, they are much higher among men for beer and spirits. Among women, they are higher for spirits, but only slightly higher for beer and wine (Figure 19). Similar to the current choice of alcohol beverages, spirits were the preferred source of ethanol among both men and women.

Table 19: The amount of ethanol consumed during one session when participants were drinking most often

	Dose per single occasion when drank most often in grams of ethanol	
	Men N = 1587	Women N = 1325
Beer	95 grams	22 grams
Wine	68 grams	27 grams
Spirits	177 grams	56 grams

Figure 19: Past and current largest dose per occasion in grams of ethanol among men and women



Among the reasons for drinking currently lees than in the past about 40% men and women reported health reasons, and around 70% other reasons (some respondents reported several reason for cutting down their drinking). Arterial hypertension and headaches were the most commonly-cited health reasons among women, and arterial hypertension, MI, and problems with stomach were most commonly-reported reasons among men. Age was the most common response in "Other reasons" for both men and women (Table 20).

Table 20: Reasons for drinking less in the last 12 month than in the past

	Men N = 1587 %	Women N = 1325 %
Illness related	40.0	45.8
Selected types of health reasons:		
Arterial hypertension	6.6	15.8
MI	5.0	0.8
Headaches	2.5	8.1
Stroke	3.3	1.3
Stomach	5.5	3.7
Other reasons:	68.7	69.3
Selected types of other reasons:		
Age	28.0	37.5
Family circumstances	8.5	6.5
Work	7.4	1.9

5.1.6 Abstainers from alcohol

All those who reported "Never" to all six options on the GF chart were considered to be abstainers from alcohol in the last 12 months. About 18% of women and 13.5% of men reported abstaining from alcohol in the last 12 months. Since abstainers are always a somewhat peculiar group in epidemiological studies we conducted a more detailed analysis of this group.

5.1.6.1 Demographics and self-reported health among current abstainers versus drinkers.

In the last 12 months 1486 people reported abstaining from alcohol. The distribution of selected variables between abstaining and non-abstaining groups is listed in Appendix 9. There were significantly more women among current abstainers than men. There was no significant difference between marital status among the two groups. There was a linear trend between age and abstaining status among women with the percentage of abstaining women increasing from 8.3% in the younger group to 30% in the older group. Among men the proportion of abstainers did not change significantly between different age groups.

There were more people with primary education among abstainers in both sexes and fewer people with higher education. There were also substantially fewer people with professional jobs (9.6% versus 22.9%) and more people in manual jobs (33.8 versus

41.7) among male abstainers compared to drinkers. Among female abstainers these differences were not so great (Appendix 2).

Abstainers also reported having poorer health than non-abstainers, including self-reported history of selected diseases. The difference was significant for both men and women for self-reported health, depressive symptoms, MI and angina.

5.1.6.2 Past drinking patterns among current abstainers

Among people who reported abstaining from alcohol during the last 12 months, 92% of men and 52% of women reported that they drank more in the past. The past drinking frequencies during the period **"when drank most frequently"** is shown in Table 21. Most women (94.2%) reported drinking once or twice a month or less often in the past. Men reported drinking more frequently, with 62.4% drinking at least once a week, and 11.4% drinking daily.

Table 21: Frequency of drinking in the past among current abstainers

Frequency of drinking in the past when drank more frequently	All N=1486 %	Men N = 574 %	Women N = 912 %
Did not drink differently from present	32.3	8.2	47.5
Several times a year, but not every month	40.1	12.8	68.9
Once or twice a month	24.5	23.7	25.3
Once a week	15.1	25.4	3.8
2 to 4 times a week	11.1	19.9	1.5
5 to 6 times a week	3.2	5.7	0.4
Daily	6.1	11.4	0.2

5.1.6.3 Reasons for not drinking last 12 months among current abstainers with past drinking history

Among abstainers who reported drinking in the past, the reasons for stopping drinking divided about equally between health-related reasons and other reasons, with women reporting more health-related reasons than men (NOTE: a few participants mentioned several reasons). The most-cited health reason was arterial hypertension (17.3% respondents and 7.5% male respondents). Among other reasons, age was the most-cited reason among women and family circumstances among men (Table 22).

Table 22: Reasons from abstaining from alcohol in the past 12 months

	Men N = 527 %	Women N = 479 %
Illness related	49.6	62.0
Selected types of health reasons:		
Arterial hypertension	7.5	17.3
MI	6.8	0.8
Headaches	4.0	8.8
Stroke	4.5	5.0
Other reasons:	61.7	53.2
Selected types of other reasons:		
Age	12.0	23.2
Family circumstances	16.7	3.8

5.1.7 Patterns of drinking in follow-up survey

Selected drinking measures were collected at the baseline and at the re-examination which followed three years later (Table 23). There was no significant change in the number of abstainers among men and women comparing baseline data and the re-examination, and the proportion of abstainers between each gender remained stable. However, the frequency of drinking and the amount of alcohol consumed changed. There was a slight increase (about 4%) in the proportion of people drinking less than once a month, and an increase in drinking 1-3 times a month. In both men and women the proportions of people drinking at least once a week decreased. Although the ratio of drinking frequency between genders remained large (with men drinking more frequently than women both at the baseline and at the re-examination) this difference has somewhat decreased at the re-examination. The most common drinking frequency among women, "drinking less than once a month", changed the least. However, the most common frequency at the baseline among men "drinking 1-4 times" changed: about 50% of them started drinking less often (Table 23).

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Table 23: Drinking frequencies at the baseline and at the re-examination

Re-examination	Baseline			
	< than once a month	1-3 times a month	1-4 times a week	5+ times a week
Drinking frequencies among men				
< than once a month	53.7	30.2	15.4	8.9
1-3 times a month	34.0	50.1	38.1	23.9
1-4 times a week	11.4	19.0	43.1	32.1
5+ times a week	0.9	0.7	3.5	35.1
Drinking frequencies among women				
< than once a month	79.3	60.1	47.0	37.5
1-3 times a month	19.0	33.9	38.6	37.5
1-4 times a week	1.6	6.2	13.3	25.0
5+ times a week	0.1	0.3	1.2	0

The number of drinking occasions per year, the average dose per occasion and the average annual alcohol intake decreased among men at the follow up. Among women the decrease happened only in number of drinking occasions. Annual alcohol intake remained almost the same, and there was a small increase in the average amount of ethanol consumed per occasion (Table 24).

Table 24: Alcohol consumption and hazardous drinking at the baseline and at the re-examination

	Baseline (%)		Re-examination (%, three years later)	
	Men Mean (SD)	Women Mean (SD)	Men Mean (SD)	Women Mean (SD)
Continuous variables, among drinkers				
Average number of drinking occasions in the last year	92.1 (97.8)	20.3 (38.1)	85.4 (100.6)	15.8 (29.6)
Average dose per drinking occasion (grams of ethanol)	58.5 (43.8)	23.8 (15.9)	49.4 (22.5)	30.5 (11.8)
Average intake of pure alcohol per year (litres)	5.6 (8.8)	0.6 (1.8)	5.1 (8.8)	0.6 (2.0)
Hazardous among current drinkers				
Binge drinking (5+ drinks at least once a month)	32.6%	1.2%	38.5%	3.3%
Binge drinking among women (3-4 drinks at least once a month)	N/A	6.9%	N/A	9.4%
CAGE 2+	20.1%	1.5%	24.0%	2.2%

Although there was a slight increase in binge drinking and negative consequences of drinking both among men and women at the second point of data collection, the interrater agreement in reporting hazardous drinking between two time points was very high: 84% for binge drinking among men, 88 % for binge drinking among women, and 87% for the CAGE measure for both sexes.

5.1.8 Drinking and Marital status

The distribution of marital status and hazardous drinking variables among men and women in the baseline survey is shown in Table 25. The proportion of married men involved in hazardous drinking was smaller than of single or widowed men, with more pronounced differences in binge drinking variables. Among women, binge drinking was relatively evenly distributed across different marital status positions.

Table 25: Distribution of hazardous drinking variables by marital status among men and women

	Drinking at least 5 drinks once a month %	Drinking at least 10 drinks once a month %	CAGE 2+ %	Negative consequences 2+ %
Men				
Married/cohabiting	33.7	13.0	21.9	10.0
Single	41.4	20.5	23.4	14.7
Widowed	39.7	19.2	24.7	12.3
	Drinking at least 3 drinks once a month %			
Women				
Married/cohabiting	7.4	N/A	N/A	N/A
Single	8.3	N/A	N/A	N/A
Widowed	6.8	N/A	N/A	N/A

In the age-adjusted model, compared to married men, single men were at significantly increased risk of binge, heavy binge drinking, and having negative consequences of drinking but not problem drinking. The difference, however, remained significant only for binge drinking when we adjusted for other covariates (Table 26). Widowed men were at an increased risk of binge drinking and twice more likely to be heavy binge drinkers than married men in both models, but to be a widower was not associated with problem drinking and having more than two negative consequences of drinking.

Table 26: Logistic regression of hazardous drinking and marital status among men

	Drinking at least 5 drinks once a month OR (95 CI)	P-value	Drinking at least 10 drinks once a month OR (95 CI)	P-value	CAGE 2+ OR (95 CI)	P-value	Negative consequences 2+ OR (95 CI)	P-value
Marital status*								
Married/ cohabiting	1		1		1		1	
Single	1.30 (1.02-1.67)	0.036	1.59 (1.17-2.17)	0.003	1.02 (0.76-1.35)	0.914	1.47 (1.04-2.08)	0.028
Widowed	1.63 (1.15-2.30)	0.006	2.20 (1.42-3.40)	<0.001	1.46 (0.99-2.16)	0.059	1.54 (0.92-2.57)	0.102
Marital status**								
Married/ cohabiting	1		1		1		1	
Single	1.10 (0.80-1.51)	0.576	1.16 (0.76-1.75)	0.492	0.73 (0.50-1.06)	0.094	0.79 (0.49-1.28)	0.339
Widowed	1.59 (1.04-1.90)	0.032	2.16 (1.28-3.62)	0.004	1.15 (0.72-1.83)	0.567	1.31 (0.72-2.37)	0.377

*Age-adjusted

**Adjusted for age, education, occupation, deprivation, household amenities score, current employment status, self-reported health and depression

Among women, widowers were at an increased risk of binge drinking but the significance has slightly reduced after we controlled for other covariates (Table 27).

Table 27: Logistic regression of hazardous drinking and marital status among women

	Drinking at least 3 drinks once a month OR (95 CI)	P-value
Marital status*		
Married/cohabiting	1	
Single	1.14 (0.85-1.52)	0.398
Widowed	1.47 (1.06-2.03)	0.021
Marital status**		
Married/cohabiting	1	
Single	1.20 (0.85-1.67)	0.291
Widowed	1.42 (0.99-2.04)	0.059

*Age-adjusted

**Adjusted for age, education, occupation, deprivation, household amenities score, current employment status, self-reported health and depression

5.1.9 Drinking and Education

The frequencies of hazardous drinking in different educational groups are listed in Table 28. The lowest rates of binge, heavy and problem drinking were reported among male respondents with higher education. The most hazardous drinking was among men with secondary education. The lowest binge drinking was reported among female respondents with primary education. Similarly to men, the highest proportion of binge drinkers among women was among those with secondary education.

Table 28: Distribution of hazardous drinking variables and education among men and women

	Drinking at least 5 drinks once a month %	Drinking at least 10 drinks once a month %	CAGE 2+ %	Negative consequences 2+ %
Men				
Higher	26.8	8.2	17.9	7.3
Vocational	34.5	14.9	22.4	11.4
Secondary	42.0	18.3	26.6	13.0
Primary	34.9	15.1	20.1	10.0
	Drinking at least 3 drinks once a month %			
Women				
Higher	6.9	N/A	N/A	N/A
Vocational	7.9	N/A	N/A	N/A
Secondary	8.7	N/A	N/A	N/A
Primary	2.3	N/A	N/A	N/A

In the age-adjusted model, men with a lower than "high" educational level were at an increased risk of binge, heavy binge, problem drinking, and of having more than two consequences of drinking. Male respondents with secondary and primary educational levels were almost twice more likely to report binge drinking and more than two times more likely to report drinking ten drinks at least once a month when compared to respondents with higher education (Table 29). The highest odds of problem drinking and reporting two or more negative consequences related to alcohol were among men with secondary education. After adjustment, the direction of relationships remained similar but the odds ratios decreased, and only the association between binge drinking and secondary educational level remained statistically significant. Occupation was a major contributor to these changes.

Table 29: Logistic regression between types of education and problem among men

	Drinking at least 5 drinks once a month OR (95 CI)	P-value	Drinking at least 10 drinks once a month OR (95 CI)	P-value	CAGE 2+ OR (95 CI)	P-value	Negative consequences 2+ OR (95 CI)	P-value
Education*								
Higher	1		1		1		1	
Vocational	1.43 (1.18-1.74)	<0.001	1.94 (1.46-2.58)	<0.001	1.32 (1.06-1.64)	0.015	1.62 (1.19-2.20)	0.002
Secondary	1.93 (1.63-2.29)	<0.001	2.40 (1.87-3.10)	<0.001	1.61 (1.33-1.96)	<0.001	1.83 (1.40-2.40)	<0.001
Primary	1.80 (1.41-2.31)	<0.001	2.64 (1.85-3.75)	<0.001	1.39 (1.04-1.86)	0.027	1.66 (1.12-2.48)	0.012
P-value for linear trend		<0.001		<0.001		<0.001		<0.001

	Drinking at least 5 drinks once a month OR (95 CI)	P-value	Drinking at least 10 drinks once a month OR (95 CI)	P-value	CAGE 2+ OR (95 CI)	P-value	Negative consequences 2+ OR (95 CI)	P-value
Education**								
Higher	1		1		1		1	
Vocational	1.14 (0.84-1.55)	0.384	1.42 (1.46-2.58)	0.114	0.98 (0.70-1.39)	0.932	1.47 (0.87-2.49)	0.151
Secondary	1.41 (1.04-1.90)	0.026	1.48 (1.87-3.10)	0.070	1.19 (0.85-1.67)	0.293	1.45 (0.86-2.44)	0.164
Primary	1.22 (0.77-1.96)	0.391	1.77 (1.85-3.75)	0.077	0.97 (0.57-1.66)	0.927	1.50 (0.73-3.09)	0.269
P-value for linear trend		0.042		0.096		0.321		0.276

*Age-adjusted

**Adjusted for age, marital status, occupation, deprivation, household amenities score, current employment status, self-reported health and depression

Among women, female respondents with secondary education were 1.4 times as likely to drink three-four drinks at least once a month as women with higher education (Table 30). Women with primary education were less likely to report drinking three drinks at least once a month than women in the higher education category but this association was not significant. In the model adjusted for other covariates, there were no significant associations between education level and binge drinking. Similar to men, the biggest changes in ORs happened after an adjustment for occupation.

Table 30: Logistic regression between binge drinking and education among women

	Drinking at least 3 drinks once a month	
Age-adjusted	OR (95 CI)	P-value
Education*		
Higher	1	
Vocational	1.17 (0.86-1.58)	0.328
Secondary	1.44 (1.07-1.94)	0.021
Primary	0.59 (0.28-1.26)	0.174
P-value for linear trend		0.204
Education**		
Higher	1	
Vocational	0.96 (0.62-1.49)	0.854
Secondary	0.93 (0.59-1.48)	0.771
Primary	0.55 (0.21-1.45)	0.231
P-value for linear trend		0.466

*Age-adjusted
**Adjusted for age, marital status, occupation, deprivation, household amenities score, current employment status, self-reported health and depression

5.1.10 Hazardous drinking and occupation

Table 31 shows the distribution of hazardous drinking variables by categories of main life-time and current occupation. For the main life-time occupation among men, the highest percentage of drinking at least 5 drinks once a month was found among drivers and the lowest proportion was seen among professional occupations. Heavy binge drinking was most prevalent among construction workers, and followed by drivers and manual workers. Similar patterns were seen for consequences of drinking. Problem drinking was most common among the military, followed by manual workers and drivers. Within current types of occupation, drivers were also at the high risk for binge, heavy binge, and problem drinking, and manual workers had the highest proportion of

people reporting more than two negative consequence of drinking. Professional types of occupation had the lowest proportion of all hazardous drinking variables.

Similarly to men, among women the lowest proportion of binge drinkers was among professional occupations both for the main life-time and current occupations. The highest proportion of binge drinkers by main life-time occupation was among clerks followed by service industry workers. Regarding current occupation, women working in services had the highest proportion of binge drinkers followed by technical occupations.

Table 31: Distribution of hazardous drinking variables, main life-time, and current occupation among men and women

Men	Drinking at least 5 drinks once a month %	Drinking at least 10 drinks once a month %	CAGE 2+ %	Problem drinking 2+ %
Types of main life-time occupations				
Professional	25.8	7.4	16.6	8.0
Technical	31.6	10.0	19.7	7.9
Military	31.9	13.5	25.8	5.7
Drivers	41.7	17.6	24.5	11.5
Manual	38.3	16.5	24.6	12.8
Construction	38.0	19.6	23.9	12.6
Types of current occupations				
Professional	26.1	6.9	15.5	6.8
Services	39.5	16.3	25.1	12.6
Drivers	49.8	19.3	27.4	10.7
Prof Manual	40.5	17.4	25.9	11.0
Construction	37.6	19.3	22.7	8.8
Manual	37.3	16.2	27.0	15.2
Women	**Drinking at least 3 drinks once a month %**			
Types of main life-time occupations				
Professional	5.1			
Technical	5.3			
Clerks	7.9	N/A	N/A	N/A
Services	6.6	N/A	N/A	N/A
Prof Manual	6.2	N/A	N/A	N/A
Manual	6.3	N/A	N/A	N/A
Types of current occupations				
Professional	7.1			
Technical	10.3			
Clerks	7.8	N/A	N/A	N/A
Services	10.4	N/A	N/A	N/A
Prof Manual	8.0	N/A	N/A	N/A
Manual	7.9	N/A	N/A	N/A

After controlling for age, all occupational groups were more likely to report binge drinking than those in professional occupations with drivers being almost twice more likely reporting this pattern (Table 32). Men working in the construction industry were three times more likely to report drinking at least 10 drinks once a month than people in the professional occupation group, followed by manual workers (OR 2.53), drivers (OR 2.46), and military (OR 1.77). Similar patterns were found between current occupation

and hazardous drinking, with drivers 2.4 times more likely drinking at least 5 drinks per occasion a month than professionals, and manual and construction workers three times more likely to drink 10 drinks per occasion once a month, followed by drivers and military (Table 32). Finally, the highest odds of problem drinking and reporting more than two negative consequences of drinking were found among manual workers.

In the adjusted model, drivers and manual workers in main-life and current occupations remained significantly more likely to report binge and heavy binge drinking. Construction workers had the highest odds of heavy binge drinking in their main life-time occupations, and they were also more than twice more likely to report heavy binge drinking within the current occupation. Problem drinking was significantly associated with military and manual main life-time occupations, and with services and manual occupations within current jobs. The associations between problem drinking and remaining occupation types (drivers, construction workers) in both main life-time and current occupations were not statistically significant in the multivariate model.

Table 32: Logistic regression between types of main-lifetime, current occupation and binge and heavy binge drinking among men

	Drinking at least 5 drinks once a month OR (95 CI)	P-value	Drinking at least 10 drinks once a month OR (95 CI)	P-value	CAGE 2+ OR (95 CI)	P-value	Negative consequences 2+ OR (95 CI)	P-value
Types of main-life- time occupations*								
Professional	1		1		1		1	
Technical	1.36 (1.06-1.74)	0.017	1.43 (0.96-2.12)	0.078	1.24 (0.93-1.67)	0.142	1.01 (0.67-1.53)	0.163
Military	1.24 (0.90-1.71)	0.187	1.77 (1.12-2.81)	0.015	1.61 (1.14-2.29)	0.008	0.65 (0.35-1.19)	0.966
Drivers	1.94 (1.53-2.46)	<0.001	2.46 (1.73-3.49)	<0.001	1.52 (1.15-2.00)	0.003	1.41 (0.97-2.05)	0.070
Manual	1.82 (1.50-2.21)	<0.001	2.53 (1.87-3.42)	<0.001	1.65 (1.32-2.07)	<0.001	1.71 (1.26-2.31)	<0.001
Construction	1.73 (1.34-2.24)	<0.001	3.00 (2.09-4.31)	<0.001	1.54 (1.15-2.07)	0.004	1.63 (1.10-2.40)	0.014
P-value for linear trend		<0.001		<0.001		<0.001		<0.001
Types of current occupations*								
Professional	1		1				1	
Services	1.85 (1.34-2.54)	<0.001	2.62 (1.65-4.16)	<0.001	1.83 (1.26-2.64)	0.001	1.97 (1.20-3.22)	0.007
Drivers	2.40 (1.73-3.33)	<0.001	2.57 (1.63-4.06)	<0.001	1.74 (1.20-2.52)	0.004	1.39 (0.81-2.39)	0.230
Professional manual	1.87 (1.50-2.34)	<0.001	2.73 (1.94-3.84)	<0.001	1.85 (1.43-2.40)	<0.001	1.65 (1.14-2.38)	0.007
Manual	1.58 (1.12-2.23)	0.009	3.03(1.83-4.66)	<0.001	1.47 (0.99-2.20)	0.059	2.72 (1.69-4.40)	<0.001
Construction	1.84 (1.32-2.56)	<0.001	2.93 (1.89-4.86)	<0.001	2.23 (1.54-3.24)	<0.001	1.23 (0.68-2.22)	0.487
P-value for linear trend		<0.001		<0.001		<0.001		0.001
Types of main-life- time occupations**								
Professional	1		1		1		1	
Technical	1.41 (0.65-1.47)	0.051	1.13 (0.77-2.27)	0.304	1.34 (0.90-1.99)	0.151	0.86 (0.47-1.56)	0.621
Military	1.17 (0.95-1.95)	0.444	1.43 (0.79-2.58)	0.235	1.60 (1.04-2.46)	0.034	0.47 (0.47-1.56)	0.071
Drivers	1.65 (1.01-2.29)	0.012	1.89 (1.08-3.31)	0.026	1.51 (0.97-2.34)	0.069	0.95 (0.50-1.82)	0.885
Manual	1.47 (0.91-1.85)	0.026	1.72 (1.03-2.87)	0.038	1.51 (1.02-2.22)	0.038	1.00 (0.56-1.78)	0.997
Construction	1.40 (0.80-1.82)	0.091	2.29 (1.32-3.98)	0.003	1.44 (0.93-2.34)	0.106	1.02 (0.54-1.94)	0.947
P-value for linear trend		0.109		0.006		0.182		0.349
Types of current occupations***								
Professional	1		1				1	
Services	1.41 (0.96-2.08)	0.083	2.42 (1.39-4.19)	0.002	2.15 (1.40-3.31)	<0.001	1.56 (0.85-2.87)	0.150

Drivers	1.79 (1.15-2.80)	0.010	1.89 (1.02-3.50)	0.042	1.62 (0.97-2.67)	0.064	0.87 (0.43-1.88)	0.773
Professional	1.58 (1.15-2.17)	0.005	2.14 (1.32-3.44)	0.002	1.60 (1.11-2.31)	0.013	0.98(0.57-1.68)	0.950
manual								
Manual	1.61 (1.01-2.54)	0.043	2.16(1.12-4.17)	0.022	1.70 (1.01-2.86)	0.046	1.38 (0.69-2.74)	0.359
Construction	1.15 (0.73-1.81)	0.546	2.27 (1.24-4.17)	0.008	1.28 (0.77-2.16)	0.358	0.77 (0.35-1.62)	0.459
P-value for		0.002		0.012		0.012		0.780
linear trend								

*Age-adjusted

**Adjusted for age, marital status, education, employment status, deprivation, household amenities score, self-reported health and depression

***Adjusted for age, marital status, education, deprivation, household amenities score, self-reported health and depression

Regarding the main life-time occupations among women, at the highest odds of binge drinking were manual workers followed by clerks in both models (Table 33). Similarly to results among men, having a professional occupation as the main life-time or the current job was a protective factor against binge drinking. There were no significant associations between the current types of jobs and binge drinking, although the odds were of a similar magnitude as for men.

Table 33: Logistic regression between types of main life-time and current occupation and binge drinking among women

	Drinking at least 3 drinks once a month OR (CI 95%)	P-value
Types of main life-time occupations*		
Professional	1	
Technical	1.15(0.75-1.76)	0.512
Clerks	1.63 (1.09-2.45)	0.019
Services	1.41 (0.99-2.01)	0.055
Prof manual	1.31 (0.89-1.94)	0.169
Manual	1.77 (1.14-2.75)	0.011
P-value for linear trend		0.003
Types of current occupations*		
Professional	1	
Technical	1.52 (0.89-2.61)	0.130
Clerks	1.04 (0.60-1.81)	0.891
Services	1.49 (0.98-2.28)	0.062
Prof manual	1.06 (0.62-1.81)	0.844
Manual	1.36 (0.86-2.14)	0.186
P-value for linear trend		0.265
Types of main life-time occupations**		
Professional	1	
Technical	1.31(0.75-2.27)	0.342
Clerks	1.93 (1.15-3.22)	0.012
Services	1.59 (0.96-2.64)	0.071
Prof manual	1.77 (1.01-3.10)	0.047
Manual	2.65 (1.45-4.86)	0.002
P-value for linear trend		0.002
Types of current occupations***		
Professional	1	
Technical	1.74 (0.93-3.26)	0.086
Clerks	1.06 (0.55-2.01)	0.870
Services	1.37 (0.78-2.40)	0.272
Prof manual	1.15 (0.59-2.24)	0.688
Manual	1.58 (0.86-2.90)	0.137
P-value for linear trend		0.244

*Age-adjusted

**Adjusted for age, marital status, education, employment status, deprivation, household amenities score, self-reported health and depression

***Adjusted for age, marital status, education, deprivation, household amenities score, self-reported health and depression

5.1.11 Drinking and material situation

Table 34 shows the distribution of measures of material situation and hazardous drinking variables. Among men, those with the highest deprivation and the lowest number of household amenities had the largest proportion of those reporting hazardous drinking. Contrarily among women, people with the highest deprivation and the lowest number of household amenities had the smallest proportion of binge drinkers.

Table 34: The distribution of measures of material situation and hazardous drinking among men and women

	Drinking at least 5 drinks once a month %	Drinking at least 10 drinks once a month %	CAGE 2+ %	Negative consequences 2+ %
Men				
Deprivation, %				
1 (lowest)	33.9	14.3	20.2	7.2
2	32.8	11.7	24.5	10.9
3	35.5	13.7	22.1	12.1
4 (highest)	36.0	14.6	23.6	13.8
Number of household amenities, %				
1 (highest)	33.4	12.7	21.7	7.7
2	33.7	12.9	21.0	10.1
3 (lowest)	37.4	16.9	24.6	15.2
	Drinking at least 3 drinks once a month %			
Women				
Deprivation, %				
1 (lowest)	8.2			
2	8.7			
3	9.0			
4 (highest)	5.3			
Number of household amenities, %		N/A	N/A	N/A
1 (highest)	8.8			
2	7.8			
3 (lowest)	5.9			

Among men, in both models, people with the highest deprivation and the lowest number of household amenities were significantly more likely to report binge and problem drinking, and were more than twice as likely to report having negative consequences of drinking as people with the lowest deprivation and people with the highest number of household amenities (Table 35). There was also a linear trend for all outcome variables (except heavy binge drinking and deprivation).

Table 35: Logistic regression of hazardous drinking variables with ownership of selected household items score and depravation score among men

	Drinking at least 5 drinks once a month (95 CI)	P-value	Drinking at least 10 drinks once a month (95 CI)	P-value	CAGE 2+ (95 CI)	P-value	Negative consequences 2+ (95 CI)	P-value
Deprivation *								
1 (lowest)	1		1		1		1	
2	0.95 (0.77-1.17)	0.627	0.79 (0.59-1.06)	0.119	1.29 (1.02-1.63)	0.033	1.58 (1.13-2.21)	0.007
3	1.17 (0.97-1.41)	0.104	1.05 (0.81-1.36)	0.714	1.21 (0.97-1.51)	0.085	1.93 (1.43-2.61)	<0.001
4 (highest)	1.25 (1.05-1.50)	0.012	1.21 (0.95-1.54)	0.112	1.39 (1.13-1.70)	0.002	2.34 (1.78-3.11)	<0.001
P-value for linear trend		0.007		0.113		0.003		<0.001
Number of household amenities*								
1 (highest)								
2	1		1		1		1	
3 (lowest)	1.21 (1.02-1.43)	0.025	1.26(1.00-1.59)	0.047	1.23 (1.02-1.48)	0.034	1.58(1.21-2.08)	0.001
	1.55 (1.29-1.85)	<0.001	1.94(1.52-2.47)	<0.001	1.56 (1.27-1.91)	<0.001	2.74(2.09-3.61)	<0.001
P-value for linear trend		<0.001		<0.001		<0.001		<0.001
Deprivation**								
1 (lowest)	1		1		1		1	
2	0.89 (0.71-1.13)	0.342	0.73 (0.53-1.01)	0.061	1.22 (0.95-1.57)	0.126	1.62 (1.12-2.35)	0.011
3	1.07 (0.86-1.34)	0.546	0.94 (0.69-1.28)	0.698	1.05 (0.81-1.35)	0.737	1.67 (1.17-2.39)	0.005
4 (highest)	1.34 (1.04-1.72)	0.026	1.11 (0.78-1.56)	0.548	1.47 (1.11-1.95)	0.007	1.94 (1.32-2.86)	0.001
P-value for linear trend		0.042		0.689		0.027		<0.001
Number of household amenities ***								
1 (highest)								
2	1		1		1		1	
3 (lowest)	1.16 (0.95-1.42)	0.135	1.15(0.87-1.51)	0.320	1.07 (0.85-1.34)	0.026	1.37(0.99-1.88)	0.056
	1.33 (1.04-1.72)	0.026	1.43(1.02-2.00)	0.040	1.37 (1.04-1.82)	0.577	1.84(1.27-2.68)	0.001
P-value for linear trend		0.022		0.043		0.037		0.001

*Age-adjusted

**Adjusted for age, marital status, education, occupation, employment status, number of household amenities, self-reported health and depression

***Adjusted for age, marital status, education, occupation, employment status, deprivation, self-reported health and depression

Among women, the relationships were weak. Women with higher deprivation and lowest number of household amenities had a slightly lower risk of binge drinking. The association, however, was not significant in logistic regression models (Table 36).

Table 36: Logistic regression of binge drinking with ownership of selected household items score and depravation score among women

	Drinking at least 3 drinks once a month (95 CI)	**P-value**
Deprivation*		
1 (lowest)	1	
2	1.03 (0.71-1.49)	0.870
3	1.14 (0.83-1.58)	0.395
4 (highest)	0.72 (0.52-1.01)	0.054
P-value for linear trend		0.073
Number of household amenities *		
1 (highest)	1	
2	1.03(0.78-1.36)	0.823
3 (lowest)	0.95(0.70-1.29)	0.738
P-value for linear trend		0.765
Deprivation**		
1 (lowest)	1	
2	0.92 (0.61-1.38)	0.696
3	1.09 (0.76-1.57)	0.636
4 (highest)	0.83 (0.56-1.25)	0.374
P-value for linear trend		0.679
Ownership of selected items***		
1 (highest)	1	
2	1.10 (0.81-1.51)	0.545
3 (lowest)	0.92 (0.63-1.34)	0.669
P-value for linear trend		0.727

*Age-adjusted
**Adjusted for age, marital status, education, occupation, employment status, number of household amenities, self-reported health and depression
***Adjusted for age, marital status, education, occupation, employment status, deprivation, self-reported health and depression

5.1.12 Drinking and Employment status

The highest proportion of all hazardous drinking variables was found among unemployed men followed by employed men, and it was the lowest among pensioners (Table 37). Similarly, largest proportion of binge drinkers was among unemployed women followed by employed female respondents.

Table 37: Distribution of hazardous drinking and employment status among men and women

Employment status, %	Drinking at least 5 drinks once a month %	Drinking at least 10 drinks once a month %	CAGE 2+ %	Negative consequences 2+ %
Men				
Employed	39.2	16.2	24.9	11.6
Pensioner	29.1	10.5	18.4	8.2
Unemployed	54.7	30.9	38.3	24.9
	Drinking at least 3 drinks once a month %			
Women				
Employed	11.6	N/A	N/A	N/A
Pensioner	4.4			
Unemployed	17.0			

In the age-adjusted model, unemployed men had about a double risk of binge, heavy binge, problem drinking, and were 2.5 times more likely to report more than two negative consequences of drinking, compared to employed men. The significance of these associations persisted after we controlled for other co-variates. There was no difference between pensioners and employed men in adjusted models (Table 38).

Table 38: Logistic regression between employment status and hazardous drinking among men

	Drinking at least 5 drinks once a month (95 CI)	P-value	Drinking at least 10 drinks once a month (95 CI)	P-value	CAGE 2+ (95 CI)	P-value	Negative consequences 2+ (95 CI)	P-value
Employment status*								
Employed	1		1		1		1	
Pensioner	0.93 (0.77-1.14)	0.532	1.07 (0.81-1.36)	0.639	1.02 (0.82-1.27)	0.860	0.85 (0.63-1.15)	0.308
Unemployed	1.87 (1.39-2.51)	<0.001	2.31 (1.66-3.21)	<0.001	1.86 (1.38-2.53)	<0.001	2.51 (1.76-3.60)	<0.001
Employment status**								
Employed	1		1		1		1	
Pensioner	0.97 (0.75-1.25)	0.807	1.02 (0.72-1.44)	0.913	1.03 (0.78-1.37)	0.814	0.95 (0.64-1.41)	0.795
Unemployed	1.65 (1.15-2.37)	0.006	1.81 (1.20-2.72)	0.005	1.59 (1.09-2.32)	0.017	1.88 (1.19-2.97)	0.007

*Age-adjusted

**Adjusted for age, marital status, education, main life-time occupation, deprivation, household amenities score, self-reported health and depression

Similar to men, unemployed women were 1.5 times more likely to binge drink, and this association was even stronger in a fully-adjusted model after adjusting for depressive symptoms. Pensioners were at a lower risk of binge drinking in both models (Table 39).

Table 39: Logistic regression between employment status and hazardous drinking among women

	Drinking at least 3 drinks once a month OR (95 CI)	P-value
Employment status*		
Employed	1	
Pensioner	0.60 (0.41-0.90)	0.012
Unemployed	1.53 (1.02-2.30)	0.038
Employment status**		
Employed	1	
Pensioner	0.62 (0.40-0.97)	0.034
Unemployed	1.81 (1.13-2.88)	0.013

*Age-adjusted
**Adjusted for age, marital status, education, main life-time occupation, deprivation, household amenities score, self-reported health and depression

5.1.13 Drinking and depressive symptoms

As noted in the Methods section, the cut-off point of 16+ on the CESD scale was used in this thesis to indicate depressive symptoms as in previous studies this score was shown to be highly predictive of depressive disorders including in older adults (Beekman et al., 1997, Lyness et al., 1997, Roberts &Vernon, 1983). For example, a study among older persons which looked at criterion validity of CES-D with a cut-off point of 16+ has shown that sensitivity for major depression was 100% (Beekman et al., 1997).

There was higher proportion of heavy binge and problem drinkers, and people reporting negative consequence of drinking among men with depressive symptoms (Table 40). A slightly higher proportion of women binge drinkers reported depressive symptoms as well (Table 40).

Table 40: The distribution of depressive symptoms and hazardous drinking variables among men and women

Depressive symptoms, %	Drinking at least 5 drinks once a month %	Drinking at least 10 drinks once a month %	CAGE 2+ %	Negative consequences 2+ %
Men				
CESD score<16	35.2	13.8	21.4	9.4
CESD score16+	33.2	15.3	32.0	16.0
	Drinking at least 3 drinks once a month %			
Women				
CESD score<16	8.1	N/A	N/A	N/A
CESD score16+	9.4			

Having depressive symptoms was not significantly associated with drinking five or ten drinks per occasion once a month among men (Table 41). However, men who reported depressive symptoms had an increased risk of problem drinking and of having negative consequences of drinking. Among women, the presence of depressive symptoms was not associated with binge drinking in an age-adjusted model; however, in multivariate analysis adjusting for self-reported health the association became statistically significant (Table 41).

Table 41: Logistic regression of hazardous drinking variables with depression (CESD 16+) among men and women

	Drinking at least 5 drinks once a month OR (95 CI)	P-value	Drinking at least 10 drinks once a month OR (95 CI)	P-value	CAGE 2+ OR (95 CI)	P-value	Negative consequences 2+ OR (95 CI)	P-value
Depressive symptoms among men*	0.96 (0.76-1.21)	0.740	1.21 (0.89-1.64)	0.231	1.82(1.43-2.31)	0.001	1.90 (1.40-2.59)	<0.001
Depressive symptoms among men**	0.98 (0.76-1.26)	0.877	1.14 (0.82-1.60)	0.437	1.82 (1.40-2.36)	<0.001	1.55 (1.10-2.18)	0.012
	Drinking at least 3 drinks once a month OR (95 CI)							
Depressive symptoms among women*	1.26 (0.98-1.64)	0.087						
Depressive symptoms among women**	1.38 (1.04-1.83)	0.023		N/A	N/A	N/A	N/A	

*Age-adjusted

**Adjusted for age, marital status, education, occupation, employment status, deprivation, number of household amenities, and self-reported health

5.1.14 Drinking and Self-reported health

Both among men and women, the highest proportion of binge and heavy drinkers was observed among people who reported good health (Table 42). Problem drinking and negative consequences of drinking were slightly more common among men with average health.

Table 42: The distribution of self-reported health and hazardous drinking variables among men and women

Self-reported health, %	Drinking at least 5 drinks once a month %	Drinking at least 10 drinks once a month %	CAGE 2+ %	Negative consequences 2+ %
Men				
Good	39.1	15.9	19.7	7.4
Average	35.3	14.0	23.4	11.1
Poor	26.4	11.0	19.1	11.0
	Drinking at least 3 drinks once a month %			
Women				
Good	12.9	N/A	N/A	N/A
Average	7.4			
Poor	6.0			

Having good health was significantly associated with binge drinking among women and men in both models (Table 43). Women who reported having good health were more than 1.5 times more likely to report binge drinking in an age-adjusted model and more than twice likely to report binge drinking in the multivariate model after adjustment for depression than women who reported poor health. Men in good health had 1.5 times higher odds of binge drinking than those in poor health, and these odds increased in multivariate analysis. Having good health appeared to put men at lower risk of two negative consequences from drinking but this association was not significant when we adjusted for other covariates (Table 43). Although heavy binge drinking among men was not significant in the model when adjusted for age only, it became statistically significant in a fully adjusted model.

Table 43: Logistic regression of hazardous drinking variables with self-reported health among men and women

	Drinking at least 5 drinks once a month OR (95 CI)	P-value	Drinking at least 10 drinks once a month OR (95 CI)	P-value	CAGE 2+ OR (95 CI)	P-value	Negative consequences 2+ OR (95 CI)	P-value
Self-reported health among men*								
Good	1.50 (1.39-2.29)	0.002	1.19 (0.84-1.67)	0.331	0.86 (0.64-1.15)	0.313	0.53 (0.35-0.80)	0.003
Average	1.39 (1.24-1.86)	0.002	1.15 (0.86-1.54)	0.338	1.17 (0.93-1.48)	0.181	0.91 (0.68-1.22)	0.528
Poor	1		1		1		1	
P-value for linear trend		0.002		0.298		0.290		0.003
Self-reported health among men**								
Good	1.83 (1.39-2.29)	<0.001	1.46 (1.02-2.11)	0.039	1.68 (1.25-2.24)	0.001	1.30 (0.90-1.89)	0.162
Average	2.34 (1.69-3.23)	<0.001	1.64 (1.05-2.57)	0.029	1.25 (0.86-1.82)	0.240	0.71 (0.41-1.22)	0.210
Poor	1		1		1		1	
P-value for linear trend		<0.001		0.033		0.288		0.331
	Drinking at least 3 drinks once a month OR (95 CI)	P-value						
Self-reported health among women*								
Good	1.70 (1.07-2.69)	0.025						
Average	1.10 (0.81-1.49)	0.139		N/A	N/A	N/A	N/A	N/A
Poor	1							
P-value for linear trend		0.060						
Self-reported health among women**								
Good	2.32 (1.36-3.95)	0.002		N/A	N/A	N/A	N/A	N/A
Average	1.12 (0.81-1.56)	0.491						
Poor	1							
P-value for linear trend		0.016						

*Age-adjusted

**Adjusted for age, marital status, education, occupation, employment status, deprivation, number of household amenities, and depression

5.1.15 Gender and hazardous drinking

All indicators in our analysis have shown that women drinking less than men. There were numerous factors associated with drinking in both men and women. However, none of these covariates could explain the gender difference in alcohol intake (Table 44).

Table 44: Odds ratios and differences in drinking indices between men and women in age-adjusted and fully adjusted models

	Binge drinking OR (95 CI)	P-value	Problem drinking 2+ OR (95 CI	P-value	CAGE 2+ OR (95 CI)	P-value
Gender*						
Men	23.0 (20.3-26.5)	<0.001	13.2 (9.5-18.4)	<0.001	16.9 (13.2-21.5)	<0.001
Women	1		1		1	
Gender**						
Men	15.0 (12.5-17.9)		16.7 (10.9-25.5)		17.3 (12.7-23.5)	<0.001
Women	1		1		1	

*Age-adjusted
**Adjusted for age, marital status, education, occupation, employment status, deprivation, number of household amenities, self-reported health and depression

5.1.16 Summary of results of quantitative data

The section presented results from the quantitative data analysis. The analysis has shown large gender differences in drinking between men and women, with men consuming alcohol more frequently and in larger amounts, and a significantly larger proportion of men drinking in hazardous ways. Hazardous drinking was more prevalent among younger participants, the unemployed, men and women with lower socio-economic status, and healthier people. Among male participants, at high risk of *binge drinking five or more drinks at least once a month* were widowed men, unemployed men, men with a secondary education, men with the highest deprivation score, men in manual occupations and drivers, and men reporting good compared to poor health. At the highest risk of *drinking ten drinks or more at least once a month* were widowed men, unemployed men, men reporting good health, and men in manual and construction occupations, and drivers. *Problem alcohol drinking* was significantly associated with unemployment, the highest deprivation level, depressive symptoms, military and manual occupations, and average level of self-reported health. Finally, negative

consequences from alcohol drinking were the highest among unemployed men, men with higher deprivation level, men with the fewest household amenities, and men with depressive symptoms. Binge drinking among women was significantly associated with unemployment, type of occupation (clerks and women in manual occupations were at the elevated risk), having depressive symptoms, and self-reported good health.

5.2 Results from qualitative studies

The following section presents the results from two qualitative studies. First, it looks at drinking patterns among respondents recruited from the HAPIEE cohort. It outlines the sample characteristics, describes traditional/conventional drinking as well as respondents' individual drinking patterns, shows participants' views on Russian drinking culture, and explores differences in drinking between genders, and drinking and occupation. Second, the chapter presents results from the study conducted among persons recruited in an alcohol treatment facility. After showing the sample characteristics, it describes respondents' two main problem drinking patterns: zapoj and regular (long-term) everyday drinking, their contexts, circumstances, and respondents' perceptions of the reasons behind those risky drinking behaviours. The section also explores a particular type of problem drinking: the surrogate drinking pattern, types of surrogates available and consumed in Novosibirsk, and the risks which are perceived as accompanying the drinking of those surrogates. The section describes the interplay of heavy drinking with employment, presents respondents' perceptions of policies which influence excessive consumption of alcohol in general and surrogate alcohol consumption specifically.

5.2.1 Drinking patterns among respondents recruited from the HAPIEE cohort

5.2.1.1 Sample characteristics (HAPIEE cohort)

Sample characteristics are summarized in Table 45. We interviewed 20 women and 24 men. The average age of the respondents was 56 years (range 48-63). All male respondents (apart from one widower) were married; only about half of the women were married. Twenty people had university degrees, 14 reported having vocational education, and ten people had a secondary or less than secondary education level. Twenty-seven people were employed during the study, nine were retired, and seven were retired but employed.

Table 45: Sample characteristics HAPIEE participants

Sample Characteristics HAPIEE participants N=44	Percentage (*N*) Or mean (range)
Age (yrs)	56 (48–63)
Female gender	45.5% (20)
Marital status	
Single	25% (10)
Married	37.5% (15)
Divorced/Widowed	37.5% (15)
Education	
Secondary and less	22.7% (10)
Vocational	31.8% (14)
Higher	45.5% (20)
Employment	
Unemployed	-
Manual professions	31.8% (14)
Non-manual	47.7% (21)
Retired	20.4% (9)

5.2.1.2 Drinking patterns

To see overall patterns we organized the sample (those who reported drinking in the last 12 months) according to the reported frequency and quantity of drinking into six groups: infrequent light, frequent light, infrequent moderate, frequent moderate, infrequent heavy, frequent heavy. Most women ended up in infrequent light drinkers' category and men in frequent moderate and heavy categories (Table 46).

Table 46: Drinking patterns characteristics of HAPIEE qualitative study participants

Characteristics	Women (n=20)	Men (n=24)
Drinking category		
Life abstainers	1	0
Ex-drinkers	1	2
Infrequent light	10	2
Frequent light	2	1
Infrequent moderate	-	1
Frequent moderate	2	7
Infrequent heavy	1	5
Frequent heavy	3	6
Drink preferences		
Beer	2	3
Wine/sparkling wine	11	2
Spirits	7	17

The majority of women in the sample reported drinking on special occasions in the last year – three or fewer drinks about once a month or less. Men reported a wider variety of patterns including drinking weekly or more often, at least three drinks per occasion, drinking at least five drinks once or less a month, and drinking at least five drinks per occasion weekly or more. We had two men and two women abstainers in the sample. Two men had previously been very heavy drinkers but because of poor health and family reasons became abstainers. One woman was a lifetime abstainer (never tried alcohol), and another one stopped drinking 10 years ago because of poor health.

The drinks preferences between genders were also different: men mostly preferred drinking spirits on special occasions and many drank beer as well on ordinary days, whereas among women wine and sparkling wine were more popular. Several people reported also drinking home-produced alcohol such as *samogon (*spirit, usually 40% ethanol*)*, berry/fruit wine, and *nastojka* (herb or berry based tonic, usually over 25% ethanol). Nine male participants reported drinking surrogate alcohol (industrial spirit) in the past.

5.2.1.3 The traditional drinking pattern

Both men and women reported that they drink on holidays and special occasions, many of which are ritualised: a so-called traditional drinking pattern. Those include major State holidays such as New Year, International Women's day, Victory Day, Day of the Defender; birthdays, and (more recently) religious holidays such as Easter and Christmas that were not celebrated during the Soviet regime; weddings and funerals, commemoration of the dead, during visits of friends or relatives as part of hospitality. In fact, any special occasion was often accompanied with alcohol which according to both male and female respondents helped conversation and socializing, enhanced mood, and helped them to feel joyful. Even abstainers reported keeping alcohol at home for celebrations in case someone visits them. One would be considered "a bad host" if there were no alcohol offered to the guest.

As described in the majority of cases, drinking during special occasions happened around the table at home, always with a lot of food, and often with speeches ("tosty") - at least for the first two or three drinks.

"[We drink] on different holidays. Birthdays [for example]. Guests come, sit down at a table. We have 10 people usually. Then congratulations [follow], speeches. When a speech is told you have to drink. Some drink a shot to the end, some take just a sip, just have a taste. Men usually drink it all at once. Shots… maybe about 70 grams. Then cold appetisers, salads, then main course, pelmeni in general or golubtsy. Then a cake, chocolates, fruit – the whole table is full." (man, 65)

Women's drinking during special traditional occasions was reported to be different from men's drinking both by female respondents and by male respondents. Women preferred lighter drinks such as wine, sparkling wine, or Martinis, and drank in much smaller quantities. It was often cited that women "*only take a sip from a small shot*" ("*prigubit iz rumochki*)" or drink one glass of wine or sparkling wine during the whole evening.

"*I never liked vodka. I do not like its taste. If it is someone's birthday [and there is no wine served], it is customary to celebrate it, I could drink at most 25 grams [of vodka] and then eat well. On the most holidays I prefer wine or sparkling wine*." (woman, 54)

"*For women we usually take a bottle of Martini. That is for five of them. And they do not even finish it. Usually something left… Women in general in my surroundings drink wine or sparkling wine and very little*." (man, 65)

Men on the contrary mostly preferred vodka and drank larger quantities. The first two or three shots are usually drunk by everyone but the further pace of consumption was reported to be established by each person individually. The dosage during one special occasion averaged at 250 grams of spirits. In fact, the majority of men perceived this quantity as a moderate amount when drunk during the whole evening/holiday celebration:

"*When it is a celebration, a table is full of food, good company; why not to drink a bottle [of vodka]. But of course during 3, 4, 5 hours.*" (man, 50)

Another traditional ritualized drinking reported mostly by men was drinking after banja (steamed sauna). Some people had their own banjas (in private houses) and used it with family and friends; other men visited banjas in the city exclusively in male company. The drinks and amounts varied, although the majority of men reported drinking beer

accompanied with dried fish (vobla). Men (exclusively) reported traditional drinking during such occasions as fishing, hunting and during or before sport events such as hockey or football. These occasions themselves were perceived to be predominately male.

5.2.1.4 Individual drinking patterns

Although the majority of the responders reported traditional drinking patterns on special occasions, almost every man and half of the women reported different individual patterns as well. In fact, in the beginning of conversation only traditional patterns were reported (e.g., "*I drink only on holidays*") but as discussion proceeded, more patterns were revealed, especially among men who often did not count drinking "*small*" amounts (e.g., 500-1000 ml of beer) which they could drink during the week after work or on weekends. Female respondents, on the other hand, did not count "*a glass or two of beer on a hot day*". For the majority of female and male respondents these individual drinking patterns were used as means to relax both physically and mentally, to relieve stress and tiredness after work, "*to calm down the nerves*", to rest.

Individual drinking patterns reported among men included: 1) drinking after the working week (on Friday, or on another day after the working shift) with colleagues or alone at home to relax, to relieve stress; often larger amounts- 250 ml of spirits or 1.5-2.5 litres of beer; 2) drinking 50-100 ml of spirits or a glass of wine or a bottle of beer, after work with dinner every day to overcome tiredness or for better digestion; 3) drinking on weekends not related to working week, e.g., among pensioners, to mark the end of the week and the beginning of the weekend, mainly beer; 4) drinking once a month when pension or salary is received; 5) drinking during weekends at dachas (summer houses) during summer seasons usually beer (2-2,5 litres per occasion); 5) drinking while at work. In some cases several patterns overlapped.

"*I drink usually when I receive the pension – it is a small holiday. We buy food and I drink chekushku [a quarter of a litre of vodka which one can buy in a glass bottle], 250 grams. Beer I drink about once a week. It is sold in big plastic bottles, 1.5 litres each. So, I usually finish it during the evening watching TV.*" (man, 69)

Only half of female responders reported individual patterns apart from drinking on special occasions. Apart from two responders (sub-sampled heavy drinking women), most women reported drinking small amounts of alcohol and usually not on a regular basis. The patterns included: 1) drinking a glass or two of beer when it is hot during summer season at dacha; 2) drinking a glass or two of wine with female friends once or less than once a month; 3) drinking from time to time during dinner with husband (100-150 ml of spirits); 4) drinking after the working week alone at home to relieve stress (250 ml of spirits); 5) drinking beer on weekends at home alone to relax (1.5l).

"*Besides holidays we drink sometimes during Saturday with lunch, or on any other day when we want to relax, always with dinner. And beer of course during summer, when it is very hot and you want to ease the thirst.*" (woman, 54)

"*We gather together (I have three [female] friends) about once a month to share news, some events, to relax. Three of us finish one bottle of wine during the evening. It became a ritual for us. You know, everyone is busy, everyone has a job, a family, problems-all these are very tiring…So, when we meet, we know that we will have two-three hours for ourselves – it is a very pleasant feeling.*" (woman, 54)

The summary of traditional and individual patterns is listed in Table 47.

Table 47: Traditional and individual drinking patterns reported by HAPIEE participants

	Men (average per occasion quantity and type of alcohol consumed when reported)	Women (average per occasion quantity and type of alcohol consumed when reported)
Traditional drinking patterns:		
State and religious holidays, family special events	At least three shots of 50 ml of spirits (average 250 ml)	A sip, one glass of wine/sparkling wine
Banja	beer/vodka	beer/wine
Hunting	vodka	-
Fishing	vodka	-
Life sport events (usually football or hockey)	Beer, fortified wine, brandy, vodka	-
Individual drinking patterns:		
Drinking after working week/shift	vodka, beer 250 ml of vodka or 1.5-2.5 litres of beer	vodka, beer*
Drinking on weekends not related to work	+	-
Drinking once a month when pension or salary received	+	-
Drinking small amount after work with dinner every day	50 ml of vodka, or glass of wine, bottle of beer	-
Drinking while at work	+	-
Drinking during weekends at dachas (summer houses) during summer	2-2.5 litres of beer	one-two glasses of beer
Infrequent (once a month or less) drinking with friends	250-500 ml of vodka	two-three glasses of wine
Infrequent drinking during dinner with a spouse	-	100-150 ml of vodka

* Only two women who were sub-sampled as heavy drinkers reported drinking after the working week.

The difference in drinking patterns was also shown in reports about how spouses or significant others drink. About half of women respondents reported that their husbands had problems with alcohol such as *zapojs* (drinking non-stop for more than two days), having hangover and drinking in the morning, and receiving treatment for alcohol dependence. In fact, some women reported that very heavy drinking by their significant others influenced their own alcohol intake in a way that they "*could not stand alcohol*" at all, and never kept it at home. Only one man reported that his former wife "*drank a lot*".

5.2.1.5 Perceived reasons behind the gender differences in drinking

The main reason given why women drink much less than men was a traditional role of woman as a mother and a keeper/carer of house and family which greatly increase women's responsibilities after work in comparison to men's duties. As a result, women become very busy, have almost no spare time and have fewer occasions to drink. It was also reported that woman has to provide an example of order by her own behaviour, and sometimes needed "to control" her husband's drinking. These expectations would decrease women's drinking even during traditional drinking occasions.

"*You are the woman and you have to keep your female image, you have to show an example for your children, for your husband, and for others. You have to be clean, you have to do laundry, to cook and to clean, you have to find time to do everything. It does not mean that you should not drink at all but [when there is a drinking occasion] you just sip a bit [from a glass] and put it back. You have to be ideal*." (woman, 68)

"If you are a woman you should be a woman. You should not drink every day or without any particular reason or occasion. You have a family, your household responsibilities…" (man, 65)

The other reason given (mainly by male respondents) was that women have less physical ability to drink. Women get drunk faster than men and if they drink at the same rate as men they become drunker more rapidly. At the same time the image of a drunken woman was perceived with a much more negative attitude than the image of a drunken man by both male and female respondents. To be drunk was considered to be "*not feminine*" and did not correspond to the image of women, as "*women should be*

women". It was reported that female alcoholics look "much uglier", "disgusting", "abnormal", and for them it is much more difficult to stop drinking even with medical help.

"*If for men maybe it is appropriate to stumble drunkenly, that is understandable. But when you see [drunk] woman it is very unpleasant. No questions about it. If people see a drunken man they can smile. But when a woman is drunk it is a terrible scene. People always judge it*." (woman, 48)

The reasons behind men's drinking were opposite to those of women. It was reported that men can drink more first because they are "*stronger*" in physical terms, and second they do not have as many domestic responsibilities as women. Men's social role as the main bread-winner for the family kept them "immune" from responsibilities at home, limiting their tasks to "*fixing things when they are broken*". Hence, men have more time and have more occasions to drink.

"[men] have almost no responsibilities at home. It is good if he has a summer house and he is busy fixing it, or a car and garage. But if there are no such things there is practically nothing for them to do. And it spoils them to such a degree that they do not want to even get up from the sofa…And of course they have more free time and can afford to get drunk." (woman, 49)

Finally, it was mentioned by the majority of participants that current trends between genders are changing, and that the younger generation drink in a different way. It has become customary for both young men and young women (*molodegh*) to drink beer almost every day, at the same level and often on the street and other public places. This was linked by participants with changed values, increased advertising and access to alcoholic beverages:

"*The moral criteria became different. Earlier it was a very rare occasion to see a young girl drinking beer at a bus stop, and people would treat her with a certain [negative] attitude. But now all you see is beer, beer, beer. I think it is not attractive. And does she not have home where she can drink this can of beer?*" (man, 49)

5.2.1.6 Occupation and drinking patterns

Several major themes around drinking alcohol and occupation emerged from interviews with different type of drinkers. Drinking alcohol either during or after work was related to: 1) physical access to ethanol at work, 2) permissiveness and even encouragement of drinking by management, 3) high work-related stress driven both by physically difficult jobs or/and jobs with high responsibilities; 4) occupations which required working away from home for extended periods (e.g., contractual work); and 5) particular occupational cultures of drinking after work. In all the above cases, drinking related to occupation by women was minimal. Only two women reported drinking after work because of occupational culture.

Ethanol was reported to be accessible in various occupations, mainly for cleaning or sterilizing technical equipment, and through alcohol retailers. Occupations where ethanol was reported to be accessible included: different types of manual work, military, working as a waiters, engineering. Access to ethanol by itself was not always reported as an impetus to drink either during or after work. Female workers with the same access to spirit reportedly did not drink it but often exchanged it for goods or money to men who then drank it. However, most occupations with high access to ethanol were described as predominantly male.

"We had industrial spirit in the army. It had a rubber smell. I could not drink a lot, only about 200 grams of spirit. But not every day, of course." (male, 52)

"*We did not have vodka those days, but we had lots of spirit for cleaning technical equipment which we drank from time to time*." (male, 50)

In some cases, alcohol was present at the work place as it was used as payment for work. One respondent, a car painter at a car service station, described how his team received additional payments in alcohol, and that his co-workers all drank during the work day. In such an environment he could not even consider not drinking at work: "*otherwise you could not work*". He would start with a 50g shot in the morning, would work for few hours, then drink another few shots, and at the end of a day might drink even more *"for the road"*. In fact, this respondent, unlike other participants, drank

almost nothing at home on weekends or on holidays, having a rest from drinking during working days.

"*All my life I worked at the car service station, as a car painter. How could you not drink there? You would drink a little and work. About 50 grams, like this, we drank all day. Yes, to work, not like to be drunk and fall down but little by little all day. Clients were bringing it those days. Everyone with a bottle, with spirit, with cognac, who knows with what! It was kind of a law. And some state servants would bring even 10 litre cases of spirit because otherwise you could not get to the car service. It is different now with car services available on every corner. There were only three car service stations back then. So, we had a very hard-drinking team. And at the end of the work you could drink one glass and go home."* (male, 54)

Access to ethanol at the work place and a strong male culture of drinking were often combined with other aspects which contributed to drinking. The most cited aspects included: working away from home, having a hazardous job, occupational stress, and permissiveness or/and encouragement of drinking by management

"And there were such times [at work] that the first half of the month there was absolutely nothing to do, but the second half it was huge stress at the end. It was specific to that plant. One shop depends on another, one shop starts doing something and another continues. So while that shop is making it the other has nothing to do but at the end it is overloaded with work. And the manager (master) simply gave spirit which ordinarily was used to clean wire, etc. And we [workers] worked like hell to the end and were coming home totally pissed. And I think during that time it started [problem drinking] because all this group of people was drinking heavily." (male, 56)

"All my life I was working on the car travelling across Siberia. We lived in the cars. There was nothing to do in the evenings. Nothing at all. Naturally, on those trips we drank a lot and constantly. The atmosphere was forcing. Not forcing but there was no choice…At times when there was nothing to drink we even diluted antifreeze." (male, 61)

Manual workers were reportedly more likely to drink at work than their superiors when industrial spirit was present. The physical and mental hardship of some manual occupations as well as "working class culture" of drinking were some of the reasons given behind heavy drinking practices among manual workers:

"God forbid me I did not drink as I had a very serious position. It was impossible. Ten years I worked as a shop superintendent. But manual workers did. Working class is working class. They did not drink it as it is. They would add some ash to it to clean it or something else and then drink. First of all, because it was very hard work they had to do and it was not good for their health. So maybe spirit helped them to keep up." (male, 60)

However, one participant reported that working class norms are changing and that those who want to earn real money and are specialists in their work are making different image and lifestyle choices. This is also driven by the fact that many private sector employers have strict rules regarding drinking which makes it very easy to lose one's job if caught drinking or drunk at work.

"There are highly qualified workers who are in demand, elite, one can call them. They have different drinking culture and behaviour in general. [for example] They do not swear, they look neat, they earn more, opposite to those with lower qualifications." (male, 65)

In fact, in cases where supervisors were intolerant of drinking, workers were encouraged to stop drinking entirely, not just stop drinking at work. The method they used reportedly worked for many. Usually a private medical provider "*puts a code on you*" and tells the client that if he drinks even the smallest amount he can die, or be severally unhealthy because of an implant given to the client. "The coding method" could vary and in many cases does not even involve implantation.

"Lots of men at our work zakodirovalis [went to aversive treatment therapy] because they do not know how to not drink. They drink, drink, drink and could fell asleep at work. Of course supervisors do not like it, and so they had to stop them somehow to

keep their job. That type of treatment is now a fashionable way to stop drinking." (male, 59)

There was also a particular drinking culture among drivers which in alcohol drinking treatment facilities even had a nickname among doctors as a "driver's day" or "weekend zapoj [binge]". Driver's day is usually reported to be Friday or the end of the working week if a driver was working shifts (which can be any day of the week). Accumulation of stress related to driving and no possibility of drinking during the week (professional drivers had to take alcohol tests before driving everyday) created this relief day after which some continued to drink the whole next day and stopped drinking on Sunday in preparation for the next working week.

"On Friday I come home and [drink] at minimum half a litre [of beer] in big bottles. And if it is not enough I go and buy more. And 2.5 litres could remain na opohmelku which I can drink in the morning, to wake up in the morning. That's it. And I finish [on Saturday] I am ill, feel ill and I drink a little by little to feel better… That is it, and then if there is an opportunity, meaning I feel that in the evening I still can drink more keeping in mind that tomorrow or the day after tomorrow I have to work and I will not be sick on Monday, I feel that I can add more [drink more] and will be not sick. So, I have to be careful with this and I drink less and little by little. On Sunday and even before Sunday I have to stop [drinking] to feel better already on Sunday evening." (male, 59)

Interestingly, one woman who reported occupational drinking was also working in the transport industry as a conductor. Besides having physically difficult jobs, she described the culture of drinking after work as another factor influencing their drinking pattern:

"*I had such a job where everyone drinks. It was on a bus. It was like a law: two days you work and two days you rest, and after the last working day you drink. And somehow I used to it and little by little started drinking a lot*." (female, 35)

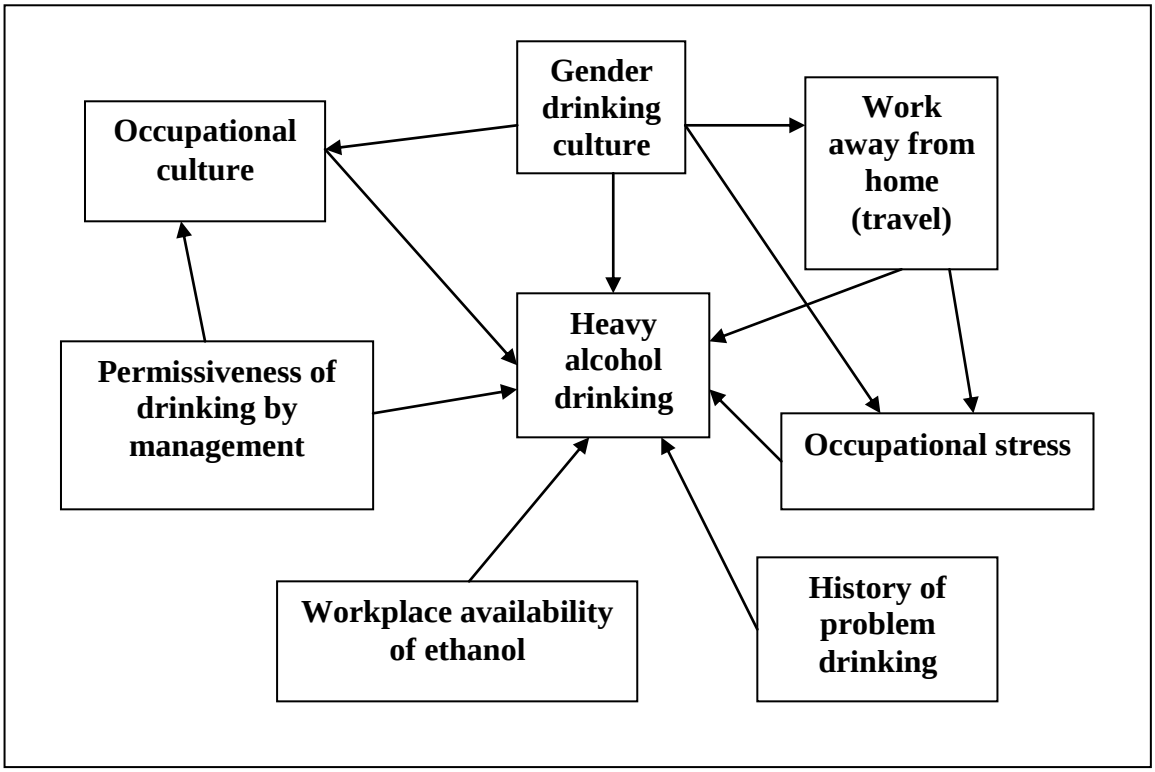
The other occupations reported to be related to drinking at work by females (which were not actually experienced by our respondents but observed by them) were waitress in a restaurant and seller at a market. In these two cases, as it was described above,

several factors were related to drinking: access to alcohol at work, having a physically demanding job, and an occupational drinking culture:

"On baraholka (market) people drink lots of vodka. Beginning in the morning. We have such work, of course, that we need to wake up at three in the morning and at four we have to be at work. And there is no work all the time. You sell something and then there is nothing to do. You can of course clean your little place but that is it – nothing to do. Plus, there are tons of people walking along the stalls suggesting tea, coffee, other beverages. And especially during winter when it is cold some people feel like they need to "warm themselves up." (female, 54 about co-workers)

All in all, there was usually more than one factor contributing to drinking environment related to occupation. For example, occupational stress and management permissiveness of drinking at work influenced an occupational culture of drinking, which combined with high access to ethanol at work to produce a drinking environment. Working away from home in largely male company, conducting physically difficult tasks in the absence of family and/or management control and access to ethanol created the opportunity to drink as well (Figure 20).

Figure 20: Structural model of drinking and occupation



5.2.1.7 Perceived drinking culture

When discussing Russian drinking culture, most participants pointed out that Russians drink a lot, they like to drink, they prefer drinking strong alcohol, and often drink to total drunkenness. Drinking was reported to be deeply rooted in the Russian mentality throughout the centuries, with vodka the "*unquestionable*" national drink. Everyone confirmed that it is a historically traditional drink, and that "*in some people minds vodka and bread are both inseparable and essential in the diet*". It was also said that it is so likable because it is strong and much better in a cold climate as "*it warms you up*". And because there are many heavy drinkers in Russia who prefer strong alcohol, vodka's strength produces "*an effect desirable for many - it knocks you out very fast*". One participant mentioned that there is a customary perception that "*vodka is useful for health as it cleans the blood vessels"*. It was pointed out by several participants as well that vodka became the preferred alcoholic drink because there was poor access to other alcoholic beverages such as good quality wine or beer, especially during the Soviet anti-alcohol campaigns when many wineries were destroyed:

"*We drank only vodka. Everyone. Because there were almost no other types of alcoholic beverages. In the 80s they [government] started to give coupons for alcohol. But the choice was the same: vodka, sparkling wine and if you are lucky cognac. Good quality wine one could get only through connections [po blatu]."* (female, 48)

It was perceived by some participants that people even started to drink more during anti-alcohol campaigns as the shortages led to individuals "stocking up" and buying large quantities of alcoholic beverages whenever they were available for sale. Hence, they tended to have more at home – and this increased consumption. Moreover, heavy drinkers, in the absence of legally sold alcohol, moved to surrogate and home-made alcohol consumption (more about this is presented in the *Perception of policies on surrogates* section of the thesis).

"*There were gigantic queues for vodka when coupons were introduced with lots of alcoholics gathered in one place. Then you could understand the magnitude of the problem. I think people started drinking even more during those days because everyone was buying vodka just in case it would disappear totally from the shelves as was done with some other products. So, you would have a stock at home. But of course when men are around this stock would not last long.*" (female, 49)

"*There is a saying Forbidden fruit is tastier. So if before [the anti-alcohol campaign] you could buy just one bottle [of vodka] and it was OK, then you bought or get under the counter two bottles, just in case. And many desperate even started drinking cologne*." (male, 53)

This perceived Russian heavy drinking culture was explained by several historical, structural and individual factors. First, it was reported that there was long history of heavy drinking in Russia and that a large proportion of population had problem drinking patterns:

"*We drink to the end. If abroad they can drink 100 grams [of vodka] for the whole evening, in our case it is one litre*." (male, 68)

"*It went for ages through generations: from father to son, from brother to brother. Russian people drank, drink and will be drinking [a lot], and there is nothing to do to change it.*" (female, 69)

"*It is a tradition to drink to "little devils" (do chertikov) till one falls with his head to the bowl of salad. People simply do not know when to stop [drinking], no feeling of limits.*" (male, 52)

"*I was in Germany and in Bulgaria and I did not see such [situation with drinking] as here. Here you can see it everywhere on your way on the streets: those drunk faces.*" (female, 58)

Second, it was pointed out that the government played a major role in levels of alcohol consumption in the country as, on one side, it earned high revenues throughout history from selling alcohol and therefore "*promoted drinking*", and on the other side, it "*closed its eyes*" to the problem of heavy drinking.

"*I think it is a very profitable business as we have lots of people who drink. Besides, vodka is our national drink beginning with tsars [when tsars reigned] who gained a lot of profit from alcohol sales. And, for example, when Stalin needed money for industrialization in 30s he gave a permission to sell cheap vodka despite the Soviet policies to promote sober image of "Communism builders".*" (male, 55)

"*Nowadays the government does not pay attention to this [problem]. There are more and more holidays, and the tendency is usually to drink without limits on holidays, to total drunkenness. The ten day winter holidays are a total disaster*." (female, 60)

This government indifference to the alcohol problem was perceived as a part of the government indifference to its population in general. There was a perception among participants that the government does not take care of them, "*it does not care a straw (pliuet na nas) for people's needs*", and it leads to the notion that the ordinary person feels that he/she is not needed in society, "*feels lost*". A vision of rich, corrupt government employees contrasted with an overall picture of poor quality of life of

ordinary people caused frustration, and this led to the notion of an unjust life which contributed to alcohol consumption, in the opinion of some participants:

"*The ministers live well, their pockets are full of money, they feel great, they do not care for simple people. The person is not needed in our society. He is nothing to the government (chelovek ne nughen obshchestvu, gosudarstvu). Look around. There are so many homeless, poor, alcoholics on the streets, and no one cares about it. And people drink, and drink, and drink."* (female, 68)

The recent financial crises, and accompanying high unemployment has intensified this bitter feeling of no prospects, instability, uncertainty, injustice, and as a result no goals for the future. It was reported that alcohol was used as a stress relief during this time by many men. Moreover, the gender role of being the breadwinner (as discussed above) placed them under higher stress than women:

"*Many men began drinking heavily during the transition period because there were no life perspectives for them. They felt instability in future and drank. Women somehow mobilized during that time, but a lot of men just vanished. They considered themselves breadwinners (dobytchikom) and when lost their jobs and could not provide for the family, were placed under huge psychological stress…*" (female, 49)

"*Men are humiliated, they cannot earn enough. That is why people drink. They [government] should improve life (naladit zhisn). The quality of life is so low, we do not believe our government, that is why we do not vote*." (male, 54)

Finally, it was reported that a *low culture of life* (nizkaja kultura zhisni) in the population in general, and a low individual (vnutrenniaja) cultural level, led to the fact that many people drink in "*no civilised way*", *"as pigs*". This low culture of life comprised not just level of education but also the way people behave in public, the way they spend their spare time, whether they read books, participate in sports, or have hobbies. It was reported that some of it depends not just on individuals and their upbringing but also on the fact that books, cinema, theatre, sports as possible leisure

alternatives to drinking, are unaffordable for many, and "*it is much cheaper to buy a bottle than go to the theatre or cinema*" (male, 65).

To summarize, Russian drinking culture was described as being heavy, excessive drinking of strong alcohol with deep historical roots. Respondents depicted several factors influencing it: a long tradition of drinking heavy alcohol, individual culture and history of drinking, government regulations of the types of drinks available along with absence of successful strategy to address problem drinking, the presence of stressful economic situations, low culture and a poor quality of life.

5.2.2 Drinking patterns among patients of alcohol treatment facility

5.2.2.1 Sample characteristics of people recruited from the alcohol treatment facility

Sample characteristics are summarized in Table 48. The mean age of participants was 39 (ranging from 21-61) years, which is younger than in the sample from the HAPIEE cohort, underlining the notion that alcohol problems are more common among younger people. The majority of the sample were male. Seven people reported having secondary education, 27 participants had vocational education, and six had a higher degree. The majority of respondents were involved in manual occupations (including currently unemployed). More than half of the sample was unemployed at the time of interview. Seven respondents had prison experience. Only two respondents lived alone; the majority lived with their parents (usually mother) or their own family. Most participants had been in treatment more than twice. All respondents said that they came to the treatment facility because they had difficulties in stopping drinking themselves.

Table 48: Sample characteristics participants recruited from alcohol treatment facility

Sample Characteristics Patients in alcohol treatment facility N=40	Percentage (*N)* Or mean (range)
Age (yrs)	39 (21–61)
Female gender	17.5% (7)
Marital status	
Single	25% (10)
Married	37.5% (15)
Divorced/Widowed	37.5% (15)
Education	
Secondary and less	17.5% (7)
Vocational	60.0% (24)
Higher	22.5% (9)
Employment	
Unemployed	52,5% (21)
Manual professions	30,0% (12)
Non-manual	17.5% (6)
Pensioner	2.5% (1)
Length of last drinking episode	
4 days-2 weeks	17.5% (7)
3 weeks – 2 months	30.0% (12)
3 months – 8 months	20.0% (8)
More than 8 months	32.5% (13)
Average dose during last drinking episode (ml equivalent of spirit)	690 ml (250-2000)
Number of times in treatment Twice and more	72,5% (29)

5.2.2.2 Zapoj pattern

Most participants were drinking daily before coming to treatment, reporting a loss of control over drinking and needing help to stop. The typical day during a *zapoj* episode (binge drinking continually for two days and more) was described as usually starting with a drink to relieve a severe hangover. Participants would drink first thing in the morning anything left from the evening or immediately go to purchase "the relief dose" which averaged 200 ml (four shots or one glass) of spirits. After several hours, another dose would follow, and closer to the evening the last dose would be purchased and drunk. The majority of participants reported having not eaten any food while drinking due to a loss of appetite and/or inability to eat anything in the morning because of severe withdrawal.

"*To relieve a hangover I do not need much. Meaning, a glass of spirit will be enough for me to make me sleep if I am in zapoj. When I wake up and there is nothing to drink left I am going to get it. And this lasts days…I drink, then smoke but never eat. If I drink*

for three weeks I do not eat three weeks. I just cannot. [And] I do not want [to eat], I do not have appetite." (male, 31)

The daily average dose reported was 700 ml equivalent of spirits per day. In the majority of cases, respondents reported drinking alone at their homes watching TV or doing some home tasks. Several drank with friends or with neighbourhood drinking buddies, and two drank during working hours, "sip by sip", which helped them "get along" while doing their job tasks.

"So it goes for ten days. Every day, during 24 hours I drank a litre of vodka. Little by little. You sit and watch TV. You have a bottle of vodka and maybe some juice. At first you also have some snacks, but then you do not eat at all. So you would drink a bit of vodka, a bit of juice, watch TV, sleep, wake up and continue drinking again." (male, 55)

The length of drinking episode or *zapoj* varied between participants and over time within one drinking career: from three days non-stop drinking to more than a year drinking with short episodes of non-drinking, usually related to time spent in alcohol treatment. Many participants reported controlled drinking especially in the beginning of their drinking career but also between zapoj episodes, and periods of total abstinence. The lastest drinking episode lasted three weeks or longer for the majority of participants, and over three months for half of those interviewed. Different life circumstances influenced the length of drinking episodes such as marriage, spouse/close relative/work supervisor pressure, imprisonment, or simple physical and emotional tiredness from drinking in majority of cases. And in some cases respondents could not explain such differences in lengths of zapojs.

"My last zapoj lasted two weeks. This is the last one. But I had also zapojs for two, sometimes three months. And once I had no zapojs for five years." (male, 55)

"I can drink with friends normally and not be drunk or sick the next day. There are periods when I do not want to drink for weeks, months. I can drink moderately on holidays. But then I do not know what happens and I start drinking non-stop for a week." (male, 57)

The main reasons behind heavy patterns of drinking at the last zapoj episode perceived and reported by the participants were: 1) family reasons such as death of a close relative, divorce, problems with children, spouse 2) celebrating holidays and not being able to stop, 3) stress related to unemployment, 4) depression, 5) boredom and 6) the end of the coding – type of aversive treatment described above (Table 49).

Table 49: Reasons behind the last zapoj episode

Family reasons	*I did not drink, I did not drink. I did not drink but then… There was a long weekend, and I was so tired of everything: of my children, their problems, all the problems (female, 40)* *I got married, lived with my wife. We had a son. But then she died from pneumonia… And I started drink heavily. Our son was only 2.5 years old then. (male, 27)*
Celebrating holidays and being unable to stop	*On the 28 of May was a day of The Frontier Guard. When I was in the army I served as one. I celebrated and since then could not stop at all. [I was drinking] ten days none stop. (male, 43).*
Stress related to unemployment	*I was in stress. Because of the injury and a fact that I lost my job because of it. Besides, I was suggested another place to work but I cannot accept it because of an injury. And naturally, some acquaintances in our neighbourhood suggested a drink: "let's drink with us, come on, for the company." And I have nothing to do anyway. Sure, let's drink I do not need to go to work." Like that. And then it went like that… (male, 33)*
Depression	*I feel somehow depressed. If earlier I could drink and could run some house errands, I was doing something, I had some wishes, now life lost its meaning, everything lost its meaning. I do not know what to do. I do not have any aspirations. After I got married we were settling the house, everything was normal, I started to build a banja, then we bought VCR, a car… but now…I do not know what to do. Everything is meaningless (male, 39)*
Boredom	*Boredom. You are coming home – and you are bored. If there was a family…And you drink a bit and your mood is much better. So I started to escape boredom but finished…I could not stop (male, 44)*
The end of the coding (alcohol aversion treatment)	*I was under a code [from drinking] for a year. But I could not wait and broke it a bit earlier. And it happened that I did not die as they said "if you drink it would be lethal". I drank and nothing happened: no physical signs, nothing in the head. And that is it. I remembered friends, invited them, we celebrated so I could not put my head up for three days. (male, 39)*

5.2.2.3 Long-term zapoj (more than a year) pattern

In contrast to the majority of respondents with zapoj patterns, who reported periods of abstinence and/or controlled, non-problematic drinking between zapoj episodes, there were eight respondents who reported drinking constantly for more than a year. They were all male, on average younger than the rest of the sample (31 years of age versus 41 years of age for the rest of the sample), most of them were unemployed (7/8) and half had a history of problem illegal drug use and a history of prison or police arrests. The

pattern of long-term drinking did not differ much from shorter zapoj patterns, apart from duration and higher average daily alcohol dose consumed: 1000 ml equivalent of spirits versus 590 ml equivalent of spirits in the rest of the sample:

"[I start drinking] maybe from 8 o'clock in the morning. I buy half a litre when I walk a dog. It [the dog] does its business, and then we go again during lunch time. So, I purchase half a litre for a day, around 12 o'clock, after a good nap. And [I buy] more in the evening. That is at 8 o'clock. So, all in all it comes to 1.5 litres every day." (male, 29)

For the majority of these participants heavy drinking patterns developed gradually: in the beginning of their history of alcohol consumption they were drinking only on holidays and special occasions (the traditional Russian pattern of drinking described above), and some, - after work with colleagues. Then drinking progressed to more frequent drinking, experiences of hangover and hangover release (drinking first thing in the morning), and to daily drinking. Drinking increased a lot for some participants in periods of unemployment and in some cases was a reason for unemployment:

"Little by little I began to drink vodka. At first, after work every day and then it went out of control. I quit my job and started 'real' drinking. I started drinking spirit [diluted industrial spirit] not vodka, stopped working entirely. So it went gradually… that is it. [And now] I just cannot be without drinking. " (male, 29)

Only a few of long-term drinking respondents developed a problem drinking pattern very fast: "*When I got out of prison two years ago I started drinking fortified beer, then wine. But it was not enough and I switched to vodka. And it was not enough either so I drank spirit mixed with beer*." (male, 24)

5.2.2.4 Surrogate drinking pattern

All participants reported drinking vodka and diluted industrial spirit ('sultyga') before coming to treatment, and about half also drank wine and beer. Most respondents would start drinking vodka but then buy diluted spirit from private providers when resources become limited, and switch again to vodka or fortified wine when money appeared. A few participants reported reciprocal relationships between neighbourhood drinkers,

'*today I have a bottle to share, tomorrow you will*", which helped them to 'get a fix', 'to pass time drinking', and 'introduced' them to surrogate drinking when they had no money:

"For example, you are without money and you meet someone on a street with two bottles of Bojaryshnik. He asks you: "Will you have some" – OK. So, we smoke, drink sip by sip with water. That's it." (male, 32)

"When I worked I drank only vodka. I would come home, I would have two or three days of holidays, and I would drink wine or vodka. But now… there is no money, so you take what is cheaper. And it is cheaper all in all." (male, 45)

Respondents also reported drinking other substances (besides industrial spirit) with high volumes of ethanol which are not intended to be drunk. Those included: medicinal tinctures with high volume of ethanol purchased in pharmacies (*Boyaryshnik* – 70% ethanol, antiseptic – 95% ethanol), bath tonics purchased in kiosks (Troyar, Troya – 90% ethanol) and cologne purchased in newspaper kiosks (Trojnoj – 60% ethanol). The majority of respondents would dilute substances by half with water. However, a few individuals drank *Boyaryshnik* tincture non-diluted, and two were diluting spirit with beer (Table 50).

Table 50: Reported types of alcohol consumed in the last 12 months

Alcohol beverages	Reported ethanol %	% (*N*) of consumers
Non-surrogates		
Vodka	40	92.5 (37)
Wine/Fortified Wine	12/18	35 (14)
Beer/Strong Beer	5/9	45 (18)
Surrogates (see Appendix # with photos of types of surrogate alcohol)		
Industrial spirit (bought in apartments and private houses)	95 (undiluted)	70 (28)
Boyaryshnik (bought in pharmacies)	70	13 (12)
Antiseptin (bought in pharmacies)	95	7.5 (3)
Troyar, bath tonic (bought in kiosks)	90	12.5 (5)
Trojnoj cologne (bought in kiosks)	60-70	5 (2)

The main reason reported for drinking surrogates was a combination of severe withdrawal symptoms and high accessibility (affordability and physical availability) of surrogates. The price of surrogate substances was one of the main attractions. Diluted spirit was three times cheaper than the cheapest vodka. And especially when no money was available it was reported to be much easier to "borrow" 2-3 roubles among friends or neighbourhood heavy drinkers to purchase cheap spirit*. In some sales places spirit could even be exchanged for goods.

"The cheapest vodka now is around 70 roubles for 500 grams…or you pay 20 roubles for the same amount of spirit. Do you see the difference? And you do not think about your liver or kidneys, you feel so badly physically, you are in tremor and almost cannot move. All you think about is how to get better quicker." (male, 34)

Besides lower cost, the physical availability of spirit-selling locations was another important reason. Diluted or non-diluted spirit was sold from kiosks (under the counter) and private apartments and houses in every neighbourhood illegally (Figure 21, 22). Respondents knew on average seven places where they could purchase industrial spirit. The need to know so many places was explained by hours of opening, proximity to the participant's house/location, the availability of spirit at the place (some places could be temporarily closed by the police or could run out of spirit), and quality of the spirit. Most places opened very early (6-8 a.m.) to meet the needs of those clients who have to "*get a fix*" first thing in the morning, and remained open until late (23.00). Some places were open 24 hours.

"There is a place on the first floor and the other is on the ninth floor. Five minutes from my apartment. They even have a steel door with a special small window for spirit sale. So they do not need to open the door, they just open this small window...I wish there would not be such places. I left my lamp and radio there [as payment]." (female, 52)

* For a price of 500 ml of diluted spirit (20-25 roubles) in Novosibirsk one could buy 1.5 loafs of bread or 500 ml of milk.

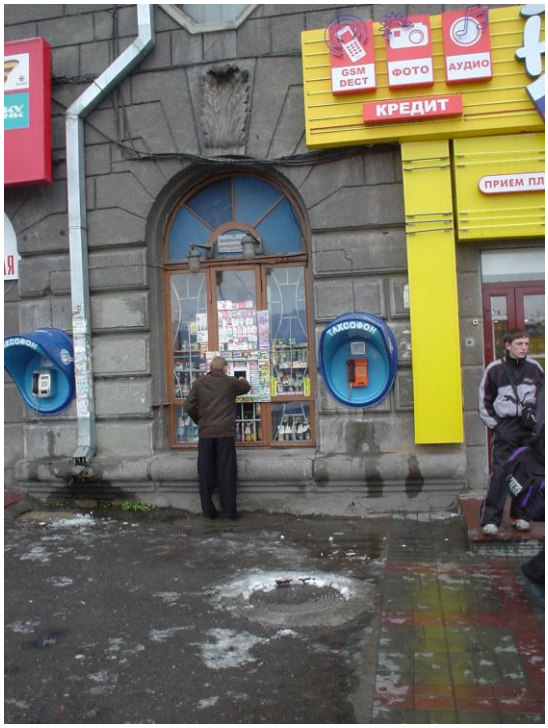


Figure 21: The kiosk near Novosibirsk railway station where surrogate alcohol could be purchased under the counter.

Figure 22: Typical Novosibirsk apartment building where diluted industrial spirit could be bought from the ground floor barred balcony

The spirit sold from apartments and private houses was reported as having different qualities. The "bad" spirit would have a strong smell of rubber, oil or acetone, and could have a "milky" colour. In comparison, good vodka, and a good spirit, would have no smell and could be drunk "smoothly". The quality could differ between sellers but also in the same location depending on "supply" (e.g., where the spirit was coming from). It was also reported that in some places tobacco or dimedryl (sleeping medicine) was added to the spirit, which would "knock you down faster" and "got you more addicted to it". That is why some respondents preferred not to use these sellers and rather bought undiluted spirit at a higher price, in order to be sure that nothing was added to it or that they were *"not buying just water":*

"*They add some stuff to diluted spirit. You wake up in the morning and rush immediately to buy it again. They dilute it in such way so that most of it is water but they add pills to it and it hits your head, you become like a fool, no longer responsible for your actions. Become crazy. I even hit a man once after drinking it."* (female, 35)

There were distinctive perceptions of more severe withdrawal symptoms from drinking bad industrial spirit (compared to good vodka or substances bought at pharmacies). Such spirits were called "poisonous", "harmful", "disgusting to taste" and described as substances which negatively influence physical health and mood. The health consequences reported by the study participants included severe headaches, loss of sight, and numbness in the arms and legs. A few respondents mentioned that for them the availability of spirit contributed to the development of more severe alcohol dependence. Only one respondent attributed having a severe hangover to the quantity rather than quality of consumed alcohol.

"You feel awful after drinking industrial spirit. Besides its terrible taste, the hangover is much worse, awful headache, depressed mood. Your legs become numb, it is difficult to move." (male, 56)

"There is a very, very strong hangover after it. First of all, there is a very strong tremor, and I am not talking just about hands. It is inside, all your insides are shaking

starting from the stomach and ending with upper parts. There is no such thing after drinking vodka or Boyaryshnik, which actually tastes nice." (male, 38)

Despite its detrimental qualities, respondents would still buy industrial spirit on the pretext that one can also be easily poisoned by contaminated vodka bought in a decent shop. They would claim that such vodka also can be made of the same diluted industrial spirit. In fact, the quality of spirit was mostly discussed in comparison with the quality of vodka.

Thirteen participants reported drinking only vodka and other legal alcoholic beverages, and no surrogates during the last 12 months. Main reasons given were: health concerns "*those are lethal substances*", "*it will be a suicide to drink them*"; "*if I drink it I will feel hundred times worse health wise*"; previous negative experiences after drinking surrogates such as poisoning, and ability to afford "*clean*", good quality alcohol.
This group also reported a shorter previous-drinking episode (two weeks or less) and lower average dose consumed per day before coming to treatment (430 ml of ethanol vs. 800 ml among surrogate drinkers). More people in this group had non-manual, managerial jobs and had a higher education level. This could imply that first, surrogate consumers could be more dependent on alcohol than non-consumers. (In fact, according to some of our respondents, surrogates produce greater dependence but this is probably an example of a reverse attribution of causality.) And second, socio-economic status seems one of the factors influencing surrogate drinking behaviour. It is plausible that lower socio-economic status could be a risk factor for alcohol dependence, as well as a force in the choice to buy and consume illegally sold spirit. Although because of the nature of the qualitative study, we cannot derive any generalizations or conclusions based on these observations, we can suggest that these hypotheses be checked in further research.

5.2.2.5 Occupation and drinking among respondents from the alcohol treatment facility

In this study there was one pensioner, eleven people employed in manual occupations, six in professional (teachers at the university, supervisors) and technical positions (engineers) and more than half of the patients in alcohol treatment facility were

unemployed. Most of them were previously employed at various manual jobs but because of heavy long drinking episodes and following absenteeism were laid off:

"*I was often drinking at work, and the first few times they [management] did not say anything but when I was totally pissed they kicked me out.*" (male, 31)

The majority of employed respondents reported that they usually drank after work, and their "binge drinking" often happened at home causing work absenteeism. They would take a holiday or an official sick leave and sometimes would pay a health practitioner to get leave when a long "binge" was happening. In cases when drinking happened at work "sympathetic management" would either close their eyes on it, or send a particulary valuable employee "to get over it", or "to get treatment [zakodirovatsa]:

"*I drank at work, of course. But not a lot, I know my dosage. I drank, felt well and did my job. I checked whether everything was OK. Electrician always has to have everything in order. Everything was ok. So I drank a bit more. I could finish a bottle (of vodka) during a day. But one day my boss told me that I should take a holiday and go for treatment [pojdi zakodirujsja]. So, here I am.*" (male, 39)

"*Oh, yeah, I had to buy a sick leave. They [management] were not satisfied with my work. But they did not take it [drinking] very seriously as they value me as a specialist.*" (male, 64)

For many of respondents, heavy drinking started at work. Reasons similar to those given in the first qualitative study were cited as causing it: access to ethanol, occupational culture, hard, monotonous, hazardous low paid jobs, permissiveness of drinking by management, long business trips in male company, and occupational stress. Further, as was shown in the qualitative study among HAPIEE participants, many of these conditions have overlapped (Table 51).

Table 51: Drinking and occupation

Access to ethanol	*"I worked as a "Baltika" [beer brand] loader. There was no drinking water there so I was drinking beer. It was very light. I drank it all day long and, of course, at the end of the day I was totally drunk."* (male, 21).

	"We had very clean spirit because we had very serious electro-technical equipment, so the spirit which was given to us was of the highest quality. So, we usually drank it during mission trips in the evenings when there was nothing to do. We played cards and drank it in our male company, sometimes we diluted it, sometimes made cocktails, or added it to the coffee." (male, 64) "*My disease began when I started working as a barman. Alcoholism, I mean. With time I had regulars and they often would suggest I drink with them a shot [rujmochku]. And there were 60 seats in the restaurant. And there were times when I simply did not know who ordered what. Then I understood that I cannot be without alcohol and often after work took a bottle of spirits with me home and drank it before going to bed. And in the morning everything [drinking] would start again.*" (male, 30)
Occupational culture	*"I was working as a policeman those days. And we had such a ritual on Fridays, we called it Friday-debauch day. We had all we wanted those days: vodka, cognac, wines, and what not. And everything was of the highest quality. So alcohol was flowing like a river. Once I counted that we drank 85 litres between 15 of us. And it was only beer, without liquors." (male, 36)* *"It was as a rule. As a rule, different groups were gathering together and drinking hard [zashibat] Everyone and regularly drinks hard. So I started drinking hard working on the open air market [baraholka]. Only then it became regular drinking before that I was drinking from time to time only. Why on the market? [Because] In a summer it was hot, so you would drink bottle after bottle [of beer]… and in winter time it was cold...* "(male, 35)
Long business trips in male company	*"I had contractual construction work in the North. We lived in dormitories. Can you imagine 120-150 men live together? No families. Everyone drinks. We worked and drank like hell. Our working day was 12 hours."* (male, 35) *"I started drinking on my trips to Norilsk. When our brigade of eight workers drank first two weeks, than worked like animals the rest of two weeks to make the plan [fulfil the obligations].* *-Did management react on your drinking?* *-No one cared. The main thing was a result of work being done."*(male, 40)
Physically demanding hazardous for health jobs	*"It is better not to work at such type of jobs at all. I had to load six meter long planks covered in ice on a carriage where they would dry. I was paid only 600 roubles for that and even that was unstable…When people arrived to take the planks, they paid a bit, and we would buy a bottle to warm up.* " (male, 31) "*I pack bay leaves by hand. You take it from a big sack, place in a pan, and then pack into small paper bags, and glue the bag. Conditions are horrific, the time-table is hard. I wake up at 5am every day, work on Saturdays as well, we do not have any social bonuses, or sick leaves or annual leaves but one want to earn [some money]. There are lot of dirt, dust, and noise. My table becomes black after 2 minutes since I started working. I think it because of these very dusty bay leaves. This dust settles in lungs, you cough a lot. There are 30 of us working there but people often cannot cope with such conditions and leave often after a day. There is no air conditioner during the summer. It is very stuffy… So, in the morning I drink half a glass of vodka or 500 grams of cocktail [gin and tonic], and take 2 litres of the cocktail to work. I drink it there while working…"* (female, 32)
Permissiveness of drinking by management	*"That time I worked as a fitter. And naturally drank a lot. It was such a job that even if you had alcohol smelling breath [s peregarom] nobody paid any attention if only one worked."* (male, 41) *"I was working freelance putting tiles for one man for several weeks. So every morning he was giving me half a glass [of vodka], then half a glass during the lunch time, then after work a glass. So roughly I drank a bottle per day. It was like it for two weeks… He did not mind as far as the work was done"* (male, 35) *"On my old job nobody paid attention to me. I was privileged in that sense and could drink as much as I wanted and when I wanted. So, then it went on in on, almost every day [I was drinking]. Sort of, it was more cheerful to work that way."* (male, 38)

Work related stress	"*First you come and they promise you golden mountains…For example, I worked as an adjuster at the firm. I thought OK, first month I got 9600 roubles [about 200 pounds]. I thought maybe it is because of the first month, and they check how I work. Sort of on probation. I did not drink at all those days, I was in good proper order. OK, second month- 7300, what the hell?!. So, I went to the top engineer asking what is the deal, where is my promised salary? He says: "we are having difficult times at the moment". I say, but you have promised me 12,000. So please provide it, put it on the table. He says: "You do not like it. Leave." That is it? Can you understand? I said: "No questions, I went to human resources and hand in the application. And try not to drink after that.*" (male, 38)
	"*Our department is just a dirt pit. The chair is all corrupted, so to say. He promotes his graduates who are totally not competent, and mediocre. They do not do anything just use our results. Parasites. This is so frustrating ….I just hated the chair as he closes eyes on it. So, when you every day face this environment when everyone slanders, wants to undermine you, annulated all your achievements, you needless to say, need some relief. So, drinking calms you down, becomes a relief for your soul, so you can rest"* (male, 51)

However, several respondents also had individual reasons to drink at the workplace or before going to work as they "*physically could not do otherwise*". They reported having an initial dose of alcohol in the morning to be able to wake up and go to work, then continued drinking little by little at work, which "*helped to cope*" with their responsibilities, and simply do their jobs:

"*I do not feel like a human being if I do not drink something in the morning. I feel very sick. I cannot wake up from the bed. So, I drink usually half a litre of wine, so I get to work in normal state, and that keeps me alive until lunch time…But then again tremor begins, so I cannot keep a hammer in my hand, I see double… So I crawl to the rjumochnaja [wine/beer selling place], drink there a glass of wine, and take 1.5 litres with me as well*." (male, 40)

It was reported by some respondents involved in manual jobs that their initiation to heavy drinking often started with the first pay check when a new employee had to treat [vystavit] everyone to a drink as a sign of becoming a part of the team [collective]. Usually it was a bottle or two of vodka depending on the size of the team. Then often colleagues would drink together every day (or once a month in some cases) after work going to some outside drinking facility such as rujmochnaja[*], pivnaja, or wine and beer-selling kiosks which would have high-legged tables standing outside (Figure 23, 24).

[*] Rumochnaja – from a word "rjumka", a shot glass – type of café with tables where different type of alcohol would be served as well as some food. Pivnaja – from a word "pivo", beer – beer selling facility with usually high-legged tables and often without any food available, attended almost exclusively by men.

They would relax, socialize, discuss their problems, their management, and work related stressful situations:

"I started drinking regularly when I started working. In so called working collective. If you are going well with the collective, with the first wage you should treat everyone. You sit, drink and eat. That is so called the beginning of your real working life. That is it. And then of course after work with colleagues for a drink – this is obligatory. I do not know a welder who does not drink." (male, 28)

"*It happens often when wage is received or after work on an average day depending on situation. When it is needed to relieve stress, for example. So we pool our resources together, and [go for a drink]. For example, when needed materials did not arrive and we had all day nothing to do, and everyone is frustrated*." (male, 32)

It was reported that at times colleagues would drink also during work, especially when permitted by the management (see also Table 51). In that case, the money would be pooled at the beginning of the day and someone would be sent to buy a bottle of vodka which would be drunk during the working day. At the end of the day workers could also continue drinking as described above. This ritual of pooling money (obshchag) and drinking is considered to be a sign of comradeship and of being in a team.

Figure 23: Pivnaja

Figure 24: Rumochnaja

In some working collectives more recently, however, a sober culture was introduced. Although many of these non-drinkers were former heavy drinkers, they went through codirovanie, and did not drink at all, they became abstainers (nep'jushchie). This has made it less customary to drink at work or after work. Respondents also reported being cautious and keeping their drinking under control when they valued their jobs, when a job required high skills and responsibility, and when management did not tolerate the drinking:

"*It [eagerness to drink] somehow totally disappeared from my head. I was watched by the management. And also they gave me very nice car. So, I needed to be responsible*." (male, 44)

Finally, being employed, having a nice, interesting job where one's skills were appreciated and valued by colleagues and supervisors was believed would help keep people from drinking and was seen as stimuli not to drink. To find "*a decent*" job was often the first thing unemployed respondents wanted to do after coming out of treatment.

5.2.2.7 Perception of alcohol policies on drinking behaviour

This final section of the chapter highlights participants' perceptions of differences in drinking behaviours, with a particular focus on surrogate consumption, during major changes in alcohol policies in the last two decades, such as the Gorbachev anti-alcohol campaign and the de-monopolisation of the alcohol market after the collapse of the Soviet Union.

The first experiences of surrogate drinking were commonly reported to have occurred during the Gorbachev anti-alcohol campaign when the sale of legal alcohol was limited. Apart from increasing the consumption of samogon (moonshine, homemade spirits), the purchase and consumption of cologne was also reported in this time period:

"*I remember, there were such queues to buy alcohol, people were killing each other in those queues. And illegally you could buy it as well. Lots of moonshine production. I remember, in our dormitory everyone was making moonshine. Everyone, even former light drinkers were drinking. And the most desperate were even drinking cologne. So, nothing was changed but lots of harm was done to people [by the campaign]*." (female, 35)

In fact, most participants perceived the anti-alcohol campaign negatively, pointing out that "*it did more harm than good*", and did not help at all in addressing problem alcohol drinking. Only two respondents looked positively on the time when alcohol could be purchased only with coupons and during certain hours, as in their perspective, it influenced their drinking in a positive way. At the same time, they also mentioned that alongside government control over drinking there was better employment, and more security and stability than in the years following the collapse of the Soviet Union:

"*People drank less because there was work, employment. I drank much less because there was nothing to drink. It was taken seriously by the government. Well, maybe one could drink 50 grams with friends in the evening in the kitchen. That is it. Tomorrow you have to be at work. Then it started: nothing in the stores, no jobs, no money, plants were closing, everything collapsing. What to do in this situation? Only drink like hell.*" (male, 61)

Major disruptions in life after the collapse of the Soviet Union, such as increased unemployment, corruption, and reduced social safety nets coincided with the de-monopolisation of the alcohol market. According to study participants, the availability of industrial spirits and other low-quality alcohol then increased rapidly as did consumption of different types of alcohol (Figure 25). Spirit for internal consumption was sold legally from stores and kiosks, but at the same time quality control declined and large quantities of counterfeit cheap alcohol appeared on the market. It was reported that tank-cars of spirit from the plants outside of Novosibirsk appeared on every corner of the city, and one could buy it "*either by the glass or in ten litre canisters*". Inevitably, with the abundance of alcohol products, consumption increased and, as was pointed out by one respondent "*the whole country drank as if there was no tomorrow*":

"*I remember, when I was working as a policeman around 1993, counterfeit vodka was sold literally in every house. Because there was no control and spirit was brought to the region in tank-cars. On every street of Novosibirsk these tank-cars were standing, and you could buy the whole tank-car if you wanted. Police were closing their eyes to it because they got some profit out of it. I think people drank for a hundred years ahead those days.*" (male, 36)

The increase in the price of legal alcohol after recent policy changes, together with the high accessibility of illegal industrial spirit (as described above), were the major reasons given for drinking surrogates in the current period. During the course of this study, the government introduced policies which, according to our participants, limited their access to particular non-beverage alcohol and reduced its consumption. The most popular substances such as Trojnoj cologne and Boyaryshnik tincture disappeared from newspaper kiosks and pharmacies. However, according to participants, it was still possible to buy them under the counter in some places. Between May 2006 and September 2007, we visited several sales locations in order to purchase the non-beverage alcohol reported by the participants. Indeed, Trojnoj cologne was available in May 2006 but it was already unavailable for sale in September 2006. Similarly, Boyaryshnik disappeared from the pharmacies a bit later. Nevertheless, as reported by

our participants, illegal sales places for industrial spirit, which were often known to the police, remained untouched:

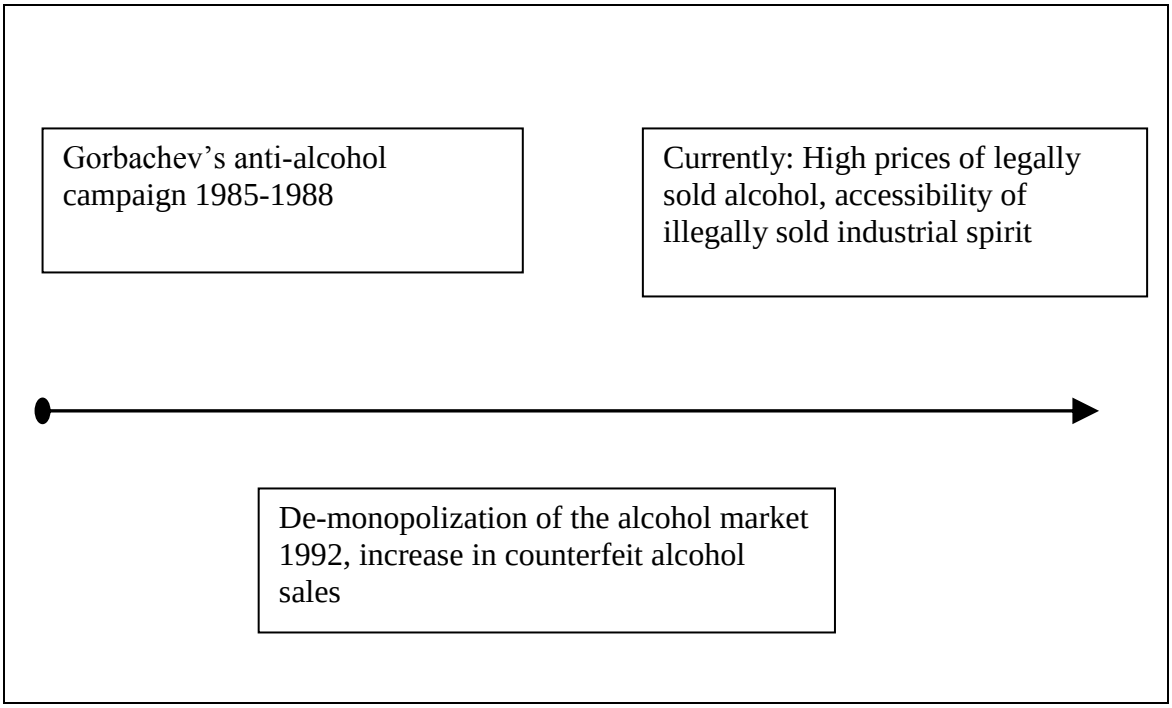
"*One woman was selling spirit a bit cheaper [than in other places]. So indeed, she had crowds, queues to buy it. But the police came and she stopped selling for three days. Then [she] started selling again but at a higher price*." (female, 35)

"*Vodka should not be banned [as in Gorbachev times because] it is understandable that people will drink surrogates [instead]. But surrogates [sales places] can be closed, especially because the police know where and what [is sold]*." (male, 32)

When we asked respondents what could be done in order to change the situation with problem drinking in Russia, opinions were divided. One group thought that there is nothing to be done: Russians will always drink a lot, and if one closes existing surrogate alcohol selling places new ones will appear as they are controlled by corrupt police. The other group thought that the only way to change anything with drinking is to provide jobs for people and improve quality of life, i.e., increase people's involvement in sports "*so the youth is growing not near beer kiosks but in sport clubs*":

"*What to do? You cannot do anything. Improve quality of life. So, the person could take a holiday and go to… For example, like my father and mother back those days they went to Bulgaria for holidays. And my father was a simple turner, and mother was just a technologist. I also went to the seaside a lot when I was a kid. And what happens now? People do not even want to have kids. As my friend told me, when you are going into labour you have to pay the staff first, then to pay for their masks, their robes, so much and so much…. That is it: low quality of life.*" (male, 44)

Figure 25: Alcohol policies since Gorbachev anti-alcohol campaign which impacted increase in surrogate alcohol consumption



5.2.3 Summary of qualitative studies

First, the chapter provided an in-depth description of drinking patterns among the men and women in Novosibirsk recruited from the HAPIEE cohort. Large differences in drinking behaviour, drinking norms and perceptions about drinking were found between genders. These differences were largely related to gender roles and perceived gender identity: "*a real woman*" is supposed to drink a minimum amount of alcohol; by contrary "*a real man*" can drink a lot. Women's multiple responsibilities at home were leaving them little time to drink, whereas men's total withdrawal from domestic responsibilities provided them more opportunities for leisure - which was often spent drinking. These differences were also reflected in occupational cultures and drinking patterns: women reported no drinking at the workplace, no drinking after work with colleagues, and only one woman reported drinking after a working shift which was related to occupational culture. Men, on the other hand, had quite a few drinking experiences related to their jobs which were triggered by access to ethanol at work, working away from home in exclusively male company, management that was tolerant of drinking at work, and work related-stresses. The chapter also explored participants'

perceptions of Russian drinking culture, which was described as a traditionally heavy-drinking culture influenced by a long history of drinking strong alcohol, governmental regulations about drinking, economic hardships, and a low quality of life.

Second, descriptions of problem drinking patterns based on interviews with patients of an alcohol treatment facility were studied, including surrogate drinking patterns. It was found that the high availability of surrogate alcohol as well as its cheap price attracted very heavy drinkers to its consumption, despite perceived risks to health. When exploring occupation and drinking in this sample, we found that besides severe withdrawal symptoms and being unable to stop drinking without help, the heavy problem drinking patterns caused job absenteeism and often loss of employment. In some cases heavy drinking started and was continued at work as a part of male occupational culture (especially among men employed in manual occupations), and with time spiralled out of control. Nevertheless, being employed was one of the main protecting factors against reported drinking especially when the job was valued and management was supportive of non-drinking.

Finally, the chapter explored perceptions of alcohol policies on drinking showing that producing severe shortages of alcohol beverages as happened during the Gorbachev anti-alcohol campaign resulted in an increase of illegal moonshine production, and alcohol surrogate consumption among heavy drinkers. On the other hand, total "*freedom*" of alcohol markets in a framework of economic instability could produce similar if not larger effects, increasing alcohol consumption in general and surrogate alcohol specifically.

6. Discussion

This chapter present a general discussion of the findings reported in this thesis. After a brief summary of the results, the limitations and strengths of the study are discussed. Second, the major findings of drinking patterns among men and women in the HAPIEE survey are discussed, with a focus on gender differences in alcohol consumption. In addition to the survey results, it shows how the qualitative data help to explain the gender differences from the participants' own perspective, revealing in detail what lies behind the numbers. Third, the socio-economic distribution of hazardous drinking patterns is considered, with specific attention to the type of occupation and occupational drinking culture, which was also explored in detail in the qualitative studies. Fourth, problem drinking and surrogate alcohol drinking patterns are addressed using the findings of the qualitative study conducted in an alcohol treatment facility. Finally, the chapter concludes with a discussion of the policy implications, which includes participants' perspectives and discussion of alcohol policies in Russia, using the findings from two qualitative studies as well as a review of current alcohol policies in the country.

6.1 Summary of the results

This thesis, based on data from Novosibirsk, Russia, found that hazardous drinking patterns were common among males but almost negligible among females. There were a very small number of surrogate alcohol drinkers in the cohort, and spirits constituted most of the ethanol intake in the male population. Beer was the preferred beverage among female consumers who reported drinking at least once a week, with spirits consumed on occasions when the largest dose of alcohol was drunk. About half of the men consumed alcohol at least once a week, while women preferred to drink less than once a month. We found a large gap in drinking between genders reflected in differences in average annual pure alcohol intake, alcohol intake per occasion, number of drinking occasions per year, frequency of intoxications, binge drinking and negative consequences of drinking.

The study identified several predictors of hazardous drinking. We found that hazardous drinking was more common among people with a lower socioeconomic position.

Hazardous drinking in both genders was more prevalent among less-educated individuals and the unemployed, and less common among people in professional occupations. For some predictors, the relationships with hazardous drinking variables were different between genders. Poor material situation was one of the predictors of binge and problem drinking in multivariate analysis among men but not among women. Single men in our study were at an increased risk of binge drinking compared to married men, but this was not the case among women. Having depressive symptoms was a predictor of problem drinking among men but was not significantly related to binge drinking. Among women, having depressive symptoms became significant only in the fully adjusted model after adjustment for self-reported health. Moreover, people in certain occupations were at increased risk for hazardous drinking. Among men, the types of occupation included: manual occupations and construction, military, and drivers; among women, manual workers and clerks were at elevated risk. Finally, people who reported better health had elevated rates of binge drinking.

Qualitative data have shown that gender roles and a traditional culture around women's and men's drinking were the main reasons for the reported gender gap in drinking behaviour. Moreover, the data provided insights into how certain occupational drinking cultures influenced drinking behaviour. The qualitative study in an alcohol treatment facility found that surrogate drinking is common among the clinical population despite being perceived to be more detrimental to health than legal alcohol. A variety of heavy drinking patterns were identified and a description given of the context that facilitates hazardous drinking behaviour with the interplay of individual and structural factors, such as wide physical availability and low price of surrogates. The findings also suggest that alcohol dependent people in a lower socioeconomic position could be more likely to be involved in surrogate drinking, but this needs to be confirmed in epidemiological surveys. Overall, the participants perceived Russian drinking culture as a heavy drinking culture, which was attributed to historical tradition, governmental influences and low quality of life.

6.2 Limitations and strengths of the study

6.2.1 Limitations of quantitative data

When interpreting the presented results, we have to consider the limitations and strengths of both the survey (quantitative) data and the qualitative interviews.

6.2.1.1 Under-reporting

Alcohol consumption drinking is often under-reported in surveys. It has been estimated, for example, that the volume of alcohol consumption reported in surveys accounts only for 66% of alcohol produced or sold (Rehm & Gmel, 2001, Global Status Report on Alcohol, 2004). This could lead to the underestimation of the proportion of study subjects with hazardous drinking patterns. Moreover, self-reported alcohol consumption is more likely to be underreported by women and by very heavy drinkers due to the social stigma attached to it (Laatikinen et al., 2002, Bobrova et al., 2010). In our study, a very low percentage of women reported hazardous drinking, and the prevalence of surrogate drinking among study participants was also very low. This made detailed analysis among women and surrogate drinkers impossible. Furthermore, the fact that data collection was conducted in clinical settings by nurses could influence respondents' answers regarding their drinking behaviour, making them more likely to provide socially-acceptable answers. Misclassification certainly occurred but it is difficult to quantify its extent. On the other hand, alcohol use in our study was measured intensively using different sets of questions, and there was a high agreement in reporting hazardous drinking across the two waves. It is likely that the absolute levels of drinking were underestimated but we believe that the rank of persons by drinking is reasonably reliable.

6.2.1.2 Non-response

There could be bias due to non-response. In the HAPPIEE study, participants were randomly selected from the population register with a response rate of 61%. Although high levels of non-response are common in surveys in Russia the impact of non-response on results in Russian settings is not known (Vagero & Kislitsyna, 2008, Bobak et al., 1999). An analysis on selected variables was conducted among a sub-sample of

non-respondents in the HAPPIE cohort, including the Novosibirsk cohort (Peasey et al., 2006). It was found that a substantial proportion of non-respondents had moved or died prior to data collection, and after corrections the response rate in Novosibirsk was above 71%. It was found that participants were healthier, had higher education, were more likely to be female, to be older, and to be non-smokers than non-respondents, which is consistent with similar epidemiological studies (Criqui et al., 1978, Hoeymans, 1998, Korkeila, 2001, Purdie, 2002, Vagero & Kislitsyna, 2008). It could be argued that less healthy people found it difficult to reach the clinic because of their health conditions, including problem drinking, and it is well-known that it is difficult to reach problem drinkers in population surveys. For example, in the Izhevsk study, where alcohol consumption was collected from proxy respondents (usually wives), there was a substantially higher proportion of heavy drinkers than in the HAPIEE Novosibirsk cohort. As the authors of this study put it: "12% of proxies reported that the man had been on zapoj at least once in the past year, compared with only 8% of men self-reporting the same behaviour; 15% of proxies reported that the man had frequent hangovers during the past year, compared with 10% of men self-reporting this" (Tomkins et al., 2007). However, although these factors could lead to a potential underestimation of the number of very heavy drinkers or people with developed alcohol problems, they would be unlikely to significantly influence the internal analyses as long as the rank of subjects by drinking is preserved. Moreover, as was discussed in Chapter 3, selected occupation types and marital status in the same age range in HAPIEE cohort are very similar to those reported by the 2002 Russian census (conducted one year before the base-line survey) suggesting that our results are generalizable to the Russian middle-aged and elderly urban population of person with addresses (excluding homeless population).

6.2.1.3 Cross-sectional data

The majority of the analysis was conducted using cross-sectional data. Hence, the observed associations between outcome variables and independent variables may not be causal, and in many cases it is impossible to assess the direction of the causality. For example, reverse causality could be a plausible explanation between material deprivation and alcohol consumption, depressive symptoms and heavy drinking, self-reported health and heavy drinking, which will be discussed in detail below.

6.2.1.4 Self-reported data

Most data analysed in this thesis have been self-reported. As discussed above, this is likely to produce misclassification (and underestimation) of drinking habits. In addition, subjectively reported covariates (e.g., material deprivation, self-reported health) may also be misclassified and, if their assessment was related to drinking status, would introduce reporting bias.

6.2.1.5 Restricted age range

Our study has a restricted age range which makes it not generalizable to younger people among whom drinking patterns may be different. It was shown, for example, that younger Russian people have a higher proportion of hazardous drinkers among both men and women, and alcohol dependent people are on average younger than people in our sample (Jukkala et al., 2008, Stickley et al., 2007, Perlman, 2010). Similarly, the mortality attributed to alcohol in Russia is highest among persons aged less than 55 years (Leon et al., 1997). Our study has a limited power to assess these younger age groups.

6.2.2 Limitations of qualitative data

6.2.2.1 Non-random sample size and unrepresentative study subjects

The main limitation of the two qualitative studies is that the samples are small and not representative for the population. The results are therefore not generalizable to other people or other settings. For example, those study participants who described particular drinking rituals related to their occupation could be unrepresentative of average workers in their industry. In this case, our quantitative data supported the results that individuals in some occupations, such as drivers or manual workers, are at more risk of unhealthy drinking than those in other occupations.

These studies also focused on participants' own perceptions and self-reports, and some aspects of alcohol consumption and drinking patterns could be beyond their experiences and awareness. Moreover, self-reported data could be biased as participants could provide socially acceptable answers especially because the interviews were conducted

in a clinical setting by a person in a clinician's overcoat. Nevertheless, the studies provided valuable insights on hazardous drinking, and on how certain socio-cultural contexts shape drinking behaviour. These factors include self-perceptions of one's own and others' drinking behaviour, and its cultural and historical roots, gender, occupation, alcohol policies, and the availability and accessibility of particular alcoholic beverages. In this sense, both qualitative studies fulfilled their main purpose of providing local contexts where drinking occurs, and participants' own perceptions and meanings behind drinking behaviour.

More observational qualitative studies (interviewing colleagues, employers) need to be conducted to bring more detail on perceived drinking culture in general, and more specifically on how occupational drinking culture and gender drinking culture are constructed and how they influences individuals' behaviour.

6.2.2.2 Sample from alcohol treatment facility

People interviewed in alcohol treatment facilities could be different from and not representative of all heavy drinkers, including surrogate drinkers (e.g., those who do not come to treatment, or occasional surrogate drinkers). On the one hand, people who come to treatment may (i) have a better financial situation as they can pay for treatment, (ii) may more likely to be married or live with a partner (in many cases, spouses brought participants to treatment), (iii) more likely to be men, (iv) may be more worried about their health in relation to drinking, (v) may have less likely to have mental illness and be homeless which could be reflected in their drinking behaviour: they will be more likely to drink in less hazardous way and less likely drinking surrogate alcohol. On the other hand, they could have more severe problems related to drinking, and hence could be more likely to use surrogates. It has been shown, for example, that the treatment-seeking population has more severe illness, has higher levels of alcohol consumption, is more likely to skip meals while drinking and has more blackouts than people who abuse alcohol but do not come to treatment (Blanco et al., 2008, Hasin et al., 1997). Finally, similar to the first qualitative study, participants could provide socially desirable answers because that study was conducted in a clinical setting in a psychologist room.

Thus, surrogate drinking patterns need to be further studied both qualitatively and quantitatively. Given that surrogate drinking can be underreported in population surveys, larger surveys among clinical population could be conducted, and/or surrogate drinkers could be recruited in their communities (e.g., at surrogate sales locations). In this respect, the particularly interesting areas for further research identified in this study include (i) the influence of surrogate use on excessive drinking and more severe dependence (i.e., use of drinks with higher than traditional concentration of ethanol or use of surrogates containing additives); (ii) the health consequences of surrogate use, and whether the consequences of surrogates can be disentangled from those of "normal" alcohol beverages); and (iii) the relationships between socioeconomic status, surrogate drinking, and dependence.

6.2.3. Strengths

There were several strengths of the study, which will be briefly discussed below.

6.2.3.1 Qualitative studies and mixed methodology

A mixed methodology enabled us to draw a more detailed picture of drinking patterns in Novosibirsk and to explore the surrogate consumption pattern, a phenomenon of the Russian drinking culture which is unlikely to be reported in surveys. For example, in the HAPIEE survey only 36 people (less than 1%) reported drinking surrogate alcohol in the previous year. However, the majority of qualitative study respondents from the alcohol treatment facility drank surrogate alcohol before entering treatment, and could provide insights to this behaviour. Qualitative studies added meaning and insights to quantitative data, especially with regard to the gender gap in drinking, differences in drinking between certain occupations, and such drinking patterns as heavy binge drinking (zapoj). Finally, qualitative studies also provided feedback for the second wave data collection (not used in this study) and to future research on the best way to ask questions related to surrogate consumption and individual drinking patterns which are likely to be overlooked in surveys. Asking particular types of "common" surrogate alcohol (e.g., [industrial] spirit, Boyaryshnik, Torjnoj) proved to be more effective than asking about surrogate beverages in general because participants were attaching different meanings to the word "surrogate". Similarly, asking about particular patterns of drinking such as "drinking beer on a hot summer day" added more cases to the data

collected by QF questionnaire because participants did not count such occasion as alcohol drinking.

At the same time, it was possible to verify in the survey the findings derived from qualitative interviews with key informants and other respondents which highlighted that particular occupations are at increased risk of heavy drinking (e.g., drivers). The large survey sample increased the generalizability of the study, which will be discussed in more detail below. All in all, the mixed design provided more complete knowledge and stronger evidence of different drinking patterns and styles amongst the middle aged and elderly population of Novosibirsk.

6.2.3.2 Large random sample of the HAPIEE study

The large sample of 9,363 people, and the fact that the HAPIEE study (which is currently the largest running biomedical cohort in Russia) is based on a random sample of the general population substantially increased the generalizability of the results and enabled us to examine a broad set of predictors of hazardous drinking, some of which were not studied before in a Russian context, such as types of occupations and depressive symptoms. There is only one other large longitudinal study running in Russia, the Russian Longitudinal Monitoring Survey. However, this study does not collect biomedical data, and its assessment of alcohol drinking is limited in comparison with HAPIEE study (e.g., it does not include past drinking patters, detailed annual alcohol consumption questions, questions on problem drinking, negative consequences of drinking and surrogate use). Multiple measures of drinking in the HAPIEE survey allowed us to study drinking patterns in detail, including past drinking patterns among abstainers and those who changed their drinking. Such a complete range of variables has not been analysed before. The large sample size provided enough statistical power to examine a large set of variables. For example, it was possible to determine differences in hazardous drinking between unemployed and employed people, such types of occupations as military and drivers, and people with depressive symptoms. Finally, respondents were randomly selected from the population registry which made the sample representative to middle and older aged Russian urban population (this aspect is discussed in more detail in section 6.2.1.2), excluding institutionalized people and the homeless.

6.3 Interpretation of the results

When interpreting the results, a theoretical model was used which emphasizes socio-cultural environments and contexts influencing drinking patterns (Marchand, 2008). Indeed, qualitative studies provided a range of perceptions of why hazardous drinking patterns occur, which included elements from various theories related to problem drinking (reviewed in section 2.3). For example, many participants from the alcohol drinking facility experienced loss of control over drinking, craving and withdrawal symptoms (elements of disease model), some of them had periods of abstinence and controlled drinking, and started heavy drinking again after certain "cues were trigged" (social-learning theory), a few had prolonged habitual drinking as a part of their daily routine and could be characterised as having "chaotic" behaviour patterns and an unbalanced motivational system (synthetic theory of motivation). Nevertheless, the model, which puts individual in a wider socio-cultural context, was used in the present study. This was done partly because a wider range of drinking patterns was explored (not only problem drinking), and partly because this model recognizes the multiplicity of interactions and multiple causes which influence human behaviour, including historical, cultural, social and political environments.

6.3.1 Drinking patterns in the HAPIEE cohort

More than 80% of participants in the HAPIEE cohort reported drinking in the past 12 months. Among men, drinking at least once a month was common, and about half of them reported drinking at least once a week. Among women, only about third reported drinking at least once a month and less than 10% drank at least once a week. These figures resemble those collected from a representative sample of the adult population in Russia in 2001, where more than 70% of Russian men reported drinking at least once a month and 59% reported drinking at least once a week, but only about 40% of women reported drinking at least once a month (Pomerleau et al., 2005). Similarly, in a national sample of the Russian population in 1996, 71% of men and 30% of women reported drinking at least once a month (Bobak et al., 1999). In our study, spirits constituted most of the ethanol intake in the usual week among men, followed by beer and wine, while among women beer was the preferred drink. When the mean dosage of alcohol per occasion was measured, spirits accounted for the greatest ethanol intake for both sexes. Given the low annual average alcohol intake in the sample, we can conclude that

Russian drinking patterns among men in the HAPIEE cohort continue to follow so-called Northern European patterns of drinking as described by many researchers with spirits preferred and beer drinking "with lower volume overall but more intense episodic consumption" (Stickley et al., 2009, Popova et al., 2007, Reitan, 2004 et al.). As for women, this pattern is followed only when large amounts are consumed, namely on special occasions or by heavy drinkers. It is also worthwhile to note, that as women follow a "more traditional" pattern of drinking on special occasions in relation to frequency, men tend to add to it "casual" weekly drinking. These patterns will be discussed in more detail below using qualitative data.

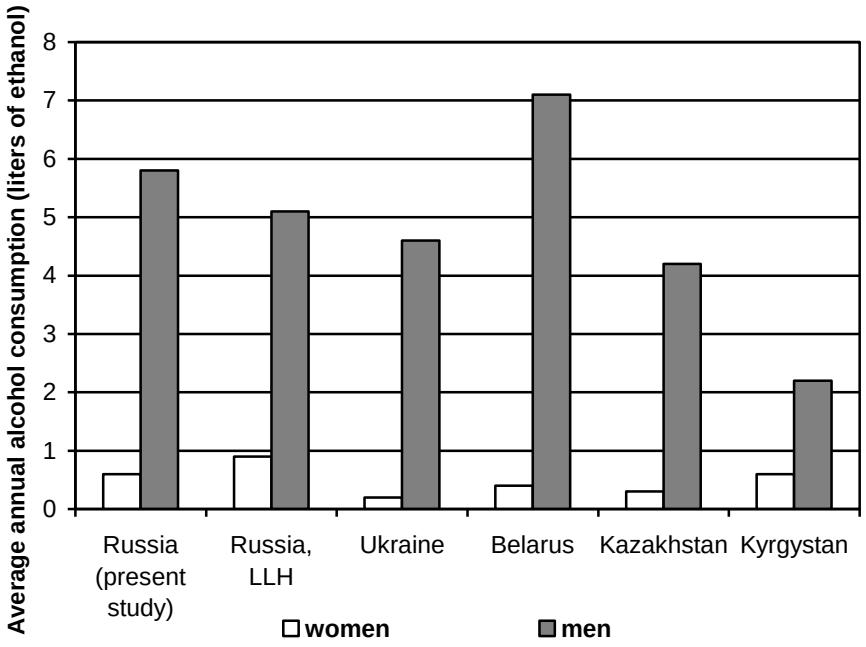
In total ethanol, men on average drank about 63.1 grams of ethanol per occasion while women had fewer than 25.9 grams. These amounts are slightly lower than those found in previous studies conducted in Novosibirsk and Moscow (Jukkala et al., 2008, Malyutina et al., 2001), possibly because our study included older adults, but are very similar when comparing drinking in the same age group (Bobak et al., 2004, Zahoori, 1997). Men's annual intake was 5.8 litres of pure ethanol and among women it was 0.6 litres; weekly intake among men was 89.7 grams and only 5.9 grams among women; the largest dose consumed per occasion in the last months was 182 grams for men and 85 grams for women. When comparing these figures with Czech Republic and Poland, where the same measurements were used to calculate alcohol consumption among the respondents of the same age (Bobak et al., 2004), Russian men had higher annual alcohol intake than men in Poland, but lower than men in the Czech Republic. However, the mean dose in grams of ethanol per occasion and the largest amount consumed in one session in the past month were greatest among Russian men, underlining the notion that Russian men drink less frequently but more heavily (Table 52). Among women, annual alcohol intake is the lowest in Russia, average dose per occasion is higher than in Poland but lower than in Czech Republic, and the largest dose consumed in the last month is highest in Russia (though only about half of Russian women reported consuming alcohol in the last month). In all three countries women drank much less than men.

Table 52: Alcohol consumption in the HAPIEE cohort (current study), in Poland and Czech Republic

	Men			Women		
Grams of ethanol	Russia (present study)	Poland	Czech Republic	Russia (present study)	Poland	Czech Republic
Annual average alcohol intake	5.8	4.1	8.5	0.6	0.7	1.4
Average dose per occasion	63.1	45.8	44.8	25.9	22.9	30.7
Largest dose consumed in the last month	182	144.7	160.9	85	42.6	48.8

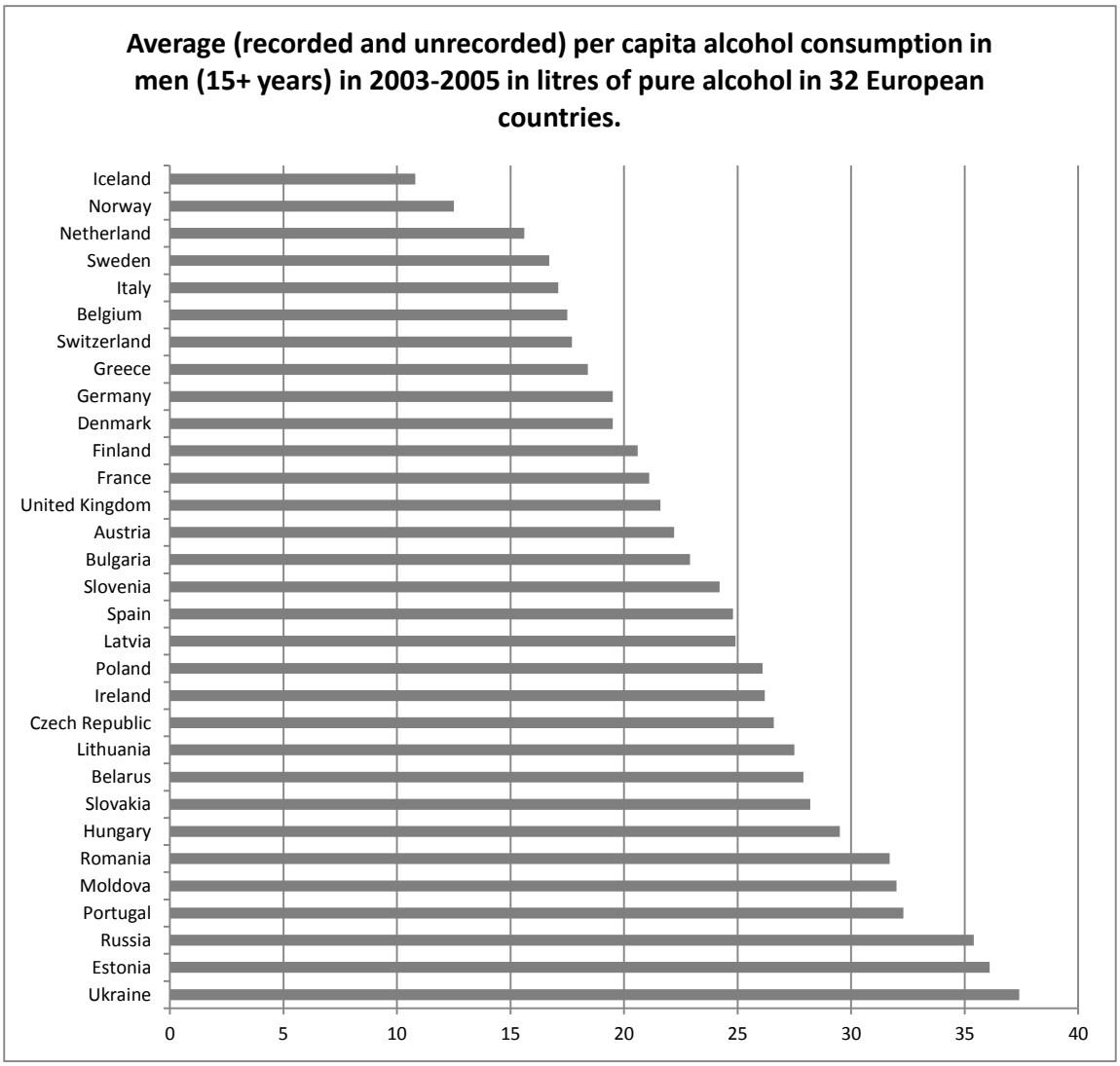
Our estimates of average annual alcohol consumption were close to the Russian national survey conducted in 2001 where, if we look at age group 50-64, men consumed 5.1 litres of pure alcohol and women 0.9 (Pomerleau et al., 2005). The corresponding numbers in other four traditional spirits-drinking countries of former Soviet Union, which the study looked at, were lower for women, and higher for men only in Belarus (Figure 26). However, this study included young people as well.

Figure 26: Average annual alcohol consumption in Russia and four former Soviet Union countries among adults aged 18 years and over (LLH study)



The average three-year alcohol consumption among men and women presented in recent European report, Alcohol and Health and Global Alcohol Status Report (data collected in 2003-2005) is much higher (WHO, 2010, 2011). These results are difficult to explain because no details are provided of how the data were collected, but the difference could be due to the inclusion of younger adults (15+). Nevertheless, the report supports our results showing that Russians are predominantly spirits drinkers, and heavy drinkers in comparison to other European countries. The report has shown that Russian men consume on average 35.4 litres of pure alcohol, whereas the average consumption in 32 European countries was 23.3 litres. This number was higher only in Ukraine and Estonia (Figure 27).

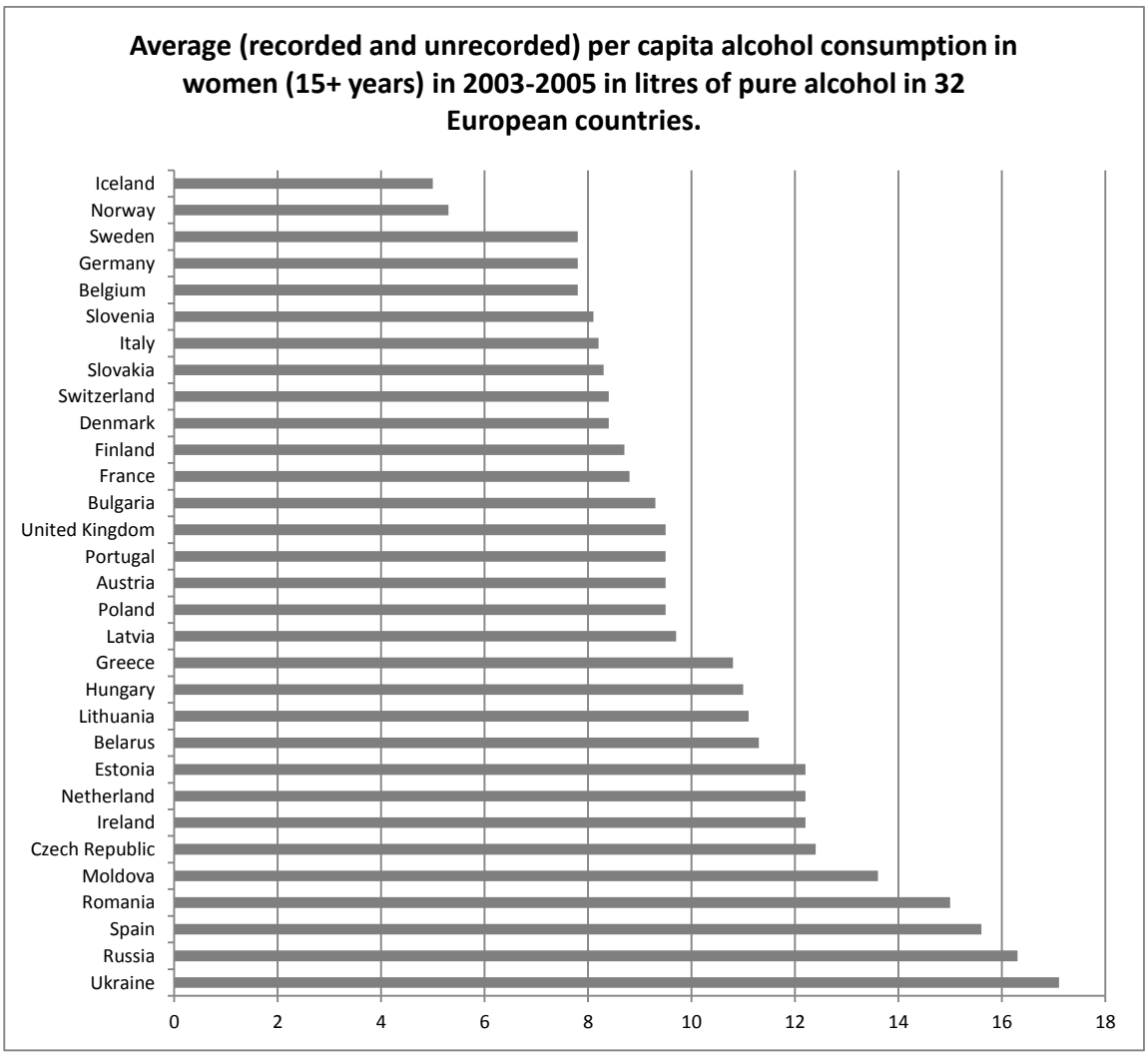
Figure 27: **Average 2003-2005 alcohol consumption in 32 European countries among 15+ years old men**



The same trend was shown in women, with Russian women consuming 16.3 litres while the European average was 10 litres of pure alcohol (Figure 28). Only Ukrainian women were reported to consume more alcohol. These results are rather surprising given that most prior research has shown that Russian people consume on average less alcohol than people in some wine or beer drinking cultures. It is possible that new cohorts of young people have increased their consumption substantially and have changed drinking patterns. These data have also shown that the ratio between men and women drinking averages in Russia is similar to the average ratio in other European countries: the average ratio is 2.4 (Range: 1.3-3.4), which is different from our results. It could be

argued that possibly men's and women's alcohol drinking among younger generations is converging which is the case in some other countries (Wilsnack et al., 2005, McPherson et al., 2004, Bloomfield et al., 2001, Bergmark et al., 2004). As will be discussed below, there is evidence that Russian young women reportedly have heavier alcohol consumption compared to older females (Jukkala et al., 2008, Stickley et al., 2007, Zaigraev, 2004). However, the main uncertainty about the comparability of specific surveys (such as HAPIEE) with WHO data relates to the lack of clarity as to how the WHO figures were obtained.

Figure 28: Average 2003-2005 alcohol consumption in 32 European countries among 15+ years old women



6.3.2 Hazardous drinking patterns

One of the central aims of this study was to describe hazardous drinking patterns among study participants. As described in sections 2.3 and 3.4, five different patterns were included to do this: binge drinking, heavy binge drinking, problem drinking, having negative consequences from drinking, and surrogate alcoholic beverage consumption.

To summarise the findings of hazardous drinking from the quantitative study, 30% of men and 1% of women reported binge drinking 100 grams or more per occasion at least once a month; 6% of women reported drinking 60 grams or more per occasion at least once a month (a measure which we used in the following analysis of binge drinking among women); 12% of men reported drinking 200 grams per occasion at least once a month; 19% of men and 1% of women had problem drinking; and 9% of men and less than 1% of women reported more than two negative consequences of drinking. Only 35 people in the follow-up survey reported drinking surrogate alcohol in the last 12 months, 33 of whom were men (1.4% prevalence in men).

Our findings on binge drinking among men and women are very similar to those from Moscow where 29.6% of men and 5.9% of women reported binge drinking, and to the study which analysed drinking data in a national sample of the Russian population (Jakkala et., 2008, Bobak et al., 1999). Similarly, the study among Russian adults aged 18 and older found a prevalence of heavy episodic drinking (those who consumed on average five drinks per occasion every 2-3 weeks) of 30% among men and 4% among women (Pomerleau et al., 2008). These numbers were very close to those reported in other traditionally spirit-drinking countries of the former Soviet Union (Pomerleau et al., 2008). The previously reported binge drinking of five drinks or more per occasion (80 grams of pure ethanol) at least once a month among women and men in Novosibirsk was slightly higher than in our study, but it included people of a younger age group (Malyutina et al., 2001). The comparison of the same measures of hazardous drinking between Russia, the Czech Republic and Poland shows that Russian men had the highest proportion of all measures: about twice as many Russian men report binge, heavy binge drinking, problem drinking, and more than two negative consequences of drinking (Bobak et al., 2004). Among Russian women, on the other hand, there was a lower proportion of women who reported binge drinking five and more drinks per

occasion at least once a month than among Czech or Polish women. The difference between countries for women with problem drinking and having more than two negative consequences of drinking was not statistically significant.

Studies elsewhere usually show lower binge drinking rates among men and similar or higher binge drinking rates among women. For example, a study conducted in Finland and three former Soviet Union countries has shown that the prevalence of binge drinking at least six drinks per occasion once a month among 20-64 year-old men was 24% in Estonia, 21% in Latvia, 27% in Lithuania, and 24% in Finland; and among women 7% in Estonia, 8% in Latvia, 11% in Lithuania, and 13% in Finland (Helasoja et al., 2007). The prevalence of binge drinking in Spain, which used a measure of binge drinking similar to that in our study, was 14.4% among men and 6.5% among women aged 18-64 (Valencia-Martin et al., 2007). Corresponding figures from the General Household Survey in the UK were 21% in men and 10% in women, and about 18% in 45-64 old men and 5% in 45-64 old women (Richards et al., 2005). In the United States, 21% of men and 7% of women reported binge drinking in 1999, 23% and 7% in 2001, with a slightly lower proportion of binge drinkers among persons over 55 years old: 15% of men and about 5% of women respectively in 2001 (Serdula et al., 2004, Naimi et al., 2003). Among older adults (53-64 at the baseline) in USA, 9% of women and 18% of men were heavy drinkers, reporting binge drinking (five or more drinks per drinking episode) in the past month and excess number of drinks in the past month (Molander et al., 2010). Similar proportions were found by another USA study, the National Survey of Drug Use and Health (n=10, 953) among people 50 years of age and older: 20% of binge drinkers among men and 6% among women (Blazer et al., 2008). A national survey of the Danish general population (n=2,030) has shown that in an age group of 50+, 18% of men and 7% of women are involved in heavy episodic drinking (drinking six or more drinks per occasion (72 grams of pure alcohol per day) at least once a month) (Bloomfield et al., 2008). This number among elderly outpatient client in the USA was 9% among men and 3% among women (Adams et al., 1996). Finally, in the Netherlands, binge drinking six drinks per occasion in the past six month was reported by 17% of men and 4% of women in the older age group (45-64) (Garretsen et al., 2008). All in all, from all the above evidence we can conclude that Russian middle aged and elderly men have a very high if not the highest proportion of binge drinkers.

However, we have to be cautious comparing the above studies with our results as some of them have either a different age range than used in our study, or use different definitions of binge or/and heavy drinking.

The number of people reporting surrogate consumption in our study was much lower than that reported by the Izhevsk study (Tomkins et al., 2007). Besides possible underreporting, there could be several reasons for this. First, in the Tompkins et al. investigation a much younger group of men was studied and as we have shown in our analysis, drinking declined with age among men. Second, the majority of data in the Izhevsk study was collected from cohabiting proxy respondents which might decrease underreporting. In fact, it was described in the study that a higher proportion of hazardous behaviour was provided by proxies than by the men themselves. Third, there could be larger non-response bias in our study because it was conducted in clinical settings versus home visits in the Izhevsk study. The proportion of surrogate drinkers in our study was close to results from an Estonian national population survey, where 2.3% of men reported EVER consuming surrogates, most of whom were ethnically Russian (Parna & Leon, 2011).

6.3.3 Gender differences in drinking

As was noticed above, there were differences in drinking patterns between men and women. There were significantly more current and life-time abstainers among women, women had fewer drinking occasions per year, and had significantly smaller average amount consumed per occasion and per week, and had significantly lower average annual pure ethanol intake. Significantly more men reported drinking monthly and weekly than women, with more women reporting drinking less than once a month. These differences in frequency of drinking mirror findings from elsewhere in Russia which showed that women drink rarely or only on special occasions, which is "a prominent feature of its [Russians'] drinking culture"(Jukkala et al., 2008). These differences between men's and women's drinking patterns were not explained, even partly, by controlling for socio-demographic variables, depressive symptoms or self-reported health.

Thus, our study confirmed previous research findings which have shown large differences in drinking behaviours between men and women in Russia. Although gender differences in drinking exist throughout the world, it appears that in Russia they are particularly large. For example, gender differences in drinking were found recently in more than 40 countries by the Gender, Alcohol and Culture: An International Study project which examined general population data on male and female drinking behaviour (GENACIS) (Wilsnack et al., 2009). There were more life-time abstainers and 12-months abstainers among women than men, and there were more men than women with high frequency of drinking, high volume of drinking and heavy episodic drinking. Comparing the patterns of drinking between genders in our cohort with the GENACIS study (Russia did not participate in this project), we could see that although the ratio in number of abstainers, and pure ethanol intake per occasion between men and women was similar to that found elsewhere in the same age group, the ratio in frequency of drinking, high-frequency of drinking, and heavy episodic drinking was much larger between genders in the HAPIEE cohort (Wilsnack et al., 2009, Makela, 2006, Wilsnack, 2000). The interpretation that the above differences could be explained by "a strong influence of social and cultural factors, such as alcohol-related norms, values, and constraints, which may interact with biological-gender to influence drinking patterns" applies as much to Russia as it is relevant to the GENACIS findings (Wilsnack, 2009).

We used qualitative interviews to reveal what cultural factors related to drinking norms and values lay behind drinking patterns and gender difference in drinking found in the epidemiological study. Our findings show that women were expected not to drink, and they drank much less than men during most cited traditional drinking occasions. Moreover, when individual drinking patterns were described, these differences persisted: men had more occasions to drink, drank in larger quantities, and consumed stronger alcohol such as vodka while women had many fewer opportunities to drink and when drinking chose "lighter" alcohol and smaller quantities. It is worthwhile to note for future studies that individual patterns were often not reported in the beginning of a conversation but only after a prompt, and perceived small amounts of alcohol, especially beer (e.g., 500ml can of beer), were not counted as a drinking event.

The expectations of drinking behaviour were also reflected in attitudes towards drunkenness for men and women. If the appearance of a drunken man in public was tolerated, drunken women were always negatively judged. "To drink alcohol" was simply perceived as unfeminine as, "a woman is supposed to be a woman". On the other hand, for male respondents, drinking large quantities of alcohol was often perceived as quite normal. It seemed that this particular division of behaviour came from the fact that "things are the way they are by virtue of the fact that men are men and women are women" (West & Zimmerman, 1987), confirming the notion of gender display through drinking (Wilsnack et al., 2005, McCreary et al., 1999, Room, 1997, 1996), and showing that alcohol consumption is highly conventionalised between genders in Russia. This finding is consistent with other ethnographic works conducted in Russia:

"*Russian culture remains permeated with the notion of an automatic and almost inalienable link between men and strong spirits…A pleasure in heavy drinking and an ability to consume large quantities of strong spirits continue to be described as defining features of masculinity, and of Russian masculinity in particular…*" (Kay, 2005)

"In the image of Russian man, drinking is some-what existential [plays existential role]. It is a way to prove his manliness. A man has to drink otherwise he cannot become a part of [men's] community…The ritual of men's drinking in Russia is an initiation into the manhood. The person who cannot fulfil this task ends up outside the male community."(Saburova, 2002)

6.3.3.4 Gender roles and drinking

Our qualitative findings have also shown that besides a reported physical ability for men to drink more, gender roles and strong traditional culture around women's drinking affected drinking behaviour in this sample. Women's domestic responsibilities left them much less spare time, and their role as a caretaker and a "controller" of their husband's drinking implied sobriety. Men's main role as "a bread winner" and traditionally limited involvement in domestic responsibilities created more occasions to drink for leisure and as a means to "relieve stress and tiredness after work".

The Soviet pursuit of equality for genders increased women's participation in the work force dramatically in Russia, but this has not relieved them of their traditional role as

family caretaker. In fact, in the 1970s (when participants of the HAPPIEE cohort were in their prime reproductive and working-age, 17-40), in order to increase fertility the government propagated traditional gender-role stereotypes, promoted motherhood, and emphasised the roles of women as primary child caretakers and of men as breadwinners (Kay, 2005, Levant et al., 2003, Goodwin, 1995, Kerig et al., 1993). The "strong male-breadwinner family model" is still supported by the majority of the Russian population (Motiejunaite & Kravchenko 2008, Shiraev, 1999, Kiblitskaya, 2000, Levant et al., 2003). Furthermore, it has been shown that a traditional, patriarchal model, often called "re-masculinisation", has been promoted since the fall of the Soviet Union (Ashwin, 2000, Watson, 1995, Shiraev, 1999) and men's "traditional roles as protector and provider were held up in contrast to women's innate propensity for tenderness, care and nurturing" throughout Post-Soviet media with "an increased emphasis on the importance of men's role as providers" (Kay, 2006). Moreover, recent qualitative and quantitative studies have shown that men's involvement in housekeeping tasks such as cleaning, washing dishes and doing laundry is not only perceived as abnormal behaviour by men but also seen negatively by women as well (Ashwin, 2004, Kon, 2009, Vovk, 2007). All in all, this persistent traditional gender structure has left women with a 'double burden' of working and caring for family and has left men distant from domestic tasks, allowing them more time for leisure activities (Goodwin, 1995, Cubbins and Vannoy, 2005, Sandnes, 2008).

The protective effect of social roles with regard to health in general and against heavy drinking in particular is supported by "classic role theory", which hypothesizes that people with fewer social roles have a higher probability to become heavy drinkers because they have a less structured life and more opportunities to drink (Kuntsche et al., 2009, 2010, 2011, Knibbe et al., 1987). For example, a recent study which looked at depression, alcohol use and social roles in Switzerland found that holding more social roles was associated with lower alcohol intake per day for women and a lower frequency of risky single-occasion drinking for men (Kuntsche et al., 2010). A similar protective effect was found in five Western European countries and in the USA where the number of social roles had a negative association with heavy volume drinking both among men and among women (Kuntsche et al., 2009). It has been reported also in Russia and in Eastern European countries that the carrying of more social roles by

women does decrease women's drinking and "protect" women from heavy drinking (Ashwin, 2007, Ahlstrom et al., 2001, Gmel et al., 2000). On the other hand, men's sole role as a breadwinner puts them at greater risk of heavy drinking especially in times when this role cannot be adequately fulfilled (Ashwin & Lytkina, 2004, Watson, 1995, Kiblitskaya, 2000). In the Russian context there is an additional dimension to it, as in Russia the role of a breadwinner does not simply mean being the main family provider but also serving as "a key to male identity, social contribution and self-esteem" as was mentioned above; and "a man who does not work or is unable to provide for his family may be seen quite simply as having failed to 'be a real man'" (Kay, 2005). While women have multiple social roles through which they can express their femininity, for example, household/family caring tasks, men when losing a job or unsatisfied with their jobs (even among unmarried men) have fewer options for self-realization, and in many cases drinking alcohol is the only option to relieve stress and/or express their masculinity (Ashwin & Lytkina, 2004, Watson, 1995, Tatarskakaya, 2003, Kiblitskaya 2000). As Kukhertin put it: "If they [men] were able to demonstrate their supposed superiority in the workplace, then their masculine identity was secure. If, however, they did not find a possibility of self-realization at work, then the alternatives were not promising – drink and violence being the most obvious outcomes" (Kukhertin, 2000).

Furthermore, a socio-cultural perspective suggests that the relationships between social roles and heavy alcohol consumption could be explained by gender inequality in general (Gmel et al., 2000). Research in this area shows that in societies with greater gender role differentiation and lesser gender equality the differences in drinking between men and women will be larger (Wilsnack et al., 2000, Gmel et al., 2000, Bond et al., 2010). For example, studies which looked at traditional views of masculinity and femininity have shown that men who adopt views and engage in traditional gender-stereotypical behaviours (so called dominant "hegemonic masculinity," Connell, 2000) bear not only positive outcomes such as higher income, political power, and higher-status positions in society than women, but also incur negative consequences including higher stress, fewer possibilities to express emotions, an unwillingness to accept support and help when needed, and unhealthy behaviours such as poor diet, smoking, and higher alcohol intake compared with men who adopt more gender-egalitarian views (Kon, 2009, Levant et al., 2003, McCreary, 1999, Kay, 2005). In fact, it has been suggested in social constructivist

literature that health-related beliefs and behaviours are a means of demonstrating gender, and thus have a large impact on people's health and longevity. By contrast, "hegemonic masculinity [is] defined against positive health behaviour and beliefs" includes "the denial of weakness or vulnerability, emotional and physical control, the appearance of being strong and robust, dismissal of any need for help" (Courtenay, 2000). Often, to relieve stressful situations, "these men would resort to behaviours considered more appropriate outlets for masculine expression" such as heavy drinking (Dolan, 2011). All in all, men who follow a patriarchal, traditional model drink more frequently, drink more and have more problems with alcohol (McCreary, 1999). One study which compared gender relations between young Americans and Russians found that Russian men and women were more likely to endorse traditional masculinity ideology than American respondents, with Russian men closer in their views on masculinity to Russian women than American men and American women (Levant et al., 2003). The authors concluded that young Russian people have strong traditional male norms and gender stereotypes which can put their health at risk. It was argued that in order to address the issues of poor men's health and unhealthy behaviour including excessive drinking, the gender stereotypes around division of roles should be challenged and more gender-egalitarian views should be promoted (Kay, 2005).

It appears, therefore, that in order to combat cultural permissiveness and encouragement of male drinking, it will be necessary for society to undergo a radical shift across a wide range of mores (which seems unlikely in the short term) and for public health campaigns to focus on disassociating alcohol from these cultural expectations and values. This will require an extended, concerted effort and considerable resources, but given the damage that male alcohol consumption is doing to the Russian economy as well as to the health and well-being of its population, such expenditure would probably be more than repaid.

6.3.4 Drinking patterns and age

Drinking declined gradually with age among women with an increasing number of abstainers in each successive age group, and a decreasing frequency of drinking, number of drinking occasions per year and volume of alcohol consumption. Health and age were the main reasons cited for the changes in alcohol consumption. Although the

proportion of abstainers did not significantly vary with age among men, there was a decline in other alcohol consumption measures as well but not to the same degree seen among women. This age decline in drinking among older adults, with a greater decrease among women than among men is consistent with cross-sectional and longitudinal studies around the world (Molander et al., 2010, Hinote et al., 2009, Moore et al., 2005, Moss, 2004, Wilsnack et al., 2000, 1991, Jukkala et al., 2008, Pomerleau et al., 2005).

These findings were also supported when we compared the drinking patterns among the same people three years later. Overall, with one additional year of age amongst participants, average annual alcohol consumption decreased by 30 grams. The number of drinking occasions, average dose of alcohol per occasion, and annual alcohol consumption decreased among men as well. Among women there was a decrease in the number of drinking occasions, but annual alcohol intake remained the same and there was a slight increase in average dose per occasion. Although there was slight increase in binge drinking and problem drinking in both sexes at the second time point of data collection, the agreement in proportion of people who reported binge or problem drinking between the two time points was high (85%) with the decrease in binge and problem drinking outnumbering the increase.

The present study investigated a relatively restricted age range, focusing on middle-aged and older participants. In most populations, drinking (and particularly problem drinking) tends to decrease with age. Thus, the differences in drinking found in this study may not apply to younger persons. The emergence of beer and light alcoholic beverages markets and a consumerist hedonistic culture among young people are likely to decrease the gender gap in drinking in Russia, an area that is yet to be studied. Moreover, most of the participants were brought up and spent most of their adult life in the Soviet era, which is culturally quite different to post-Soviet times; that might correspond to different gender expressions and gender identities and related drinking behaviour. For example, one study has shown that young women in post-Soviet Russia perceive the social environment as more permissive of alcohol consumption than during the Soviet era, and could be more involved in drinking behaviour to exercise their personal freedoms in new modern times (Hinote et al., 2009). The heavier consumption

among Russian young women compared to older females has been reported by several studies (Jukkala et al., 2008, Stickley et al., 2007, Zaigraev, 2002).

6.3.5 Marital status and drinking patterns

In our study single men were at an increased risk of binge and heavy binge drinking with widowed men twice as likely to be engaged in heavy binge drinking. Although to be a widower was not associated with negative consequences of drinking or problem drinking, single men were more likely to report problem drinking. For a single man, the significance, however, disappeared when it was controlled for other covariates. Being a widower remained, having a strong association with binge and heavy binge drinking after controlling for other variables, but there were no significant associations with problem drinking or having more than two negative consequences of drinking, possibly because of low power as most men in this study were married (90%). Among women, widows were at increased risk of binge drinking compared to married individuals but only in the bivariate model.

Since the 19th century, marriage has consistently been found to be a protective factor of mortality, disease and destructive behaviour including drinking, especially for men (Durkheim, [1897] 1979, Hu & Goldman, 1990, Wilsnack & Wilsnack, 2002, Fillmore et al., 1997). It was found in many studies across cultures that married people drink less than single or divorced people and marriage is almost always protective (Wilsnack & Wilsnack, 2002, Helasoja et al., 2002, Ragland et al., 1995). Research on this topic highlights a few selective and causal processes that could underline these relationships. On the one hand, there could be higher rates of divorce and partnership breakdown among heavy drinkers. On the other hand, the process of divorce itself, with accompanied stress, often triggers heavy drinking. A selective process makes it more difficult for heavy drinkers to get married or initiate partnership and sustain it (Power et al., 1999). And of course, marriage itself could decrease alcohol consumption due to more stable life, social ties, responsibilities, and parenthood.

The data from Russian studies on alcohol consumption and marital status are not consistent. In Izhevsk, widowed men had higher odds of alcohol-related causes of death than married men (Predimore et al., 2010). Singe men were less likely to be heavy

episodic drinkers but singe women were more likely to be heavy episodic drinkers in a study which included a representative sample of the Russian adult population (Pomerleau et al., 2008). In a study which looked at drinking in a national sample of the Russian population, unmarried men were drinking more often and widowed men and women less often than married individuals, and the association between binge drinking and marital status was not significant (Bobak, et al., 1999). The Moscow study found a protective effect of marriage against binge drinking for women but not for men (Jakkala, et al., 2008). The Taganrog study did not find any significant relationships between heavy drinking and married or unmarried status, but the proportion of non-married people in this study was very small (Carlson & Vagero, 1998). In Novosibirsk there were inconsistent findings between drinking and marital status, showing that at one time-point, divorced men were at an increased risk of the highest alcohol intake and at another point of time the highest alcohol intake was among widowed men. The same study did not find any significant associations between marital status and alcohol consumption among women. The authors of the study concluded that those fluctuations were due to the small numbers of divorced and widowed men and due to the low proportion of frequent drinkers among women (Malyutina et al., 2004).

Because of the selection processes described above, it is difficult to tell the direction of the associations between being single or widowed and heavy drinking. It was shown in the studies that the effects of being divorced or becoming a widow or a widower on heavy alcohol intake is short-term and usually happens right after the event and does not influence long-term drinking habits (Perreira, 2001, Power et al., 1999). In our study, being a widower was shown to put men at risk of heavy drinking even after controlling for other covariates. Although we cannot tell if drinking increased right after the loss of the spouse or later, because of the nature of data collected, we can speculate that the loss of social support, loneliness, and no spousal control over drinking behaviour could influence alcohol consumption. These relationships, however, need to be further researched.

6.3.6 Socio-economic status (SES) and drinking patterns

We used level of education, occupation types and current employment status as primary indicators of individual socio-economic status (Adler & Newman, 2002), as well as two

measures of material position as proxies for income level in order to investigate drinking patterns in different socio-economic groups. We discuss them in this order below.

6.3.6.1 Education and drinking patterns

In our study, binge, heavy binge, problem drinking and negative consequences of drinking were lowest among men in the highest educational group, while men with secondary education had the highest odds of binge drinking and reporting negative consequences of drinking and problem drinking in an age-adjusted model. This is consistent with previous alcohol consumption research (Kuntsche et al., 2006, Ahlstrom et al., 2001, Bloomfield et al., 2008, 2006, Levant et al., 2003, Molander et al., 2010, Caldwell et al., 2008, Droomers et al., 1999, Jefferis et al., 2007). However, in a multivariate model significance remained only for the association between binge drinking and secondary education. Among women, binge drinking increased in the secondary educational group in an age-adjusted model, however this significance disappeared when we controlled for other covariates. The absence of the correlation could be explained by low rates of binge drinking among women in this cohort, a reason which was reported from several countries including Russia (Bloomfield et al., 2006, Malyutina et al., 2004). For example, in cross-sectional trend analysis in Novosibirsk from 1985 to 1995, as in our study, there was a negative correlation between binge drinking and educational level among men, but among women this trend was not found because of low proportions of heavy drinkers among women (Malyutina et al., 2004).

Our findings are consistent with studies conducted elsewhere in Russia. In the city of Izhevsk, hazardous patterns of drinking among men were greatest in the lowest educational level and having more than high school educational level was found to be protective against alcohol-related causes of death (Tompkins et al., 2006, Pridemore, 2010). In the Moscow survey, men and women in the secondary educational group were almost twice as likely to binge drink as people in the higher education group (Jakkala et al., 2008). Alcohol intake in the city of Novosibirsk was lowest among men with the highest education and the relationships between the prevalence of frequent drinking, alcohol intake per typical occasion, binge drinking and educational level were inverse (Malyutina et al., 2004). In Arkhangelsk, men with a professional education were the

most frequent drinkers of six drinks per occasion and had the highest weekly alcohol intake compared to other education groups. Although more highly-educated males had slightly higher mean GGT-levels, they reportedly drank less per occasion than men with less education (Nilssen et al., 2005). In Taganrog, the lowest educational groups reported heavy drinking more frequently than higher groups (Carlson & Vagero, 1998).

The increased risk for heavy drinking in secondary level education group is also consistent with other studies conducted in Russia (Jukkala et al., 2008, Nilssen et al., 2005, Carlson & Vagero, 1998). One study, which looked at premature mortality in Russia, found that those with higher than secondary education were protected against alcohol-related causes of death (Pridemore et al., 2010). It was argued that it might be due to lifestyle choices, ways of socialising and low knowledge about harmful drinking, as well as educational group composition in different occupational groups (Carlson &Vagero, 1998, Jukkala et al., 2008). In our study, for example, most women in secondary and primary education groups ended up in professional manual and manual occupations and women with vocational education had technical (engineers, technologists) and white collar jobs (e.g., accountants, clerks). In fact, when we adjusted for occupation, the effect of education on binge drinking was reduced to insignificant levels. This could be due to collinearity between education and occupation, but it could also be a genuine finding. We will discuss types of occupation and their relation to binge and problem drinking in more detail below.

Overall, the relationships between alcohol-related mortality and socio-economic circumstances have been examined by many studies, most of them finding "a clear and persistent social gradient" between these factors (Makela, 1999, 2003). Studies have shown that although people with higher SES can drink more frequently and can consume more alcohol per capita, the lower socio-economic groups drink less frequently but more hazardously (Marmot, 1997, Bloomfield, 2000, Kunst et al., 1996, Droomers et al., 1999, Huckle et al., 2010). For example, it was found that the rates of problem drinking and alcoholism are more prevalent among lower classes (Hemmingsson, 1998, Romelsjo, 2004, Greenfield et al., 2000, Hilton et al., 1987). However, these relationships are usually more pronounced among the male population. Some research in western countries has shown that among women, heavy drinking

actually increases with increasing education (Kuntsche et al., 2006, Ahlstrom et al., 2001, Bloomfield et al., 2006, Marmot, 1997). For example, it was found in Germany, the Netherlands, France, Switzerland and Austria that women with higher education consume more alcohol than women in lower educational groups, but these relationships were reversed for men (Bloomfield et al., 2006). However, this was not the case in our study, as we did not find any significant relationships between level of education and binge drinking among women.

6.3.6.2 Occupation and drinking patterns

Occupational social position has been the prominent important factor examined in relation to health in general and drinking in particular (Leigh & Jiang, 1993, Makela, 1999, Makela & Paljarvi, 2008). A relationship between types of occupation and drinking problems including, job absenteeism and poor performance related to alcohol abuse, alcoholism, and alcohol-related morbidity and mortality, has been found by many studies published since the 1930s with data collected on the topic since the late 19th century (Hodgins et al., 2009, Makela & Paljarvi, 2008, Gunradi et al., 2005, Bacharach et al., 2002, 2010, Romelsjo et al., 2004, Plant, 1978, Mandell et al., 1992, Wilson, 1940). For example, a study among more than forty thousand workers in the US found that alcohol abuse was prevalent in certain occupations, with 35% of workers being dependent on alcohol, and less prevalent in other occupations with less than 1% of workers showing any symptoms of dependency (Stinson et al., 1992). It was noted from early on that the work environment can affect drinking norms, and "occupations can create cultural context" and an environment which can influence personal drinking behaviour (Wilsnack &Wilsnack, 1992). This occupational culture, which is often created in response to working conditions, includes "its own formal and informal structures, vocabulary, social rules, folklore, social organisation, history and collective beliefs" (Ames & Rebhum, 1996). Moreover, the occupational culture has its influences on individual drinking behaviour not just at work time but also outside work, for example, when colleagues spend time together drinking after work, at lunch time, and even before work (Ames et al., 2000, Ames & Rebhum, 1996, Martin et al., 1996). The ethnographic work of Ames et al. on drinking practices among blue-collar workers has shown, for example, that work-related social networks played a crucial role in heavy drinking, and that heavy drinking was perceived as "a symbolically important and

normative behaviour" among those involved in such behaviour (Ames & James, 1987, Ames & Grube, 1999, Ames et al., 2000).

Among the most cited "risky" occupations in relation to hazardous drinking depicted throughout the studies are seamen, cooks, publicans, waiters, truck drivers, blue collar workers, cleaners, construction workers, armed forces (navy, military, police), and restaurant workers (Plant, 1977, Fillmore & Caetano, 1982, Mandell et al., 1992, Brooks & Harford, 1992, Leigh & Jiang, 1993, Bray, 1991, Kjaerheim et al., 1996, Fear et al., 2007, Moore et al., 2007, 2009, Berry et al., 2007, Davey et al., 2000, Nilssen et al., 2005). For example, according to the reports collected by Plant, excess mortality of 80,000-90,000 was found among British male drink trade workers between 1860 and 1932 (Plant, 1978). In 1961 there were listed 25 male occupational groups in England and Wales which were considered to be at "a far greater risk of alcoholism than others"; among them were: military, medical practitioners, electrical engineers, publicans, barmen, cooks, hairdressers (Plant, 1978). Medical professions, professions related to food and drink production and distribution, and building and construction were found to have significantly high alcohol-related admission rates between 1974 and 1980 in Southern England (Slattery et al., 1986). In the most recent evaluation of the relationship between occupation and alcohol-related deaths in England and Wales, publicans and bar staff had the highest proportions of death, with coal mine operatives, seafarers, publicans and entertainers having the highest levels of alcohol-related mortality compared to the population as a whole (Romeri et al., 2008). In Sweden, which has a long history of population registration, studies have shown that blue-collar workers, sailors, drivers, artists (journalists, writers, photographers, actors), and wait staff were at increased risk of alcoholism; with men and women in manual working positions at particular risk of alcoholism and alcohol-related deaths compared to people in non-manual occupations (Hemmingsson et al., 1997, 1998, 2001). A review of 104 occupations in the United States found that some occupations had double the general population prevalence of alcohol dependence and abuse disorders: construction workers, people involved in the transportation industry, cleaners, and wait staff (Mandell et al., 1992). Another study from the USA has shown clear patterns between liver cirrhosis deaths and types of jobs similar to those in Sweden and the UK: among females, waitresses, hospital orderlies, and labourers were at the increased risk; among

males, bartenders, military, painters, construction workers and artists (Leigh & Jiang, 1993). Construction industry workers were at risk of alcohol consumption related problems in Canada and Australia (Hodgins et al., 2009, Berry et al., 2007).

Similar to research elsewhere, our study found some professions at particular risk of hazardous drinking: among men were manual occupations and military, people in construction industry, and drivers; among women in main life-time occupation, professional manual, manual workers, and clerks were at the elevated risk of binge drinking. Within current occupations, among men, the same types of occupations were at risk of hazardous drinking with the addition of *Services,* which included such occupations as security guard or watchman (55%). Among women there were no significant associations between types of current job and hazardous drinking. Within main life-time occupations and current occupations among men, drivers were at the highest risk of binge drinking "five or more drinks per occasion at least once a month", and people employed in the construction industry were at the highest risk of binge drinking "ten or more drinks per occasion least once a month" in both adjusted and non-adjusted models. Men in manual occupations had an elevated risk of problem drinking as well. Military men and men in manual occupations were significantly more likely to report more than two positive answers for the CAGE measure compared to people in professional occupations. Among current types of occupations, men in services were at an elevated risk of heavy binge and problem drinking. Finally, consistent with many previous studies in this area, men in professional occupations had a lower risk of binge drinking and having negative consequences of drinking than men in other occupations. As among men, women in professional occupations were at a decreased risk of binge drinking. Although clerks and professional manual workers were more likely to report binge drinking three drinks per occasion compared to women in professional positions, at the highest risk of this type of binge drinking were manual workers. The above relationships were significant after controlling for other socio-economic variables, self-reported health and depressive symptoms.

There are many explanations of why certain occupations produce hazardous alcohol drinking and subsequent negative consequences of drinking. For example, Plant suggests three main factors in relation to occupation and problem drinking: 1) alcohol

availability during working hours which may be relevant to alcohol production and alcohol distribution occupations; 2) strong social pressure to drink with co-workers (e.g., seamen, servicemen); and 3) separation from "normal sexual or social relationships" (e.g., seamen) (Plant, 1978). Furthermore, certain job characteristics such as low reward, difficult work schedule, time pressure, isolation, boredom, work shifts, high turnover, low job control and visibility, and jobs with high health risks (e.g., police officers, loggers, miners) reportedly lead to stress which might be alleviated by alcohol drinking (Hodgins et al., 2009, Yang et al., 2001, Leigh & Jiang, 1993, Brooks & Harford, 1992, Kjerheim et al., 1995, Martin et al., 1996, Ames & Janes, 1987). As Brooks puts it: "any occupation that has easy access to alcohol, low accountability and high stress may be an interacting environment for the destructive use of alcohol" (Brooks & Harford, 1992). Drinking could reduce work tension, distress due to high demands at work, conflicts related to organisational structure and poor supervision, especially among those individuals who perceive that drinking is an effective mechanism to reduce such distress (Marchand, 2008, Grunberg et al., 1998, Cooper et al., 1990). It is argued that quality of work is one of the strongest predictors of health status in individuals as it might include not just a 'material' dimension but also a 'psychosocial' dimension of adverse environments produced by the combined effect of high demand and low control and effort-reward imbalance (Siegrist & Marmot, 2004). The studies which examined psycho-social work environment in Western and Eastern Europe (including Russia) have shown that effort-reward imbalance at work was associated with problem drinking and increased alcohol intake among men (Head et al., 2004, Bobak et al., 2005). Similarly, in US studies it was found that high-strain occupations were associated with alcohol abuse and dependence compared with low-strain jobs among men (Crum, 1995, Violanti, 1983).

There are also arguments that problem drinkers might select themselves to these "high risk" occupations (Hemmingsson & Weitoft, 2001, Berry et al., 2007). For example, studies have shown that the drink trade (e.g., brewers) attracts people who are heavy drinkers already or who will be likely to develop alcohol-related problems, and people who misuse alcohol could be more likely to be recruited into these occupations than people who do not misuse alcohol (Plant, 1978, Hemmingsson & Weitoft, 2001). Furthermore, it was suggested that people who like risk could be attracted to hazardous

jobs which induce stress and at the same time desire for risk might lead to other risky behaviours including drinking (Leigh & Jiang, 1993). Some studies on drinking behaviour among military pre-enlistees have indeed shown that they had a higher prevalence of heavy drinking than the general population of similar age prior to enlistment (Ames et al., 2002). Moreover, people who do not like heavy drinking might leave the occupation which "promotes" such behaviour (Plant, 1978). It was also suggested that certain childhood and adolescent environments could contribute to both problem drinking and choosing particular occupations (Hemmingsson et al., 1997, 1999).

Mandell et all., summarising previous research, categorise emerging hypotheses in this area in four basic models: the structural model, where structure of work with low job complexity and lack of organisation produces stress and anxiety relieved by drinking (the other term for this model used is *alienation/stress paradigm,* Frone, 1999); the social control model with low supervision of and low inhibition against the use of alcohol; the social availability model where work group norms encourage drinking; and the motivational model where separation from normal conditions such as family and home induces use of alcohol (Mandell et al., 1992). The authors of this theoretical review have shown that certain models could be applicable to certain occupations. For example, the motivational model could explain an increased risk for alcohol problems among construction and transportation workers who often work under dangerous work conditions, often separated from home (in case of truck drivers); and the social availability and structural models might be applicable to waiters and waitresses who have an elevated risk of drinking because of social pressure, low job control, and high time pressure. It was also pointed out that it is more sensible not to treat these models or various factors as separate or opposing theories since they may not be mutually exclusive, but to consider them as complementary explanations (Brooks & Harford, 1992).

Our two qualitative studies depicted several "at risk" occupations for heavy drinking which mostly overlapped with our survey results, and were found to be "at risk" occupations in many other studies: drivers, military, manual and construction workers, barmen, waitresses, and policemen. Several themes emerged from participants' own

views of how certain job conditions and occupational cultures influenced their alcohol intake during and after work. These themes overlap with models and paradigms described above, and in most cases several of them applied to particular occupational drinking cultures. For example, social and physical alcohol availability at work was reported in our study by military personnel, industrial manual workers, waitresses, and barmen, and was cited with occupational stress due to particularly hazardous or monotonous work conditions, low pay, and permissiveness of drinking by management (the structural model & the social availability model). Working away from home in monthly shifts, in exclusively male company with no recreational activities available in spare time was reported by construction workers who work on a contract basis (motivational model).

Occupational culture with particular rituals of drinking together with colleagues during or after work or shift was reported by drivers, manual workers, military men, construction workers, and policemen (social availability model). A policeman told of the ritual of "shameless Fridays" when after duty everyone would drink almost to oblivion, sometimes only ending the session on Saturday. Military men described an "obligatory" ritual of drinking when a colleague received a promotion, a medal, or any type of award, when off duty, and in some cases when on duty, which is remarkably similar to the behaviour described in the ethnographic study of naval pilots in the USA: "We drink according to the following customs: We drink at happy hours, after a good flight, after a bad flight, and after a near mid-air collision… We drink when we get our wings, when we get promoted (wetting down parties), when we get passed over…" (Pursch, 1976). For some of our blue-collar participants, heavy drinking actually started at work with the first payment slip as a celebration and initiation to the new working adult life, and continued after each working day when they would go after work to socialise with their colleagues. Similarly to our findings, work-place related group drinking among the large manufacturing plant workers in the US was found to be a "symbolic ritual-based behaviour,…a regular social ritual for celebrating payday, the beginning of a holiday weekend, and the end of the workday or workweek" (Ames & Grube, 1999).

Furthermore, it was reported by drivers in our study that this type of drinking after work with colleagues often continued at home through the weekend, developing into a drinking bout (zapoj). In fact, in the alcohol treatment facility the term was created to describe this type of drinking as "a [celebration of] driver's day". Drivers reported in our study that they are strictly forbidden to drink while they are on a shift during the week, so they drink starting on the last day of the shift, continuing into the weekend. In a way, this drivers' zapoj pattern somewhat resembles the hydraulic model of drinking described by Ames et al., in her ethnographic study among the US Navy. In this study Navy personnel are strictly prohibited for drinking while on board (which could be weeks or months) but after ending deployment they drink heavily, "blowing steam off" (Ames et al., 2007). The drivers in our study also mention a lot of stress related to driving: bad roads, traffic jams, accidents, breakdowns, and in some cases lack of car insurance. The stresses related to driving such as exposure to pollution, congested traffic, working in a particular time frame were noted in other countries as well (Cunrady, 2005, Ragland, et al., 1995, 2000, 2002). It was found, for example, that spending time with co-workers increases alcohol consumption as well as increasing time required to unwind after work (Ragland, et al., 1995). In fact, driving was named as a high-strain job with relation to high job demands but low control over the job.

The cases discussed above were related almost exclusively to men. We had one woman in our qualitative study from the HAPIEE cohort who reported drinking after work as a means to relieve stress accumulated over the working week, and one woman from an alcohol treatment facility who reported drinking during work hours in order to cope with terrible work conditions (the structural model). Thus it seemed that contrary to men, for whom occupational culture was an enhancer of already strong drinking patterns set by gender, occupation for women had a small influence on their drinking culture. In fact, both women who related their drinking to occupation were drinking alone, without colleagues. These findings, however, cannot be generalised and have to be further researched in larger surveys which would examine occupations in a more precise way. For example, further studies could use specific questions about occupational drinking culture, working conditions, and social control factors and use larger samples of occupations which have been shown to be "at risk" such as waitresses or publicans. As we found in the HAPIEE survey, although current occupation was not

related to heavy drinking patterns in women, main life-time occupation had a significant association, and was particularly strong among women working in manual occupations.

To summarise, in our quantitative study occupation was one of the strongest predictors of hazardous drinking both among men and women. Our qualitative studies have shown a wide variety of frameworks for how occupation influenced drinking among men, although among women this influence was less pronounced. To understand in more detail the relationships between certain occupational environments and drinking habits more studies (both qualitative and quantitative) need to be conducted. This is especially important because the workplace is a potentially great domain for prevention interventions which can target hazardous drinking behaviour (Roman & Bloom, 1996, 2002, Webb et al., 2009).

6.3.6.3 Material circumstances and drinking patterns

In our study, deprivation was one of the predictors of binge and problem drinking among men. Compared to men with the lowest deprivation score (no economic restrain) men in the highest deprivation position were at an elevated risk of binge and problem drinking. These relationships were significant also when deprivation was taken as a continuous variable. Similarly, men who had the lowest score of household items possessed were at an elevated risk for all hazardous drinking variables. However, after adjustment for other covariates, the significance of amenities score only remained for reporting more than two consequences of drinking. Among women, deprivation taken as a continuous variable was associated with binge drinking three or more drinks per occasion, but the relationships were reversed: women in the highest deprivation position were less likely to binge drink. The statistical significance was lost when we controlled for other covariates.

Several studies conducted in different countries, including Russia, looking at measurements of material deprivation and drinking have shown inconsistent results. In Holland, Droomers et al., (1999) found that material deprivation was a predictor of excessive drinking both among men and women. On the other hand, smaller (less) material deprivation was found to be a risk factor for high alcohol intake among women in England (Sacker et al., 2001). Car ownership and housing tenure were strongly

related to heavy alcohol consumption and problem drinking among men in Scotland (Batty et al., 2008). Material deprivation was not a predictor of alcohol consumption in the national sample of Russians (Bobak et al., 1999). Findings from the Izhevsk study have shown that men who did not have a car or central heating were at an increased risk of hazardous drinking but not at increased risk of drinking daily compared to drinking less frequently (Tompkins et al., 2007, Cook et al., 2011). A study in eight former Soviet Union countries including Russia found that women, but not men, who reported having an average economic situation were less likely to be heavy episodic drinkers compared to those with a bad economic situation (Pomerleau et al., 2008). Similar to our findings, the Moscow study (which used a similar index to measure economic position: problems with paying bills, buying fish or meat, and clothing) found that men experiencing more economic problems were at an increased risk of binge drinking than men with fewer problems but the relationships were reversed among women. The authors suggested that this could be a result of "a fundamental gender difference in Russian drinking behaviour" and the differences in response to stressful economic situation by men and women in Russia (Jukkala et al., 2008). As described in detail above, Russian men as main breadwinners have more pressure when it comes to economic hardships and are more likely to relieve stress by drinking, contrary to women who are expected to be strong and to adapt to situations by other means. However, it cannot explain the fact that deprivation in our study was not associated with heavy binge drinking (having 10 or more drinks per occasion at least once a month) among men. There was a slight increase in heavy binge drinking in the highest deprivation group but it was not significant. Our study also cannot be certain of the direction of the relationships between material position and hazardous drinking. On the one hand, material position can lead to heavy drinking in order to relieve the stress of economic hardships, as discussed above. On the other hand, one can fall into a poor material position because of heavy drinking. More research needs to be done in understanding how material circumstances influences drinking behaviour.

6.3.7 Unemployment and drinking patterns

Our study has shown that unemployed men, relative to employed men were at increased risk of being involved in binge drinking, problem drinking, and reporting more than two negative consequences of drinking. Among women, unemployment was significantly

related to binge drinking as well. These relationships remained significant after controlling for education, deprivation, marital status, self-reported health and depression.

The qualitative accounts have shown these tendencies as well. Loss of employment in an unstable labour market was perceived as one of the major contributors to stress and consequent heavy drinking, especially for men, which is consistent with ample research conducted on this topic both in Russia and in other countries (Saburova, et al., 2011, Ashwin, 2000, Ashwin & Latikina, 2004, Cockerham, 1997, 2000, 2006, Liu et al., 1998, Carlson & Vagero, 1998, Room, 2005, Wojtyniak et al., 2005, Kay, 2005, Tompkins, 2007, Pietila & Rytkonen, 2008, Predimore, 2010). As described above, when men lose their traditional role of breadwinner they are hit by the stress related to it harder than women, who still have respectable responsibilities of taking care of the household and children. Studies in Izhevsk have shown that unemployed men were more likely to have hazardous drinking patterns including zapojs, hangovers, and experience of surrogates drinking (Cook et al., 2011, Tompkins et al., 2007, Saburova et al., 2011). One qualitative study conducted in St. Petersburg depicted a remarkable agreement between men and women on men's "innate vulnerability to stress" and that men suffered more than women from stress that impacts men's health and life expectancy, while women were perceived to be much stronger and more resilient during times of economic hardship; and while women's coping strategy with stress was adaptability, men's strategy was alcohol (Pietila & Rytkonen, 2008). Studies elsewhere have shown that women are more likely to decrease their alcohol consumption during unemployment. For example, one study which looked at alcohol consumption and alcohol-related mortality during the transition period in Poland suggested that women when unemployed adopt more traditional roles which "implies less stress as well as a more traditional female drinking pattern, characterised by infrequent and moderate drinking" (Wojtyniak et al., 2005). Another study conducted in Argentina on the topic of social change and gendered drinking, found that in times of increasing unemployment drinking becomes moralised, especially among women who were strong proponents of abstention (Munne, 2005).

Interestingly, in our study unemployment increased chances for women to binge drink as well, which is consistent only with studies conducted in Western countries (Wilsnack et al., 1991). The scarce existing evidence from Russia is not conclusive. One study which looked at unemployment and drinking among both men and women found relationships between drinking and unemployment among men but not among women (Bobak et al., 1999). Lower odds of heavy episodic drinking were found among unemployed men, but not women, in eight former Soviet Union countries, including Russia (Pomerleau et al., 2008). The study from Archangelsk found highest alcohol intake and highest AUDIT score among the female group which included unemployed individuals (Nilssen et al., 2005). However, this group included not just unemployed people but also people employed in the private sector, which made it impossible to distinguish the pure effect of unemployment on drinking.

In our qualitative study in an alcohol treatment facility, unemployment and heavy drinking were linked among men and women as well (more than half of the participants were unemployed at the time of the study), and in some cases participants discussed bi-directional relationships. On the one hand, "being employed" was a protective factor against zapojs, and the loss of a job was likely to trigger heavy binge drinking pattern; on the other hand, heavy drinking episodes would lead to job absenteeism and consequent loss of employment. Unemployed participants also reported that they had to switch to cheap surrogate alcohol due to loss of job and salary. Finding a job or keeping the current one (by showing the ability to stay sober for a prolonged period of time) were seen as a major task by both male and female participants in this sample.

Because of the cross-sectional nature of our study, we cannot suggest the direction of relationships between unemployment and hazardous drinking. As found elsewhere in longitudinal studies, alcohol problems can lead to disability and unemployment as well as to "downward socio-economic mobility" (Romelsjo et al., 2004). Moreover, our qualitative accounts from the alcohol treatment facility point to both directions which is consistent with qualitative study results from Izhevsk (Saburova et al., 2011). Nevertheless, unemployment has shown to be a very strong predictor of hazardous drinking both among men and women.

6.3.8 Depressive symptoms and drinking patterns

In our study, depression was a significant predictor of problem drinking and negative consequences of drinking, but not binge drinking among men, which is consistent with some studies conducted mainly in the Western world (Molander et al., 2010, Wang et al., 2001, WHO, 2004). Among women, depression became significant only after controlling for self-reported health. In an American longitudinal study, baseline depressive symptoms were not associated with changes in alcohol consumption, and as concluded by the authors it happened probably because the relationships between depression and alcohol consumption occur close in time. The same effect may have happened in our study, where depressive symptoms were measured in the week prior to the interview, and alcohol consumption was measured in the last 12 months. It might be possible that depressive symptoms emerged and receded during the year prior to examination. In a Canadian general population sample, no significant associations were found between the levels of alcohol consumption and major depression (Wang et al., 2001). In a world review report on alcohol consumption and depression it was found as well that although there was strong association between alcohol disorders and depression, the association between heavy alcohol use and depressive disorders was weak (WHO, 2004).

However, other investigations have shown a significant relationship between both alcohol consumption or/and alcohol dependence and depression (Boden & Fergusson, 2011). Finnish studies have shown, for example, that both former drinkers and people with heavy drinking occasions were at higher risk for clinical depression, and binge drinking was positively associated with depressive symptoms (Manninen et al., 2006, Paljarvi et al., 2009). Four epidemiological investigations among the general population in Europe and the USA found that people with alcoholism have from two to three times higher odds of developing depressive disorders than those without the disease (Swendsen et al., 1998). The direct cause and effect association between alcohol abuse and major depression was suggested by research in New Zealand (Fergusson et al., 2009). A study among men in Eastern Europe (to our knowledge the only study to look at depressive symptoms and alcohol consumption in Russia) found some relationships between depressive symptoms and drinking, although it was unclear if depressive

symptoms were consequences of problem drinking or a mediator of the effect of work characteristics on drinking (Bobak et al., 2005).

At the same time, there is inconsistent evidence of how relationships between alcohol consumption and depression differ by gender. Some studies find that depression predicts an increase in drinking among women but not among men, and that there is no association between alcohol consumption and the incidence of depression among men but that association exists in women (Haynes et al., 2005, Moscato, et al., 1997, Wilsnack & Wilsnack, 2000, Gilman & Abraham, 2001). As was shown in meta-analysis of depression and alcohol consumption, which used several North American and UK longitudinal studies, heavy alcohol consumption predicts subsequent depression both among both men and women, and this association is stronger for women; however, depression predicts heavy alcohol consumption only among women but not men (Hartka et al., 1991). Other evidence suggests that significant associations exist between heavy alcohol use and alcohol problems with depressive symptoms among both men and women (Rodgers et al., 2000). Finally, the analysis of relationships between alcohol dependence and depression across the world has shown that alcohol-attributable fractions of depressive disorders are larger for men than for women (Rehm et al., 2004).

Although the majority of both epidemiological and clinical studies show that excessive alcohol consumption and alcoholism are associated with depression, with high prevalence of co-morbidity in alcohol dependent populations, the causality of these relationships remains controversial (WHO, 2004, Paljarvi et al., 2009, Manninen et al., 2006, Rodgers, 2000, Farrell et al., 1998, Vaillant, 1993, Wilsnack et al., 1991, Swendsen et al., 2009). The main reasons suggested for the well-established co-morbidity between depression and alcoholism include: a causal effect when depression leads to higher levels of alcohol consumption and dependence; a causal effect of alcohol abuse leading to higher levels of depression, and common genetic and environmental predispositions for alcohol dependence and depression; (Boden & Fergusson, 2011, Fergusson et al., 2009, Rodgers et al., 2000, Paljarvi et al., 2009, Vaillant, 1993, Kendler et al., 1995). It has also been suggested that all three mechanisms described above could co-exist (WHO, 2004). However, the cross-sectional nature of the study means that the direction of causality cannot be inferred. As has been shown elsewhere,

depressive symptoms can precede high alcohol consumption and alcohol problems, can co-occur with them, and can develop after the appearance of alcohol dependence as its consequence (WHO, 2004). There should be more detailed longitudinal research conducted to address the direction of these relationships, which is beyond the scope of this study.

6.3.9 Self-reported health and drinking patterns

In our study, self-reported health was significantly associated with binge drinking among both men and women. People who reported good health were more likely to be involved in risky drinking behaviour after adjustment for the covariates. Men of good health were about 1.5 times more likely to report drinking five drinks or more in a single event at least once a month. Women who reported good health were twice as likely to report binge drinking. Self-reported health, however, was not related to heavy binge drinking or having more than two negative health consequences among men, and only the average level of self-reported health was significantly associated with problem drinking in a multivariate model. Among women, good self-reported health was the second strongest predictor of binge drinking after occupation.

It is also worthwhile to note that in the whole sample, self-reported health among people who abstained from alcohol during the last 12 months was significantly worse than among current drinkers, which is consistent with many studies around the world (Stranges et al., 2006, Green & Polen, 2001, Molander et al., 2010, Gronback et al., 1999). Moreover, around 70% of men and more than 80% of women reported that their reasons for abstaining from alcohol were related to illness and age.

It is well known that people with poor health drink less than people in good health, and vice versa, moderate consumers report better physical and mental health (Molander et al., 2010, Strangers et al., 2006, Moore et al., 2005, Pomerleau et al., 2008, Sacker et al., 2001, Gronback et al., 1999, Poikolainen et al., 1996). Longitudinal studies have shown that people with poor health decrease their drinking or become abstainers (Molander et al., 2010). Another study among English women has shown that alcohol consumption was associated with good rather than poor health (Sacker et al., 2001). Moreover, several studies found J-shaped relationships between drinking and subjective

health, matching the alcohol and mortality studies, where moderate drinkers were in good health and heavy drinkers were more likely to report suboptimal health compared with abstainers (Gronback et al., 1999, Poikolainen et al., 1996, Manderbacka et al., 1999, Marmot et al., 1993).

Studies which looked at binge and excessive drinking have produced inconsistent evidence. A study conducted in eight former Soviet Union countries found that men with poor self-reported health were less likely to report heavy episodic drinking (Pomerleau et al., 2008). A cross-sectional study in Spain has shown that sporadic binge drinkers, people who had 1-2 episodes of drinking at least 80g for men and 60g for women of ethanol per occasion in the preceding month (a measure which is similar to our measure of binge drinking) were less likely to report poor health than never-drinkers, and that the higher consumption the lower frequency of suboptimal health (Valencia-Martin et al., 2009). An earlier study from the same country showed similar results: the higher the reported alcohol consumption, the lower the odds of reporting poor health by the participants (Guallar-Castillon et al., 2001). However, in other studies that looked at self-reported health and excessive drinking, participants with hazardous drinking patterns were more likely to report poor health. Large population surveys in the United States have shown that individuals who reported binge drinking were more likely to report suboptimal health compared with non-binge drinkers (Tsai et al., 2010, Okosun et al., 2005, Okoro et al., 2004), and older infrequent binge drinkers (55+ years old) experience more unhealthy time than non-binge drinkers (Okoro et al., 2004). There are also studies which do not find significant relationships between abstaining from alcohol and poor health, or beneficial effects of moderate alcohol consumption (Strandberg et al., 2004, Stranges et al., 2006). The longitudinal study by Strandberg, et al. however, mentioned that the sample consists of only the highest social class men, and has relatively small proportion of very heavy drinkers, which makes it not generalizable to other population groups.

There are several possible explanations for the inconsistency of results across these studies and with our study. Some studies do not include abstainers in the analysis, or use different classifications of non-drinkers. Different measurements of drinking are often used between studies (e.g., looking at past month or weekly drinking versus looking in

drinking patterns last year, measuring only the volume of alcohol consumed versus pattern of use, measuring excessive drinking and binge drinking differently), as are different age ranges, different comparison groups; some studies have only male or only female respondents. However, given the cross-sectional nature of most of the described studies, including our study, the direction of the causality could not be identified, and more longitudinal studies need to explore the relationships between subjective health and drinking. Nevertheless, our results point to reverse causation between self-reported health and hazardous drinking, where people who were perceived as having good health drink more.

6.3.10 Surrogate consumption in qualitative study

Acknowledging the fact that surrogate alcohol consumption could be largely underreported in the survey, and to provide in-depth picture of heavy problem drinking patterns, we conducted qualitative interviews with clients of the alcohol treatment facility. To our knowledge, this is the first in-depth investigation of the drinking of alcoholic beverage surrogates in Russia.

First, not unexpectedly, hazardous drinking was highly prevalent among clients of the alcohol treatment facility. The long-lasting zapojs, drinking heavily from dawn to dusk, drinking large quantities of spirits (average dose per day 690ml = 224 grams of pure ethanol) and being unable to stop were experienced by all participants. The reasons reported for this type of drinking varied and included family matters, material deprivation, depression, loss of a job, and alcohol dependence. In many cases, a cluster of reasons were present. Two distinct zapoj patterns were reported: one was characterised by shorter time spent drinking with periods of total abstinence or controlled drinking between zapoj episodes, the second included zapojs that lasted over a year with higher average dose of spirits consumed per day (1000ml = 320 grams of pure ethanol, which is five times higher than the binge drinking measure used in most of the quantitative investigations). Second, the heavy drinking patterns were exacerbated by the consumption of non-beverage alcohol, especially industrial spirits. We found that there were widespread networks of informal illegal alcohol markets which provide consumers with physically available, conveniently accessible, and affordable illegal spirits. Unlike other studies which looked at surrogate consumption in Russia (Saburova

et al., 2011, Gil et al., 2009, Tompkins et al., 2007, McKee et al.,2005), we found that industrial spirits were consumed more than other types of non-beverage alcohol such as medicinal tinctures, antiseptics bought from pharmacies or eau-de-cologne. That could possibly be because some measures were taken by the local government to remove these products from kiosks and pharmacies, decreasing their wide availability. Moreover, points of sale for industrial spirits were more conveniently located (in the nearest neighbourhood or even the same building where participants lived) and often were open 24 hours.

The high accessibility and low cost of surrogates, and the need to relieve quickly severe withdrawal symptoms, were the main reasons given for the consumption of surrogates. Moreover, the consumption of bad-quality industrial spirit (as defined by respondents) was perceived to produce excessive drinking and more severe health consequences than good-quality legal alcohol or medicine with a high percentage of ethanol bought in pharmacies. That difference was linked by respondents with the quality of the spirit itself and/or substances that were added to it by sellers in order to enhance its effect, such as tobacco or sedatives. It was reported that spirit that was contaminated by additives would act faster, and would produce more craving for the next dose and a more severe hangover the next day.

To date, there have been three studies published in international literature that analysed the composition of surrogates in Russia. One study found good-quality alcohol in medicines that contain a high volume of ethanol (McKee et al., 2005). This finding is consistent with participants' reports in our study. Another study that measured illegally sold spirits in two Russian cities did not find any toxic parameters that would be different from high-quality food ethanol (Savchuk, Nuzhnyi & Kolesov, 2006). However, a few samples in this study did contain diethyl phthalate, which, as described by the authors, is a substance of medium toxicity, and in the event of substance poisoning damages the central nervous system, kidneys, liver, and eyes. And although the authors concluded that the amount of diethyl phthalate found would not modify the acute toxicity of ethanol, they suggested revising the Russian list of denaturizing agents where diethyl phthalate "is the least consistent agent with requirements imposed"

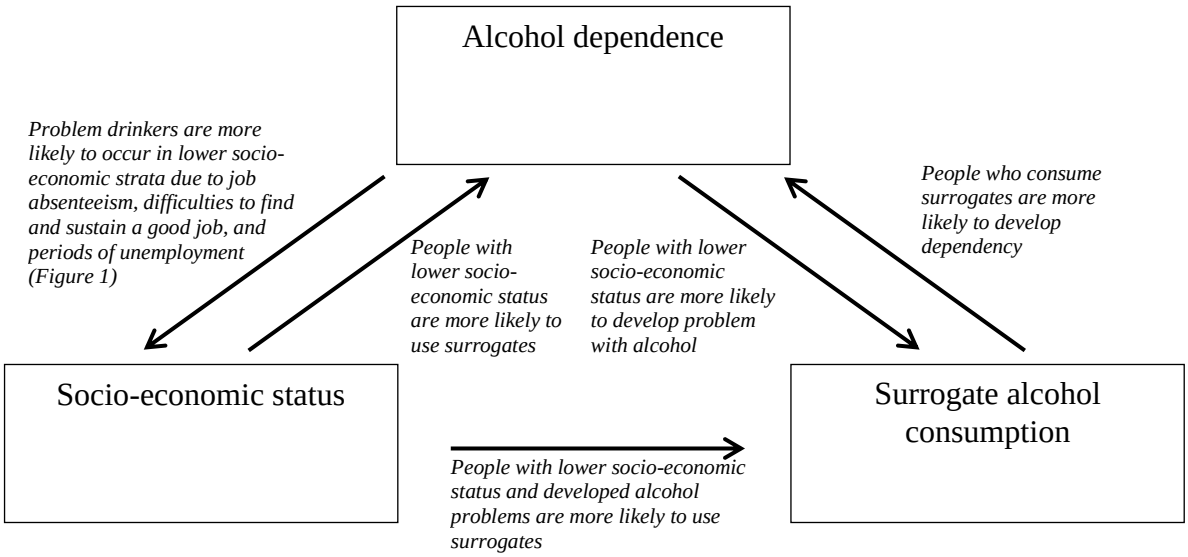
(Savchuk et al., 2006). Finally, the third study found similar high concentrations of diethyl phthalate in two samples of surrogate alcohol (Monakhova et al., 2011).

Recent studies elsewhere continue to argue that surrogate alcohol could be associated with negative health outcomes such as liver damage (Lang et al., 2006, Szucs et al., 2005, Lachenmeier et al., 2007, 2009). The high concentration of diethyl phthalate in surrogate alcohol was found in the neighbouring country Lithuania, long-chain alcohols were found in the sample of illicit alcohols in Estonia, human carcinogenic elements (e.g., ethyl carbamate) were detected in unrecorded alcohol in Poland and Ukraine (Leitz et al., 2009, Lang et al., 2006, Lachenmeier et al., 2009, 2010). A study of illicitly distilled spirits in Hungary has shown that they have significantly higher levels of methanol, 1-propanol, 2-butanol, isobutanol, and isomyl alcohol, which can produce hepatic damage (Szucs et al., 2005). Unfortunately, we did not test any industrial spirit samples in our study. However, it is worth noting the self-reported perceptions of bad-quality spirits and spirits with substances added to it that produce more severe withdrawal symptoms and craving, loss of sight, and other negative effects.

In this respect, future research can look at the following questions: does the use of surrogates lead to more severe alcohol dependence (due to larger ethanol content and/or additives which surrogates might contain), or are people with more severe dependence more likely to consume surrogates, or both? The other hypotheses which need to be further investigated quantitatively that emerged from this qualitative study are related to the relationships between socio-economic status, surrogate use and dependence, and the direction of causality between them : 1) people with lower socio-economic status are more likely to use surrogates; 2) people with lower socio-economic status are more likely to develop problems with alcohol; 3) people who consume surrogates are more likely to develop dependency; 4) people with lower socio-economic status and developed alcohol problems are more likely to use surrogates; 5) problem drinkers are more likely to occur in lower socio-economic strata due to job absenteeism, difficulties of finding and maintaining a good job, and periods of unemployment (Figure 29). For example, with regard to the third hypothesis, it is interesting to note that the records of surrogate use from 1915 state that “surrogates were being used by all those people who

had previously engaged in drinking bouts", the majority of whom were manual workers and unemployed (Stickeley et al., 2009).

Figure 29: Emerged hypotheses on surrogate consumption, alcohol dependence and socio-economic status



6.3.11 Perceptions about Russian drinking culture and alcohol policy

Our qualitative study participants perceived the Russian drinking culture as a historically heavy drinking culture: when Russians drink, they drink a lot, often to drunkenness, and drink strong alcohol with vodka being the unquestionable national drink. This is consistent with other research in this area (Stickey et al., 2009, McKee, 1999). For example, Stickley et al., state that: "…periodic but intense consumption of alcohol with the aim of becoming intoxicated had been commonplace for a long time in Russia, and was cited as one of the reasons why, although annual per-capita consumption of alcohol in Russia throughout the late 19th Century and early 20th century was not especially high in international terms, there was nonetheless a 'multitude victims of drunkenness'" (Stickey et al., 2009). This heavy drinking culture was, as we discussed earlier, related mostly to drinking by men.

Several individual and structural factors were highlighted as influencing and/or forming Russian drinking cultures, such as a long tradition of heavy drinking patterns, individual history of drinking, government regulations and policies around alcohol consumption and the alcohol market, economic hardships, and low quality of life with an absence of accessible leisure activities. It was argued that the Russian government tolerated and even encouraged heavy drinking from early on, contributing to alcohol-related problems as described in Chapter 2, because a large part of government revenue came from alcohol sales (Levitova, 2007, McKee, 1999). On the other hand, participants had mostly negative attitudes towards Gorbachev's anti-alcohol campaign, pointing out that samogon production and surrogate consumption increased during that time and one could see problem drinkers queuing near every liquor store. Nevertheless, most respondents were concerned about problem drinking and suggested that the government should do something about it, addressing it from a wider context of improving quality of life, and reducing unemployment and poverty. This is in line with other studies which show that alcohol problems and drunkenness are considered to be real problems by many Russians on a community level as well as amongst various stakeholders, and a perception that only the government can effect change (Simpura et al., 1999, Halturina & Korotaev, 2008, Gil et al., 2009). Unfortunately, factors that underlie heavy alcohol consumption such as poverty, growing inequality, the gap between rich and poor, living standards, and unemployment are rarely discussed by Russian alcohol policy makers (CIFRA, 2011). Moreover, when talking about problem drinkers, almost no attention is given to access to alcohol treatment, quality of the treatment and introduction into treatment of evidence-based medicine. Good quality studies which look at treatment effectiveness and employ different treatment modalities are virtually non-existent.

There are very well-defined, evidence-based effective and cost-effective alcohol policies and interventions to decrease alcohol problems. These include a reduction in affordability (taxation) and availability of alcohol (density of alcohol sale places, hours and days of work, purchase age), a reduction in drinking and driving, regulation of marketing (restriction of advertising, sponsorship, and promotion), and the provision of treatment to people with alcohol problems (WHO, 2010, 2004, Anderson et al., 2009, Barbor et al., 2004). There is also evidence that, although not very cost-effective, brief

alcohol interventions (which typically include feedback on an individual's alcohol use, provide the information about the harms related to alcohol, and last from 5 to 20 minutes) conducted in primary care among those identified as problem drinkers can reduce quantity of alcohol drunk by 38g per week and can also reduce the number of patients with binge and heavy drinking patterns, especially among men (Kaner et al., 2009, Anderson et al., 2009). Furthermore, the workplace is reportedly an important setting for alcohol consumption interventions as a lot of people are employed, employed people spend a large proportion of their time at work, and an employer can influence the employee behaviour by discouraging heavy drinking and altering drinking norms among workers through alcohol policies which help problem drinkers and which ensure no drinking at work (Roman & Bloom, 2002, Webb et al., 2009, Institute of Alcohol Studies, 2009, Ames et al., 2000, Sonnensthuhl, 1996). For example, in a remarkable ethnographic study, Sonnensthuhl has shown how a traditionally heavy drinking occupational culture was transformed to intemperate drinking culture by incorporating Alcohol Anonymous groups among sanghogs in New York (Sonnensthuhl, 1996). A systematic review of work-place interventions has shown that brief interventions, psychosocial skills training, and interventions contained within health and life-style checks were helpful in reducing harmful alcohol consumption (Webb et al., 2009, Institute of Alcohol Studies, 2009, Ames et al., 2000). As was shown in our qualitative studies, strict rules against drinking at work or before work, and a non-permissive drinking culture in the workplace prevented people from drinking and encouraged them to stop drinking entirely. However, to succeed with the implementation of the above policies requires great political will and support from multiple stakeholders, including workers themselves (Anderson et al., 2009).

From Gorbachev's anti-alcohol campaign and through the de-monopolization of the alcohol market during the late 1990s, the Russian government made little effort to change alcohol policy, until recently. Alcohol could be bought 24 hours a day; beer (which was not considered to be an alcoholic beverage) was sold in every street corner kiosk in bottles from 0.33 to 2 litres at the same price as juice; local stores were half-full of illegally produced vodka; alcohol was advertised on TV and, until recently, on billboards. A recent WHO report on the state of alcohol policies in European region has shown that despite the risky pattern of drinking in Russia, with a high death toll

attributed to alcohol, there is no national or subnational written policy on alcohol and no information available on any marketing regulations such as alcohol advertising and alcohol sales promotion (WHO, 2010). However, in 2006 President Putin signed the Law on Regulation of Ethyl Alcohol which addressed the volume and quality of alcohol production and sales by introducing more control on licensing, excise stamps, decreasing sale locations (Levitova, 2007). The implementation of the law faced major difficulties which ultimately led to shortages of alcohol products in the stores and an increase in surrogate consumption and alcohol poisoning as described in Chapter 2 (Levitova, 2007). In 2010, the Russian government began to look at launching an anti-alcohol campaign starting with an introduction of a minimum price for vodka, adding beer to the list of alcoholic beverages, and tripling the beer tax. In January 2011, a document suggesting improvements to current alcohol legislation was introduced. The measures suggested are in line with those introduced by WHO: increased penalties for alcohol sale to minors, control of TV advertising for beer with an ultimate aim to ban it, control of medical tinctures sales, banning of light-alcohol sales in kiosks, enlarging the label on beverages which describes the harmful effects of alcohol, banning of 24-hour sale of alcohol, decreasing the size of containers for weak alcohol, etc. One can only hope that the above suggestions and measures will receive support, will be appropriately implemented and enforced – which could be a challenge in Russia due to endemic corruption (Levitova, 2007).

Our findings related to alcohol control policies in connection to surrogate drinking documented that low availability and high price of legal alcohol would increase surrogate drinking, which was not unexpected. It has been previously been shown that during the "dry" periods, samogon and surrogate drinking in Russia increased (Stickey et al., 2009). As was mentioned in the Background section, surrogate alcohol was first mentioned in 1914, when the sale of vodka was banned by the government. Later in history, the Gorbachev anti-alcohol campaign resulted in increased moonshine production and consumption and in higher surrogates consumption too (McKee, 1999, Nemtsov, 2001, 2005, Stickey et al., 2009, White, 1996, Partanen, 1993). More recently, it was reported that during the economic crisis of 1998 consumption of samogon increased (Perlman, 2010). Similarly, according to our results, the current 30% increase in the price of alcohol increased the consumption of illegally sold spirits

(CIFRA, 2011). Moreover, it was argued recently that an increase in the minimum price of vodka by the current government will not affect average alcohol consumption, but will drive around 25 million poorer Russian heavy drinkers to illegal surrogate markets, leading to further growth in these illegal markets (CIFRA, 2011). Thus, it seems that increased taxation on alcoholic beverages in Russia without addressing all sources of alcohol in order to tackle illegal production and sales of surrogate alcohol might lead to an increase of surrogates' consumption. Unfortunately, in Russia at this time enforcement agencies such as police are often "covering" illegal alcohol outlets, or remaining passive, leading to "the formation of ever-new cohorts of alcoholics" (Khalturina & Korotaev, 2008). On a positive note, our qualitative study among heavy drinkers has shown that recent policies targeted to reduce non-beverage alcohol, such as medicines and perfumes with high alcohol content sold in legal outlets, have resulted in a decrease in consumption of such substances among studied subjects.

All in all, given the high proportion of hazardous drinkers in Russia, serious measures need to be taken by the Federal government to reduce overall alcohol consumption among the general population and problem drinking. For example, the cultural image of Russians as being heavy drinkers needs to be addressed, which would involve separating heavy drinking from the image of "a real men" and the image of particular occupations, discouraging drinking at work, promotion of a new drinking style making binge drinking an old-fashioned habit in a wider framework of healthy lifestyle promotion. Although there is a recent positive shift in alcohol policy driven by the current Prime Minister, the implementation, enforcement and regulation of the proposed policies will be paramount. It also seems that, given the high accessibility of surrogate alcohol, it would be essential to address illegal spirit production and sale, and the surrounding corruption. Increasing the overall quality of life of the population might decrease hazardous drinking and demand for surrogate alcohol consumption as well. Moreover, problem drinkers need to have access to good quality and variety of treatment, including brief interventions provided at the work place or/and by GPs, access to support groups and counselling, affordable detoxification and rehabilitation. Finally, any interventions need to be monitored, evaluated and regulated.

To summarise this chapter, drinking behaviour is influenced by interplay of individual, socio-economic, and structural factors which can produce certain environments that "encourage" heavy drinking and consequently hazardous drinking or "protect" one from it.

6.4 Public health and policy implications

This section summarises public health, policy, and research implications which were discussed above, and provides a conclusion for the thesis.

To be most effective in impacting drinking behaviour in Russia, a multilevel approach should be undertaken to target the cultural and environmental factors which influence drinking behaviour. First, decreasing the average consumption of alcohol in the Russian population, particularly in men, is a paramount task since average consumption of alcohol in populations is shown to be a marker of problem alcohol consumption (Ledermann, 1956, Marmot, 1998, Norstrom, 2006). For example, a study in Sweden found that an increase in 1 litre of pure alcohol intake in men was associated with a 13% increase in sickness absenteeism in male employees (Norstrom, 2006); in England there were similar results: an increase in average weekly drinking led to an increase in the prevalence of heavy drinking (Marmot, 1998). Second, hazardous patterns of drinking such as binge and surrogate drinking need to be addressed. Harm minimization or harm reduction strategies such as raising awareness and advocacy about alcohol-related harm from binge drinking (discussed in detail below) is currently promoted and undertaken by many countries (Casswell & Thamarangsi, 2009, Anderson et al., 2009, WHO, 2010a).

As mentioned in section 6.3.3, decreasing average consumption and reducing binge drinking can be accomplished by disconnecting heavy drinking from the notion of "what it means to be a real man", and by de-normalising binge drinking. This has been done, for example, in anti-smoking campaigns when aspirational cowboy images used by cigarette brands disappeared from TV screens, and smoking ceased to be associated with positive heroes in popular movies. It was also shown that "hegemonic masculine models were constructed differently in feature films in the 1940s compared to the 1980s" (Connell & Messerschmidt, 2005). Analysing crime dramas, for example,

Cavernder & Deutsch have shown that in earlier movies the heroes were usually macho types, smoking and drinking spirits. Over time, the focus has shifted from "macho displays of strength" to "technical competence" (Cavernder & Deutsch, 2006). In a Russian context this can be done by banning alcohol advertising, reducing images of alcohol drinking, of drunken men and of intoxication as humorous or courageous on TV, in movies, etc. A healthy lifestyle should be promoted through social advertising, in schools and at work places, and healthy leisure activities should be made accessible to the public.

Given the price elasticity of demand for alcohol, raising taxes on alcohol beverages and simultaneously addressing illegal alcohol/surrogate alcohol market (e.g., by stopping the sale or putting tax on the illicit production of spirits) can decrease alcohol intake. Reducing access to alcohol by decreasing the density of legal alcohol outlets, reducing hours of alcohol sale, closing illegal sales outlets, and increasing fines for non-compliance are important measures. However, these measures would ultimately require serious enforcement efforts and a fight against corruption. In general, reducing poverty and increasing quality of life would diminish demand for alcohol surrogates.

On the other hand, hazardous drinking can be addressed at work places as well as in primary care practice through brief interventions, consultations, referrals, and accessible, diverse treatment options. If targeting specific industries (e.g., transportation), detailed ethnographic studies need to be undertaken, as it was shown that within even one workplace, different subcultures could co-exist in which one could be permissive to drinking and another not (Ragland, 1995). However, changing occupational drinking culture could be a feasible measure in targeting hazardous drinking.

All the above measures have to be done with care as changing "deeply embedded cultural assumptions" might be a difficult task. As was shown by Gorbachev's anti-alcohol campaign, overly drastic measures can lead to the loss of public support and consequent failure.

6.5 Future research implications

Drinking behaviour is a dynamic process formed by social, economic, political, and cultural contexts, which can transform with time. Our study has reported participants' drinking behaviour specific for a particular timeframe and age. Future studies need to investigate drinking cultures in Russia, in different sub-groups and in a wider range of ages, as drinking patterns might not only change with age but also within different cohorts of people, and in different times.

The cross-sectional nature of the present study cannot demonstrate causal effects between hazardous drinking and its contributing factors. Longitudinal studies need to be done in order to further investigate these relationships, and the direction of causality of such relationships as depression and drinking, self-reported health and drinking, unemployment and material situation and drinking.

There is a need for further mixed design research on occupational culture and drinking. Our study has shown that particular jobs are at increased risk of hazardous drinking. Ethnographic studies using observation, open-ended interviews, and focus groups in particular industries can help to understand how certain drinking cultures are formed and how they can be changed. Surveys among workers of "at risk" industries can look at hazardous drinking levels and their predictors such as work-related stress, social and physical availability of alcohol at work premises, work conditions, and low management control.

Finally, there is a need for further research on surrogate drinking culture. Recruitment and observation of surrogate drinkers in their communities would provide valuable understanding of this drinking pattern, not least because it would include those who are missed in most observational or treatment studies. Quantitative longitudinal studies are needed to further investigate the predictors of surrogate drinking such as socio-economic status and alcohol dependency and the direction of causality between them. Factors that can influence a person's drinking behaviour but which were out of scope of this study, such as personality traits, recovery capital, severity of dependency and accompanied mental and physical conditions can be further investigated. This could be done by recruiting larger samples of participants in treatment programs where such

behaviour is more likely to be reported than in general population samples. It is also possible to recruit participants in community settings (e.g., by using a respondent-driven sample), though safety might be a concern. The other interesting issue which came out of this research is the perceived poor quality of surrogate alcohol compared to legal alcohol. Future research can look at the question of whether it is the quantity of surrogate alcohol consumed rather than its quality that produce a detrimental effect on people' s health.

7. Conclusions

The aim of the research described in the thesis was to explore Russian drinking culture with an emphasis on hazardous drinking, using a mixed method design with the data from a large cohort sample, and two qualitative studies in the Russian city Novosibirsk.

First, the research showed that the traditional pattern of drinking on special occasions, with spirits being the preferred drink, was prevalent among the study participants. Other patterns were also present, especially among men, who reported drinking beer or spirits weekly, drinking after work, drinking after salary or pension has been received. Hazardous drinking was common among men, and almost negligible among women. The frequency of drinking and preferred types of drinks were consistent in quantitative and qualitative studies with detailed descriptions of traditional and individual patterns provided by qualitative accounts.

Second, the study found a large difference in drinking between genders, with pronounced differences in abstinence rates, average annual volume of alcohol consumed, drinking frequencies, number of drinking occasions, average dose per occasion, and hazardous drinking patterns. The qualitative study suggested that these differences are largely due to perceived 1) cultural image of gender (when gender is displayed through drinking) with men pursuing a traditional masculinity model which suggests high alcohol intake; 2) gender roles which "protect" women (but not men) against hazardous drinking, and 3) different gender role-related responses by men and women to stressful situations, especially during economic hardships.

Third, the quantitative study showed that hazardous drinking decreased with age, was more prevalent among men, the less educated, the unemployed, healthier people, and people in certain occupations (e.g., manual workers, drivers). Some predictors of hazardous drinking, however, were different for men and women. Being a widower was associated with binge and heavy binge drinking among men but not among women. Poor material circumstances were significantly related to binge and problem drinking only among men. There was no significant association found between binge drinking and having depressive symptoms among men, but there was among women. In addition,

having depressive symptoms was a significant predictor of problem drinking and having negative consequences of drinking among men.

Fourth, although surrogate drinking was not common in the HAPIEE cohort, it was not unusual among participants from the qualitative study sampled in an alcohol treatment facility. Affordable price and high accessibility, joined with a need to relieve symptoms of withdrawal were reasons which participants gave for using surrogates. The study also found very heavy drinking patterns in this group, including short and long term zapojs. Furthermore, the findings suggested that those in lower socio-economic positions and with more severe alcohol dependency are at higher risk of surrogate consumption. At the same time, surrogate consumption could lead to alcohol dependency and possible consequent unemployment and decreased socio-economic status. However, these hypotheses need to be verified in large and prospective epidemiological surveys.

Finally, qualitative research has revealed that the Russian drinking culture is perceived by participants to be a heavy drinking culture, built on the interplay of individual and structural factors with an important government influence on alcohol consumption levels. This suggests that Russian authorities need to play a more active role in addressing alcohol the consumption among Russians, including consumption of surrogates, using a multilevel approach and evidence-based interventions, and not forgetting the underlying factors of hazardous drinking such as poverty, low quality of life, and unemployment.

In conclusion, the thesis provided new insights into alcohol consumption in Russia (and elsewhere), showing that socio-cultural environment (including gender and socio-economic status) is an important contributor to hazardous drinking along with structural factors such as accessibility, availability, and affordability of legal and illegal alcohol regulated by governmental policies or their absence. The study also identified implications towards future research in this area as well as Russian policy implications.

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Appendix 1 HAPIEE study protocol

(Attached as a separate file).

Appendix 2 HAPIEE baseline questionnaire

Date of questionnaire filled			
	Day	Month	Year

Health and Life Style

Personal questionnaire

Name: ..... Surname: .....

Date of birth			
	Day	Month	Year

Study ID	Interviewer code

1. Place of birth (region): _____

2. Sex:

1. Male
2. Female

3. What is your highest completed level of education?

1. Incomplete primary or no formal education
2. Primary
3. Vocational (apprenticeship)
4. Secondary
5. University (degree)

4. What is your marital status?

1. Single
2. Married
3. Cohabiting
4. Russia: Divorced / Separated
5. Widowed

About your health

5. What is your height in cm? ☐☐☐ . ☐

6. What is your weight in kg? ☐☐☐ . ☐

7. Over the last 12 months, would you say your health has been:

1. Very good
2. Good
3. Average
4. Poor
5. Very poor

8. Here is a list of activities that you might do during a typical day. Does your health now limit your ability in these activities? If so, how much?

	Yes, limited a lot	*Yes, limited a little*	*No, not limited at all*
Vigorous activities, such as running, lifting heavy objects, participating in strenuous sports	☐ 1	☐ 2	☐ 3
Moderate activities, such as moving a table, pushing a vacuum cleaner	☐ 1	☐ 2	☐ 3
Lifting or carrying bag of groceries	☐ 1	☐ 2	☐ 3
Climbing several flights of stairs	☐ 1	☐ 2	☐ 3
Climbing one flight of stairs	☐ 1	☐ 2	☐ 3

	Yes, limited a lot	*Yes, limited a little*	*No, not limited at all*
Bending, kneeling or stooping	☐ 1	☐ 2	☐ 3
Walking two kilometres	☐ 1	☐ 2	☐ 3
Walking one kilometre	☐ 1	☐ 2	☐ 3
Walking one hundred metres	☐ 1	☐ 2	☐ 3
Bathing and dressing yourself	☐ 1	☐ 2	☐ 3

9. Do you have any long-term health problems for which medical treatment has been sought over last 12 months?

1. Yes
2. No

Russia: codes omitted above

10. Have any of the following diseases ever been diagnosed in you <u>by a doctor</u> and have you ever been <u>hospitalised</u> for this disease?

	Yes, diagnosed and hospitalised	*Yes, diagnosed, never hospitalised*	*No or do not know*
heart attack / acute myocardial infarction	☐ 1	☐ 2	☐ 3
angina / ischaemic heart disease	☐ 1	☐ 2	☐ 3
stroke	☐ 1	☐ 2	☐ 3
chronic respiratory disease	☐ 1	☐ 2	☐ 3
cancer	☐ 1	☐ 2	☐ 3
stomach ulcer	☐ 1	☐ 2	☐ 3
gallbladder disease	☐ 1	☐ 2	☐ 3
kidney stones	☐ 1	☐ 2	☐ 3
asthma	☐ 1	☐ 2	☐ 3
atopic eczema	☐ 1	☐ 2	☐ 3
other allergy	☐ 1	☐ 2	☐ 3
hay fever	☐ 1	☐ 2	☐ 3
disease of spine or joints	☐ 1	☐ 2	☐ 3
Russia: arterial hypertension			

11. Do you usually **cough** on most days for as much as **3 months each year?**

1. Yes
2. No

12. Do you usually bring up any **phlegm** from your chest first thing in the morning for as much as **3 months each year**?

1. Yes
2. No

Injuries and accidents

---

13. In the past **12 months** have you been injured or have you had an accident serious enough to contact a doctor?

1. Yes
2. No, please go to the **question 20**

14. How many different times in the past **12 months** were you injured or have you had an accident serious enough to contact a doctor?

Please would you **tell us** about the **MOST SERIOUS INJURY OR ACCIDENT** you have had in **last 12 months.**

15. Place: Where were you when you were injured or had your accident?

1. Home (yours or someone else's home)
2. Work
3. Road
4. Other
5. Unknown

16. Mechanism: How were you hurt or how was the injury inflicted?

1.	Traffic injury	2.	Fall
3.	Other blunt force	4.	Stab or cut
5.	Firearm	6.	Fire or hot subject or substance (e.g. scald)
7.	Chocking or hanging	8.	Drowning or submersion
9.	Suffocation	10.	Poisoning
	Russia: option omitted		
11.	Machinery related	12.	Struck by or against
13.	Other	14.	Unknown

17. Intent: Was this accident:

1.	Unintentional	2.	Self-harm
3.	Intentional	4.	Other
5.	Unknown		

18. What was the **nature of your injury?**

1.	Fracture	2.	Sprain or strain
3.	Cut, bite or open wound	4.	Bruise
5.	Burn	6.	Concussion
7.	Organs system injury	8.	Other – please specify
9.	Unknown	10.	Russia: frostbite

19. Did you require **medical treatment** as a result of your injury or accident?

1.	No treatment required	2.	Treated as outpatient, discharged
3.	Admitted to hospital	4.	Other – please specify
5.	Unknown		

20. Have you ever been told by a doctor that you have **high blood pressure**?

1. Yes
2. No

If **YES**, have you been taking drugs for high blood pressure in the last 2 weeks?

1. Yes
2. No
3. Don't know

21. Have you every been told by a doctor that you have **diabetes**?

1. Yes
2. No

If **YES**, how are you treated?

1. Only by diet
2. By diet and insulin
3. By diet and tablets
4. By diet, tablets and insulin
5. No treatment

22. Have you ever been told by a doctor that you have **high blood cholesterol**?

1. Yes
2. No

If **YES**, how are you treated?

1. Only by diet
2. By diet and tablets
3. Tablets only
4. No treatment

23. Are you under **long-term treatment or medical care** for any medical condition, except for high blood pressure, high cholesterol or diabetes?

1. Yes
2. No

If **YES**, please give details:

Russia : **23a**. Have you been taking any medication regularly during the last 12 months?

1. No 2.Yes (please specify in table below)

Name of medication	Reason for taking it	Was it prescribed by a doctor?	
		Yes	No
		Yes	No
		Yes	No
		Yes	No

24. Do you take any **vitamins or mineral supplements**?

1. Yes (regularly, at least 3 times per week)
2. Yes (irregularly, less than 3 times per week)
2. No

25. If YES, do these supplements contain vitamin C?

1. Yes
2. No
3. Russia: don't know

26. Can you **seek medical advice** when you need it?

1. Anytime I want to and without any difficulty
2. Usually, but it can be complicated e.g. difficult to get to doctor, doctor busy, or can't afford
3. Not usually, too complicated and often I do not bother
4. No, it is either too difficult to get to the doctor, the doctor is too busy, or it is too expensive

27. Where do you go, when you want medical advice and it is not an emergency?

1. State funded general practitioner
2. State funded specialist
3. State hospital
4. Private general practitioner
5. Private funded specialist
6. Private hospital
7. Other

28. Do you have to **pay** to see the doctor?

1. Yes Russia: 1=always or mostly, 2=sometimes, 3=never
2. No

29. At any time in the last 6 months, have you been prescribed a medicine and not been able to buy it?

1. No, I can always obtain the medicines that I need
2. Yes, it was unavailable
3. Yes, it was too expensive
4. No, I have not been prescribed any medicines

30. How many times in the **last 12 months** did you **seek medical advice?** ☐☐

31. Did any of your **parents or siblings suffer** from any of the **following diseases?**

	Did parents or siblings suffer from disease?		**IF YES**, did a parent or sibling have onset before the age of 60?	
	Yes	No	Yes	No
Heart disease (infarction, angina)	☐ 1	☐ 2	☐ 1	☐ 2
Stroke	☐ 1	☐ 2	☐ 1	☐ 2

Diabetes	☐ 1	☐ 2	☐ 1	☐ 2
Neoplasms	☐ 1	☐ 2	☐ 1	☐ 2
Allergy	☐ 1	☐ 2	☐ 1	☐ 2
Russia: Arterial hypertension				

32. Have you ever had any pain or discomfort in your chest?

1. Yes
2. No

If no, please, **women** proceed to **Question 39**, **men** proceed to **Question 45**.

33. Do you get it when you walk uphill or hurry or do physically demanding work?

1. Yes
2. No
3. Never hurries or walks uphill or does physically demanding work

34. Do you get it when you walk at an ordinary pace on the level?

1. Yes
2. No

35. What do you do if you get it while you are walking?

1. Stop or slow down
2. Carry on at the same pace
3. Take nitroglycerine

36. If you stand still, what happens to it?

1. Relieved
2. Not relieved

37. If relieved, how soon?

1. 10 minutes or less
2. More than 10 minutes

38. Can you specify where such pain or discomfort appeared? (*Please choose all appropriate options)*

1. Sternum (upper or middle)
2. Sternum (lower)
3. Left anterior chest
4. Left arm
5. Neck
6. Other Please specify: _____

Only for women

39. Do you still have periods?

1. Yes, regularly
2. Yes, irregularly **If YES**, go to question 42.
3. No

40. How old were you when the periods stopped? | | | Years

41. What was the cause of the menopause?

1. Natural
2. Surgical (operation)
3. Russia: Other (e.g. hormonal dysfunction)

42. Have you ever used hormonal contraception?

1. No, never
2. Yes, but I no longer use it
3. Yes and I still use it

43. Have you ever had hormonal replacement therapy?

1. Yes
2. No

44. If YES, are you still taking hormonal replacement therapy?

1. Yes
2. No

Health behaviours

45. How many hours during a typical week, <u>except when at work</u>, do you engage in physically demanding activities, such as housework, gardening, maintenance of the house (DIY) etc? | | | |

Russia: question 45 asked for summer and winter separately

46. How many hours during a typical week do you engage in sports, games or hiking? | | | |

47. Do you smoke cigarettes?

1. Yes, regularly, at least one cigarette a day on average
2. Yes, occasionally, less than one cigarette a day
3. No, I smoked in the past but I stopped
4. No, I have never smoked

48. For current and past smokers: How many cigarettes a day do you smoke now (or you used to smoke, if you stopped)? | | | |

49. For current and past smokers: How old were you when you started smoking? | | | Years

50. For past smokers: How old were you when you stopped smoking? | | | Years

51. For past smokers: When did you stop smoking? | | | | | Calendar year

52. The next few questions are about how much wine, beer and spirits you may have had during the last 12 months. When we say one drink, we mean 0.5 litre of beer, 2 dl glass of wine, or 5 cl of spirits. Please answer each question below - ie. cross a square **in each row -** to indicate how often you had that amount of alcohol during one day.

Here is an example how to calculate correct amount of alcohol on a single occasion: if you had 0.7 l bottle of wine AND two 5cl measures of spirit in a single occasion you had 3.5 drinks of wine and 2 drinks of spirit which is a total of 5.5 drinks. Then you need to choose correct column to indicate how often in the last year you had such amount of alcohol.

	Every day or almost every day	***3-4 per week***	***1-2 per week***	***2-3 per month***	***About once a month***	***6-11 in past year***	***3-5 in past year***	***1-2 in past year***	***Never in past year***
1. How often in the last year did you have 10 drinks or more during one day?									
10 drinks or more 5 l (10 x 0.5 l) of beer or 2 l (10 x 2 dl) of wine or 0.5 l (10 x 5 cl) of spirits	☐	☐	☐	☐	☐	☐	☐	☐	☐
2. How often in the last year did you have 7-9 drinks during one day?									
7-9 drinks (7-9 x 0.5 l of beer or 7-9 x 2 dl of wine or 7-9 x 5 cl of spirits)	☐	☐	☐	☐	☐	☐	☐	☐	☐
3. How often in the last year did you have 5-6 drinks during one day?									
5-6 drinks (5-6 x 0.5 l of beer or 5-6 x 2 dl of wine or 5-6 x 5 cl of spirits)	☐	☐	☐	☐	☐	☐	☐	☐	☐
4. How often in the last year did you have 3-4 drinks during one day?									
3-4 drinks (3-4 x 0.5 l of beer or 3-4 x 2 dl of wine or 3-4 x 5 cl of spirits)	☐	☐	☐	☐	☐	☐	☐	☐	☐
5. How often in the last year did you have 1-2 drinks during one day?									
1-2 drinks (1-2 x 0.5 l of beer or 1-2 x 2 dl of wine or 1-2 x 5 cl of spirits)	☐	☐	☐	☐	☐	☐	☐	☐	☐
6. How often in the last year did you have about half drink during one day?									
About half drink	☐	☐	☐	☐	☐	☐	☐	☐	☐
	Every day or almost every day	***3-4 per week***	***1-2 per week***	***2-3 per month***	***About once a month***	***6-11 in past year***	***3-5 in past year***	***1-2 in past year***	***Never in past year***

53. How much beer (litres) do you usually drink during one week? | | |

54. How much wine (decilitres) do you usually drink during one | | |

55. How much spirits (decilitres) do you usually drink during one | | |

Russia: units for questions 54 and 55 are ml not dl.

56. What was the largest amount of alcohol you had **on a single occasion** during the last 4 weeks?

0.5 L bottles or glasses of beer AND

2 dl glasses of wine AND

5 cl glasses of spirits (double shots)

57. During the **last 12 months**, how often did you drink enough to feel drunk?

1. every day or at least 5 times a week
2. about 1-4 times a week
3. about 1-3 times a month
4. 3-11 times a year
5. once or twice a year
6. never in the past year

57A. Did you used to drink alcohol more often than you have during the last year?

1. No (of No move to question 58)
2. Yes - how often did you drink when you used to drink more frequently?

57B 2. Several times a year, but not every month
3. Once or twice a month
4. Once a week
5. 2 to 4 times a week
6. 5 to 6 times a week
7. Daily

57C. How old were you when you started drinking? ……..

57D. How much did you drink during one session when you were drinking most often?

A. Beer (how many .5 litre bottles)……
B. Wine (ml) ……..
C. Fortified wine (ml) …….
D. Spirits (vodka, cognac) (ml) ……

57E. In which year did you stop drinking or start to drink less?

In ……. Or if less than a year:

1. 1-3 months ago
2. 3-6 months ago
3. 6-12 months ago

57F. Why did you cut down on your drinking or stop drinking?

- because of cardiovascular illness

1.

2. Angina
3. Irregular heartbeat
4. MI
5. Chronic circulatory problems
6. Arterial hypertension

- because of gastro-intestinal illness / disease
  1. stomach
  2. bowel
  3. liver
  4. pancreas
- because of neurological or cerebrovascular illness
  1. stroke
  2. headaches
  3. polyneuritis
  4. osteochondritis (is this in the right place?)
  5. epilepsy
- because of other illness / diseases
  1. respiratory organs
  2. urological
  3. injury
  4. rheumatic disease
  5. other illness
- for reasons other than health
  1. because of age
  2. because of work
  3. family circumstances
  4. hard to get hold of alcohol
  5. other reason
- have you ever had to refer to a drug-abuse clinic
  1. no
  2. yes, once
  3. yes, more than once

58. In **last 12 months**, did your drinking cause you difficulties with the following aspects of your life?

Please cross appropriate box in each row:	Yes	No
marriage/partner or home life	☐ 1	☐ 2
friendships and social life	☐ 1	☐ 2
your work	☐ 1	☐ 2
Police or other authorities	☐ 1	☐ 2
your physical health	☐ 1	☐ 2
any injury or accident	☐ 1	☐ 2
your psychological or mental health	☐ 1	☐ 2
your financial circumstances	☐ 1	☐ 2

59. In the **last 12 months**, did you have any of the following experiences?

Please cross appropriate box in each row:	Yes	No
Have you ever felt you should cut down on your drinking?	☐ 1	☐ 2
Have people ever annoyed you by criticising your drinking?	☐ 1	☐ 2
Have you ever felt bad or guilty about your drinking?	☐ 1	☐ 2
Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover?	☐ 1	☐ 2

60. How do the following factors influence human health?

Please cross appropriate box in each row:	Improve		No effect	Make It Worse	
	Strongly	Slightly		Slightly	Strongly
Eating meat	☐ 1	☐ 2	☐ 3-4	☐ 5	☐ 6
Eating fruit and vegetables	☐ 1	☐ 2	☐ 3-4	☐ 5	☐ 6
Lack of physical activity	☐ 1	☐ 2	☐ 3-4	☐ 5	☐ 6
Obesity	☐ 1	☐ 2	☐ 3-4	☐ 5	☐ 6
Smoking	☐ 1	☐ 2	☐ 3-4	☐ 5	☐ 6
Drinking alcohol	☐ 1	☐ 2	☐ 3-4	☐ 5	☐ 6
Passive smoking	☐ 1	☐ 2	☐ 3-4	☐ 5	☐ 6
Environmental pollution	☐ 1	☐ 2	☐ 3-4	☐ 5	☐ 6
Lack of money	☐ 1	☐ 2	☐ 3-4	☐ 5	☐ 6
Stress	☐ 1	☐ 2	☐ 3-4	☐ 5	☐ 6
Exercise	☐ 1	☐ 2	☐ 3-4	☐ 5	☐ 6

61. Below is a list of the ways you might have felt or behaved during **the last week**.
For each of the following statements, please indicate how often you felt that way:

During the past week:	*Less than one day*	*1-2 days*	*3-4 days*	*5-7 days*
a) I was bothered by things that usually do not bother me	☐ 1	☐ 2	☐ 3	☐ 4
b) I did not feel like eating, my appetite was poor	☐ 1	☐ 2	☐ 3	☐ 4
c) I felt that I could not shake off the blues even with help from my family and friends	☐ 1	☐ 2	☐ 3	☐ 4
d) I felt that I was just as good as other people	☐ 1	☐ 2	☐ 3	☐ 4
e) I had trouble keeping my mind on what I was doing	☐ 1	☐ 2	☐ 3	☐ 4
f) I felt depressed.	☐ 1	☐ 2	☐ 3	☐ 4

During the past week:	*Less than one day*	*1-2 days*	*3-4 days*	*5-7 days*
g) I felt that everything I did was an effort	☐ 1	☐ 2	☐ 3	☐ 4
h) I felt hopeful about the future	☐ 1	☐ 2	☐ 3	☐ 4
i) I thought my life had been a failure	☐ 1	☐ 2	☐ 3	☐ 4
j) I felt fearful	☐ 1	☐ 2	☐ 3	☐ 4
k) My sleep was restless	☐ 1	☐ 2	☐ 3	☐ 4
l) I was happy	☐ 1	☐ 2	☐ 3	☐ 4
m) I talked less than usual	☐ 1	☐ 2	☐ 3	☐ 4
n) I felt lonely	☐ 1	☐ 2	☐ 3	☐ 4
o) People were unfriendly	☐ 1	☐ 2	☐ 3	☐ 4
p) I enjoyed life	☐ 1	☐ 2	☐ 3	☐ 4
q) I had crying spells	☐ 1	☐ 2	☐ 3	☐ 4
r) I felt sad	☐ 1	☐ 2	☐ 3	☐ 4
s) I felt people dislike me	☐ 1	☐ 2	☐ 3	☐ 4
t) I could not get going	☐ 1	☐ 2	☐ 3	☐ 4

62. Are you **a member of club or organisation** (sports club, church, political party)?

1. Yes
2. No

If **YES**, how often do you take part in common activities?

1. Several times a week
2. Several times a month
3. About once a month
4. Several times a year
5. Never or almost never

63. On whom do you rely first of all when having problems?

1. friends
2. relatives
3. employer
4. state
5. private / commercial companies
6. public organisations such as trade unions
7. charities, church
8. myself
9. no-one
10. other, please give details: _____

Russia, Czech Republic: state "you may choose more than one option"

Poland: only one option permitted

64. Are you regularly in **contact with your relatives** who do not live in your household?

1. several times a week

2. about once a week
3. several times a month
4. about once a month
5. less than once a month
6. I do not have relatives / no relatives outside my household

65. How many relatives who do not live in your household do you **see at least once a week**?

1. none
2. 1 or 2
3. 3 to 5
4. more than 5
5. I do not have relatives / no relatives outside my household

66. How often do you visit **friends**?

1. several times a week
2. about once a week
3. several times a month
4. about once a month
5. less than once a month
6. I do not have friends

67. How many friends do you see at least once a week?

1. none
2. 1 or 2
3. 3 to 5
4. more than 5
5. I do not have friends

68. We would like to ask about your area of residence and other people:

	Always	*Mostly*	*Some-times*	*Rarely*	*Never*
Do you feel safe in the area of your residence during the day?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Do you feel safe in the area of your residence at night?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Would your neighbours help you if you need it?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Is there trust among people in your area of residence?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Do you think that you can trust people?	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

69. Have the changes since 1989 been good or bad for you:

	Very good	*Good*	*No change*	*Bad*	*Very bad*
Occupational position	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Income	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
Material circumstances	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5
General social position	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5

70. How much do you agree or disagree with the following statements?

	DISAGREE			AGREE		
	STRONGLY	MODERATELY	SLIGHTLY	SLIGHTLY	MODERATELY	STRONGLY
a) At home, I feel I have control over what happens in most situations	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
b) Keeping healthy depends on things that I can do	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
c) There are certain things I can do for myself to reduce the risk of a heart attack	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
d) There are certain things I can do for myself to reduce the risk of getting cancer	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
e) I feel that what happens in my life is often determined by factors beyond my control	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
f) Over the next 5-10 years I expect to have many more positive than negative experiences	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6
g) I often have the feeling that I am being treated unfairly	☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6

	DISAGREE					AGREE
h) In the past ten years my life has been full of changes without my knowing what will happen next	☐1	☐2	☐3	☐4	☐5	☐6
i) I very often have the feeling that there's little meaning in the things I do in my daily life	☐1	☐2	☐3	☐4	☐5	☐6
j) I sometimes feel as if I've done all there is to do in life	☐1	☐2	☐3	☐4	☐5	☐6
k) I gave up trying to make big improvements or changes in my life a long time ago	☐1	☐2	☐3	☐4	☐5	☐6

Social and economic conditions

71. How often does it happen that you do not have enough **money for food** which you and your family need? And how often did this happen before 1990?

Russia: …enough money to buy food …

at present	before 1990
☐ 1. all the time	☐ 1. all the time
☐ 2. often	☐ 2. often
☐ 3. sometimes	☐ 3. sometimes
☐ 4. rarely	☐ 4. rarely
☐ 5. never	☐ 5. never

72. How often does it happen that you do not have enough **money for clothing** which you and your family need? And how often did this happen before 1990?

at present	before 1990
☐ 1. all the time	☐ 1. all the time
☐ 2. often	☐ 2. often
☐ 3. sometimes	☐ 3. sometimes
☐ 4. rarely	☐ 4. rarely
☐ 5. never	☐ 5. never

73. Do you have difficulties with **paying bills** (for housing, electricity, heating etc)? And what was the situation before 1990?

at present	before 1990
☐ 1. all the time	☐ 1. all the time
☐ 2. often	☐ 2. often
☐ 3. sometimes	☐ 3. sometimes
☐ 4. rarely	☐ 4. rarely
☐ 5. never	☐ 5. never

74. Are you in receipt of any of the following benefits at the moment? *Choose all that apply.*

1. Child benefit
2. Unemployment benefit
3. Care allowance (care for invalid)
4. Widow(er)'s pension
5. Social assistance (e.g. with food, fuel, clothes or medication)
6. Others – please specify: _____

7. Do not receive any state benefits

75. How many **rooms** does your house/flat have **(excluding kitchen and bathrooms)**? ☐☐

76. How many **adults** (18 years or older) live in your house/flat? ☐☐

77. How many **children** (under 18 years old) live in your house/flat? ☐☐

78. What was the highest completed **level of education** of your **parents**?

Your father:	Your mother:
1. Incomplete primary or no formal education	1. Incomplete primary or no formal education
2. Primary	2. Primary
3. Vocational (apprenticeship)	3. Vocational (apprenticeship)
4. Secondary	4. Secondary
5. University (degree)	5. University (degree)

79. Did you have any of the following items in your house when you were a child (about 10 years old)?

Cold tap water	1. Yes	2. No	3. I don't remember
Hot tap water	1. Yes	2. No	3. I don't remember
Radio	1. Yes	2. No	3. I don't remember
Fridge	1. Yes	2. No	3. I don't remember
Own kitchen	1. Yes	2. No	3. I don't remember
Own toilet	1. Yes	2. No	3. I don't remember

80. What is your current economic activity?

1. Employed
2. Entrepreneur (owner of a company) ORDER CHANGED SLIGHTLY !
3. Self-employed / freelance
4. Housewife
5. Farmer
6. Pensioner, still employed
7. Pensioner, not employed. At what age did you retire …….. ☐☐ years old ?
8. Unemployed

81. What was your main life-time occupation?

_____

82. Have you ever experienced unemployment?

1. No
2. Yes, for up to 3 months in total
3. Yes, for 3 months to 1 year
4. Yes, for more than one year

83. If you are out of work, do you look for a job?

1. Yes
2. No, no hope
3. No, I choose not to work
4. No, I am too ill to work
5. No, I am retired
6. No, other reason: please specify _____

84. Now, would you tell us about your household? Below is a list of various items, which of the following do you have in your household?

	Yes	No, I do not want it	No, I can not afford it
Microwave	☐ 1	☐ 2	☐ 3
Video recorder	☐ 1	☐ 2	☐ 3
Television (colour)	☐ 1	☐ 2	☐ 3
Washing machine	☐ 1	☐ 2	☐ 3
Dishwasher	☐ 1	☐ 2	☐ 3
Car	☐ 1	☐ 2	☐ 3
Freezer	☐ 1	☐ 2	☐ 3
Cottage (for holidays / weekends etc.)	☐ 1	☐ 2	☐ 3
Videocamera / camcorder	☐ 1	☐ 2	☐ 3
Satellite / cable TV	☐ 1	☐ 2	☐ 3
Telephone	☐ 1	☐ 2	☐ 3
Mobile phone	☐ 1	☐ 2	☐ 3

THANK YOU FOR COMPLETING THE QUESTIONNAIRE

We would like to contact you from time to time and ask you a few short questions about your health. If this is alright, would you please write your area code and telephone number in the box

Area code	Telephone number

Appendix 3 HAPIEE questionnaires related to alcohol consumption

The graduated frequency questionnaire

The next few questions are about how much wine, beer and spirits you may have had during the last 12 months. When we say one drink, we mean 0.5 litre of beer, 2 dl glass of wine, or 5 cl of spirits. Please answer each question below - ie. cross a square **in each row -** to indicate how often you had that amount of alcohol during one day.
Here is an example how to calculate correct amount of alcohol on a single occasion: if you had 0.7 l bottle of wine AND two 5cl measures of spirit in a single occasion you had 3.5 drinks of wine and 2 drinks of spirit which is a total of 5.5 drinks. Then you need to choose correct column to indicate how often in the last year you had such amount of alcohol.

	Every day or almost every day	***3-4 per week***	***1-2 per week***	***2-3 per month***	***About once a month***	***6-11 in past year***	***3-5 in past year***	***1-2 in past year***	***Never in past year***
1. How often in the last year did you have 10 drinks or more during one day?									
10 drinks or more 5 l (10 x 0.5 l) of beer or 2 l (10 x 2 dl) of wine or 0.5 l (10 x 5 cl) of spirits	☐ **A49a**	☐	☐	☐	☐	☐	☐	☐	☐
2. How often in the last year did you have 7-9 drinks during one day?									
7-9 drinks (7-9 x 0.5 l of beer or 7-9 x 2 dl of wine or 7-9 x 5 cl of spirits)	☐ **A49b**	☐	☐	☐	☐	☐	☐	☐	☐
3. How often in the last year did you have 5-6 drinks during one day?									
5-6 drinks									

	Every day or almost every day	*3-4 per week*	*1-2 per week*	*2-3 per month*	*About once a month*	*6-11 in past year*	*3-5 in past year*	*1-2 in past year*	*Never in past year*
(5-6 x 0.5 l of beer or 5-6 x 2 dl of wine or 5-6 x 5 cl of spirits)	☐	☐	☐	☐	☐	☐	☐	☐	☐
	A49c								

4. How often in the last year did you have 3-4 drinks during one day?

3-4 drinks (3-4 x 0.5 l of beer or 3-4 x 2 dl of wine or 3-4 x 5 cl of spirits)	☐	☐	☐	☐	☐	☐	☐	☐	☐
	A49d								

5. How often in the last year did you have 1-2 drinks during one day?

1-2 drinks (1-2 x 0.5 l of beer or 1-2 x 2 dl of wine or 1-2 x 5 cl of spirits)	☐	☐	☐	☐	☐	☐	☐	☐	☐
	A49e								

6. How often in the last year did you have about half drink during one day?

About half drink	☐	☐	☐	☐	☐	☐	☐	☐	☐
	A49f								
	Every day or almost every day	*3-4 per week*	*1-2 per week*	*2-3 per month*	*About once a month*	*6-11 in past year*	*3-5 in past year*	*1-2 in past year*	*Never in past year*

Negative consequences of drinking questionnaire

In last 12 months, did your drinking cause you difficulties with the following aspects of your life?

Please cross appropriate box in each row:	Yes	No
marriage/partner or home life	☐ 1	☐ 2
friendships and social life	☐ 1	☐ 2
your work	☐ 1	☐ 2
Police or other authorities	☐ 1	☐ 2
your physical health	☐ 1	☐ 2
any injury or accident	☐ 1	☐ 2
your psychological or mental health	☐ 1	☐ 2
your financial circumstances	☐ 1	☐ 2

CAGE questionnaire

In the **last 12 months**, did you have any of the following experiences?

Please cross appropriate box in each row:	Yes	No

Have you ever felt you should cut down on your drinking?	☐ 1	☐ 2
Have people ever annoyed you by criticising your drinking?	☐ 1	☐ 2
Have you ever felt bad or guilty about your drinking?	☐ 1	☐ 2
Have you ever had a drink first thing in the morning to steady your nerves or get rid of a hangover?	☐ 1	☐ 2

Appendix 4 Gender differences in drinking practices in middle aged and older Russians

(The article is attached in a separate file)

Appendix 5 Drinking alcohol surrogates among clients of an alcohol-misuser treatment clinic in Novosibirsk, Russia

(The article is attached in a separate file)

Appendix 6 Information Sheet

Information Sheet for Research Participants

Study title

Alcohol consumption in Russia as a part of the Health, Alcohol and Psychosocial factors In Eastern Europe

What is the purpose of the study?

We wish to find out how people drink in Russia. For this reason we would like to invite you to take part in an interview. The purpose of the study is to help us to describe a variety of drinking occasions and drinking patterns among Russian men and women (e.g. how, when, where and what do people drink), to identify harmful drinking patterns, and to provide recommendations related to minimization of harm to health from alcohol use.

Do I have to take part?

It is up to you whether or not to take part. If you do decide to take part you are free to withdraw at any time.

Interview

The interview will last between 60 and 90 minutes. The data will be tape-recorded and tapes will be saved in the safe place for analysis. All data are confidential and anonymous. Names or other personal identification information are not recorded. What you say in the interview will not be attributed to you personally. The results of the study will be written up into a report. No persons will be identified in any report or publication.

Benefits

The benefits of participating in this research for you personally are the small "thank-you" gift.

Your help will be of great value to us. Thank you for taking part in the study!

For further information: Sofia Konstantinovna Malyutina
At the Survey Centre Institute of Internal Medicine
Siberian Academy of the Russian Academy of Medical Sciences
Tel: …….

Appendix 7 Consent Form

Participant Consent Form: Novosibirsk

Title of project:

Health, Alcohol and Psychosocial factors In Eastern Europe
(HAPIEE Study)

Project details:

Contact person: Malyutina Sofia Konstantinovna

Please tick each statement if it applies to you

I have read the Information Sheet for Research Participants. ☐

I have been given the opportunity to ask questions. ☐

I have received satisfactory answers to all my questions. ☐

I have received enough information about the study. ☐

The study has been explained to me by:

Ms_Bobrova_____

I understand that I am free to withdraw from the study at any time. ☐

I agree to take part in this study. ☐

Signed.....Date.....

Investigator's signature.....…Date: .....

Appendix 8 Introduction to qualitative study

Novosibirsk Qualitative Study

Thank you for taking the time to speak with me today.

My name is Natalia Bobrova and I am working with Siberian Academy of the Russian Academy of Medical Sciences and the University College London on a research project looking at alcohol drinking in Novosibirsk.

Through this project, we hope to learn more about drinking occasions and drinking patterns in Russia. We will ask you about your personal experiences and experiences of your peers, as well as your thoughts about drinking in Russia in general.

The interview takes about 60 minutes. I appreciate you spending this time with me. At the end of the interview we would like to give a small gift to thank you for your participation.

I would like to tape record the interview in order to make sure that I capture all of the valuable information that you share with me. I may also write things down while we're talking so that I don't forget anything.

Everything you say is confidential, and no one else will hear the tape or see the notes besides the people who are working on this research project. **Go through consent form here.**

Appendix 9 The distribution of selected variables between abstaining and non-abstaining groups

	Men			Women		
	Non-abstainers	Abstainers	P-value	Non-abstainers	Abstainers	P-value
	N=3685	N=574		N=4182	N=912	
Age, %						
45-49	15.9	16.2		20.0	8.3	
50-54	19.5	19.9		20.0	14.8	
55-59	21.4	22.8		22.0	18.5	
60-64	19.5	16.7		18.3	20.6	
65+	23.7	24.4	0.609	19.7	37.7	0.001
Marital status, %						
Married	88.2	85.5		60.2	55.5	
Single	11.8	14.5	0.076	39.8	44.5	0.008
Education,%						
Primary	10.8	15.5		8.3	15.9	
Secondary	34.2	40.1		33.0	36.3	
Vocational	21.8	21.1		31.4	26.2	
University	33.2	23.3	<0.001	27.4	21.6	<0.001
Occupation,%						
Professional	22.9	9.6		23.1	17.2	
Technical	6.2	4.9		15.1	11.9	
Military (clerk for females)	13.0	13.5		11.6	11.3	
Drivers (services for females)	13.4	14.9		23.4	25.0	
Manual	33.8	41.7		10.9	13.2	
Construction (prof manual for females)	10.8	15.4	<0.001	16.0	21.4	<0.001
Self-reported,% health						
Good	16.2	12.7		6.1	4.3	
Average	68.3	60.4		70.5	51.2	
Poor	15.4	27.0	<0.001	23.4	44.5	<0.001
Self-reported history of disease, %						

MI	10.1	14.6	0.001	3.9	8.2	<0.001
Angina	16.1	21.4	0.001	13.5	26.1	<0.001
Arterial hypertension	43.6	44.6	0.653	58.5	68.3	<0.001
Stomach ulcer	17.0	22.0	0.003			
Gallbladder disease	4.3	5.6	0.151	14.9	18.5	0.001
Depression, % (CESD 16+)	14.4	18.7	0.023	32.8	38.2	0.009