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PERSPECTIVES ON ALCOHOL CONSUMPTION IN OLDER ADULTS

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ACADEMIC DISSERTATION

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ABSTRACT

Alcohol use plays a part in the life of older adults, and can be assumed to be increasingly prominent in the future as the baby boomers age. Understanding alcohol consumption patterns and factors associated with risky drinking in the general population of older adults aids in detecting older adults who may suffer from the hazardous use of alcohol or alcohol use disorders.

The present study assessed some essential issues in alcohol consumption among older adults: the prevalence of consumption and associated factors (paper I), older adults' own reasoning for their alcohol consumption (paper II), the drinking of alcohol for medicinal purposes (paper III), and potentially inappropriate drug–alcohol interactions (paper IV).

The data were gathered using a postal questionnaire sent to a stratified random sample of older adults aged ≥ 65 years in the City of Espoo. The number of respondents was 1 395, and the response rate for community-dwelling older people was 71.6%. The mean age of respondents was 78 years and 62.7% were women. The questionnaire included demographic and health-related variables, diagnoses and medications, items enquiring about the life situation, social functioning, psychological well-being, alcohol consumption and habits as well as self-reported reasons for alcohol consumption. The guidelines of the American Geriatrics Society were used to define the at-risk drinking limits.

Of the 1 395 respondents, 62.2% used alcohol and 8.2% exceeded the defined at-risk drinking limit. Using direct adjustment based on the general population of Espoo, the prevalence of alcohol consumption was 71.5% (95% CI 68.6–73.7). The prevalence of at-risk drinking was estimated to be 10.8% (95% CI 8.9–12.8); 20.6% among older men (95% CI 16.5–24.8) and 4.2% among women (95% CI 2.5–6.0). At-risk alcohol consumption was more common in the youngest age groups and among men; 25.4% of men and 7.7% of women aged 65–70 years exceeded the at-risk drinking limit. Although the frequency and quantity of alcohol consumption declined with age in both genders, 18.9% of male respondents aged 71–80 years and 11.3% aged 81–90 years exceeded the at-risk drinking limit. The corresponding figures among females were 2.5% and 1.4%.

The respondents' most common reasons for drinking were "for having fun, celebration" (58.7%), and "for social reasons" (54.2%). Of the respondents, the younger age groups reported more often than the older age groups that they used alcohol "for having fun, celebration, and for social reasons". The proportion reporting drinking alcohol for medicinal purposes increased with age. Alcohol was

consumed “with meals” in all age groups, although this was more common in younger age groups. A larger proportion of the “at-risk users” than the “moderate users” indicated that they were using alcohol because of their “meaningless life,” in “relieving anxiety,” “relieving loneliness,” and “relieving depression”, “as a pastime” and “because everybody uses it”.

Of the respondents, 17.3% reported that they have used alcohol for medicinal purposes. The medicinal consumption of alcohol was more common in the oldest age group. Both genders used this self-medication equally. The most common conditions for which alcohol was used as a medicine were cardiovascular diseases, sleep disturbances, a common cold and indigestion.

The concomitant use of drugs that have potential interactions with alcohol was common. Of the drug users, 62.2% also used alcohol. Among the “at-risk users” and “moderate users”, 42.2% and 34.9% were on drugs potentially causing significant interactions with alcohol.

Key words: aged, older people, alcohol use, prevalence, at-risk drinking, reasons for drinking, medication, alcohol–drug interaction

TIIVISTELMÄ

Alkoholi liittyy ikääntyneiden elämään ja voidaan olettaa sen painoarvon lisääntyvän suurten ikäluokkien siirtyessä eläkkeelle. Ikääntyneiden yleisten alkoholinkäyttötapojen ja käyttöön liittyvien tekijöiden ymmärtäminen auttaa tunnistamaan ne ikääntyneet, joille alkoholinkäyttö mahdollisesti aiheuttaa ongelmia.

Tässä tutkimuksessa käsitellään seuraavia ikääntyneiden alkoholin käyttöön liittyviä keskeisiä kysymyksiä: ikääntyneiden alkoholin käytön yleisyys ja siihen liittyvät tekijät (artikkeli I), ikääntyneiden itsensä ilmoittamat alkoholinkäytön syyt (artikkeli II), alkoholin käyttö lääkkeenä (artikkeli III) ja mahdollinen lääkkeiden ja alkoholin haitallisen yhteiskäytön esiintyminen (artikkeli IV).

Tutkimusjoukon muodostivat Espoon väestörekisteristä ositetulla satunnaisotannalla otetut ≥ 65 vuotiaat espoolaiset, joille lähetettiin postikysely. Vastauksia saatiin 1 395 ja vastausprosentti oli 71.6%. Vastaajien keski-ikä oli 78 vuotta, ja 62.7% oli naisia. Kyselylomakkeella selvitettiin vastaajien sosiodemografisia taustamuuttujia, terveyteen liittyviä muuttujia, diagnooseja ja lääkitystä, elämän tilanteeseen liittyviä muuttujia, sosiaalista toimintaa, hyvinvoinnin kokemusta, alkoholin käyttötapoja ja alkoholin käytön syitä vastaajan itsensä arvioimana. Alkoholin riskikäytön raja määriteltiin Yhdysvaltain geriatriyhdistyksen suositusten mukaiseksi.

Vastaajista (n=1 395) 62.2% käytti alkoholia. Määritellyn alkoholinkäytön riskirajan ylitti 8.2% vastaajista. Espoon väestöön suhteutettuna alkoholia käytti 71.5% (95%CI 68.6–73.7) yli 64 vuotiaista espoolaisista. Määritellyn alkoholinkäytön riskirajan ylitti 10.8% (95%CI 8.9–12.8); 20.6% miehistä (95%CI 16.5–24.8) ja 4.2% naisista (95%CI 2.5–6.0). Riskikäyttö oli yleisempää nuoremmissa ikäryhmissä ja miesten keskuudessa; 25.4% miehistä ja 7.7% naisista 65–70 -vuotiaiden ikäryhmässä ylitti määritellyn riskikäytön rajan. Vaikka molempien sukupuolten alkoholin käyttö väheni iän myötä, 18.9% 71–80 ja 11.3% 81–90 vuotiaista miehistä ylitti riskikäytön rajan. Vastaavat luvut naisilla olivat 2.5% ja 1.4%.

Alkoholinkäytön yleisimmiksi syiksi ilmoitettiin ”hauskanpito ja juhliminen” (58.7%) ja sosiaaliset tilanteet (54.2%). Vastaajien nuoremmat ikäryhmät ilmoittivat vanhempia useammin alkoholinkäyttönsä syiksi ”hauskanpidon, juhlan ja sosiaaliset tilanteet”. Alkoholia lääkkeenä käyttävien osuus kasvoi iän myötä. Alkoholia käytettiin aterioiden yhteydessä kaikissa ikäryhmissä, joskin yleisemmin nuoremmissa ikäryhmissä. ”Riskikäyttäjät” ilmoittivat käyttönsä syiksi ”kohtuukäyttäjiä” useammin ”elämän tarkoituksettomuus”, ”ahdistuksen

lievittäminen”, ”yksinäisyyden lievittäminen”, ”masennuksen lievittäminen”, ”ajankulu” ja ”koska muutkin käyttävät”.

Vastaajista 17.3% ilmoitti käyttävänsä alkoholia lääkinnällisiin tarkoituksiin. Alkoholin lääkinnällinen käyttö oli yleisempää vanhimmassa ikäryhmässä. Molemmat sukupuolet harjoittivat itselääkintää samalla tavoin. Yleisimmät alkoholilla lääkityt vaivat olivat sydän- ja verisuonisairaudet, unihäiriöt, vilustumissairaudet ja ruoansulatusvaivat.

Alkoholin käyttö potentiaalisia yhteisvaikutuksia aiheuttavien lääkkeiden kanssa oli yleistä. Lääkityksen ohessa alkoholia käytti kaikkiaan 62.2% vastanneista ja potentiaalisesti yhteisvaikutuksia aiheuttavien lääkkeiden käyttäjistä alkoholia käytti riskikäyttäjistä 42.2% ja kohtuukäyttäjistä 34.9 %.

Avainsanat: ikääntynyt, vanhusväestö, alkoholinkäyttö, prevalenssi, riskikäyttö, alkoholin käytön syyt, lääkitys, alkoholin ja lääkkeiden yhteisvaikutus

CONTENTS

LIST OF ORIGINAL PUBLICATIONS

This dissertation is based on the following publications and some unpublished data:

I Immonen S, Valvanne J, Pitkälä K. Prevalence of at-risk drinking among older adults and associated sociodemographic and health-related factors. Journal of Nutrition, Health and Aging 2011; 15(9):789–794.

II Immonen S, Valvanne J, Pitkälä K. Older adults' own reasoning for their alcohol consumption. International Journal of Geriatric Psychiatry 2011; 26(11):1169–1176.

III Immonen S, Valvanne J, Pitkälä K. Alcohol use of older adults: drinking alcohol for medicinal purposes. Age and Ageing 2011; 40:633–637.

IV Immonen S, Valvanne J, Pitkälä K. The prevalence of potential alcohol-drug interactions in older adults. Submitted.

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LIST OF ABBREVIATIONS

AGS	American Geriatrics Society
ARPS	Alcohol-Related Problems Survey
AUD	Alcohol Use Disorder
AUDIT	Alcohol Use Disorders Identification Test
AI	Alcohol-interactive
BI	Brief Alcohol Intervention
CAGE	Acronym of four questions widely used in screening for alcoholism
CI	Confidence interval
CNS	Central nervous system
DSM-IV	Diagnostic and Statistical Manual of Mental Disorders
ICD-10	International Statistical Classification of Disease and Related Health Problems
MAST-G	Michigan Alcoholism Screening Test - Geriatric Version
NIAAA	United States National Institute of Alcohol Abuse and Alcoholism
OR	Odds ratio
QF	Quantity and frequency of alcohol consumption
SD	Standard deviation
WHO	World Health Organization

1 INTRODUCTION

Alcohol has been a part of human culture since the beginning of recorded history because of its expected beneficial effects, or in search of pleasure or to avoid negative emotional states (Hanson 1995). However, alcohol consumption has been identified as an important risk factor for many chronic diseases and injuries (Rehm et al. 2009). The total consumption of alcohol has more than tripled over the past four decades in Finland (Yearbook of Alcohol and Drug Statistics 2011). Alcohol consumption by people of retirement age has also increased since the late 1980s (Ministry of Social Affairs and Health 2006).

The number of older adults is increasing in both absolute and relative terms throughout the developed world. The older population and its different cohorts are not homogeneous but culturally and socially diverse (Jyrkämä 2007). Alcohol consumption is related to cohort life styles, gender, the course of life, the history of alcohol consumption, social patterns, physiology, cultural heritage, the health condition, drinking norms, and moral principles (Klipstein-Grobusch et al. 2002, Sieri et al. 2002, Tigerstedt and Törrönen 2005, Suhonen 2005, Bjørk et al. 2008, Haarni and Hautamäki 2008, Trevisan 2008, Weyerer et al. 2009). New cohorts with their own values, lifestyles, and consumption habits, different from those of the generations before them, are retiring (Jyrkämä and Haapamäki 2008), and there is reason to presume that alcohol consumption will be increasingly prominent in the future as the baby boomers age (Gfroerer et al. 2003, Moore et al. 2005, Sorocco and Ferrell 2006, Chan et al. 2007, Sulander et al. 2009, Kuerbis et al. 2012).

In the present study, older adults refer to those individuals who are 65 years old or older and live in their own homes. In community surveys, the prevalence of alcohol consumption among older adults has varied widely due to differences in the study populations and inconsistent definitions. Among Finnish adults aged 65–84 years, the use of alcohol has particularly increased in men and women aged between 65 and 74, and abstinence has decreased over the long term (Laitalainen et al. 2008 and 2010).

The unhealthy use of alcohol has been identified as a significant risk to health. Alcohol is the most common substance used by older adults (Christensen et al. 2006, Moore et al. 2009). However, older adults who may suffer from harmful alcohol use and additional health problems are under-identified and undertreated by health care professionals (Lakhani 1997, Johnson 2000, O'Connell et al. 2003, Rogers and Wiese 2011). With effective intervention, older adults suffering from alcohol problems can be successfully treated (Fleming et al. 1999, Oslin 2000,

Oslin et al. 2005, Sorocco and Ferrell 2006, Aalto and Holopainen 2008, Caputo et al. 2012).

Discussion of substance abuse problems among older adults began in Finland in the early 2000s (Suhonen 2005). Internationally, however, the theme has been dealt with for longer periods. In the United States, the research tradition already began in the 1970s. In Finland, research concerning substance abuse problems among older adults has been surprisingly sparse (Vilkko et al. 2010). However, research is increasing in this area because of growing recognition of the prevalence of alcohol use disorders in older adults.

The signs and symptoms of alcohol problems in older adults may not only differ from those of younger persons, but may also be present at lower levels of alcohol consumption (Dudour and Fuller 1995, Aalto and Holopainen 2008). Alcohol problems among older adults have been referred to as the "invisible" or "silent epidemic" (O'Connell et al. 2003). However, older adults do respond well to alcohol treatment (Dufour and Fuller 1995, Fleming et al. 1999, Oslin et al. 2005, Aalto and Holopainen 2008).

The Alcohol Program in Finland (2004–2011) focused on co-operation in reducing alcohol-related harm. The program has also generated data on substance abuse in older adults and on identification of the problem. In addition, the Finnish Blue Ribbon project "Too much is always too much - Aging and Alcohol" (2005–2011) produced thematic materials and brought alcohol consumption of older adults to public attention in the media. The city of Espoo, where this study was performed, participated in the Finnish Blue Ribbon project.

This study provided information on alcohol consumption among community-dwelling older adults in the city of Espoo. It explored the prevalence of alcohol consumption among older adults and associated characteristics, as well as their own reasoning for alcohol consumption. It also explored potential alcohol–drug interactions.

2 REVIEW OF THE LITERATURE

2.1 ALCOHOL: NO ORDINARY COMMODITY

Alcoholic beverages have cultural and symbolic meanings. They are commodities bought and sold in the marketplace and they are also drugs with toxic effects. Alcohol products are mainly used with meals, as thirst quenchers, as a means of socialization and enjoyment, as instruments of hospitality, and as intoxicants. (Babor et al. 2004). Alcohol is also a means to relieve anxiety and to put aside dislikes. Furthermore, alcohol has been used throughout history for medicinal purposes (Williams 1980, Babor et al. 2004).

In many societies, there are differences in the cultural meaning of drinking for men and women and for older adults (Babor et al. 2004). However, attitudes towards alcohol consumption have altered, drinking habits have changed, and gender differences appear to have decreased among those people growing up after World War II (Johnson 2000, Keyes et al. 2008). The relationship between culture, alcohol consumption, and health and social outcomes is complex and multidimensional (Rehm et al. 2003, Babor et al. 2004).

Alcohol consumption is linked with health and social consequences through many and complex mechanisms and interactions (Figure 1) (Rehm et al. 2003, Babor et al. 2004, Kiianmaa 2010).

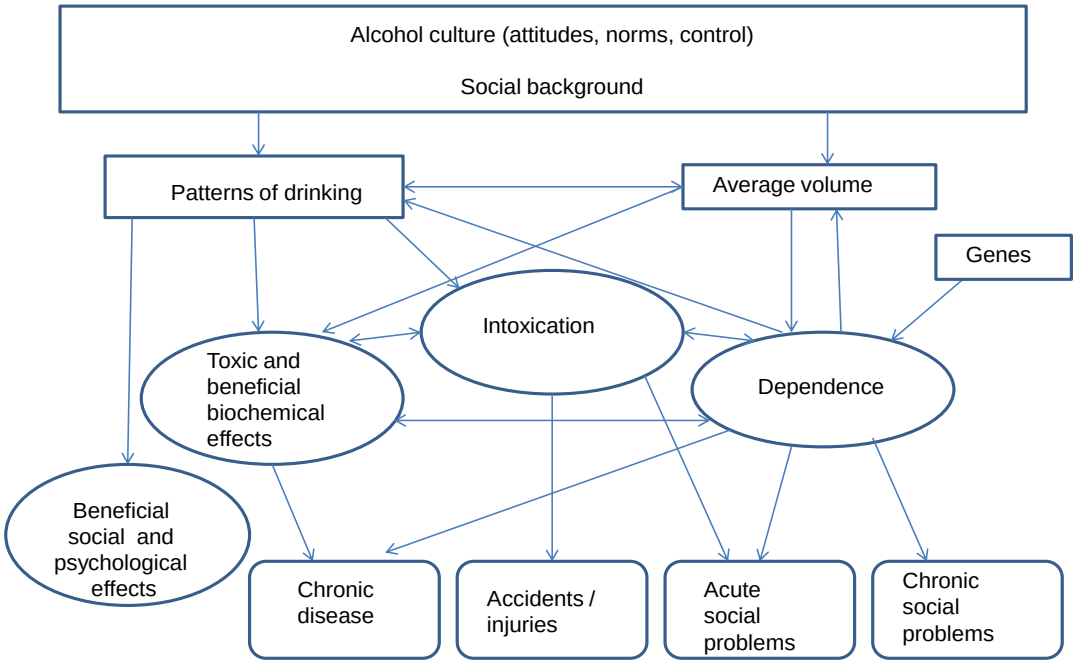

Figure 1. Alcohol consumption linked to its intermediate mechanisms and long-term consequences (modified from Rehm et al. 2003 and Mäkelä et al. 2009)

2.2 PREVALENCE AND TRENDS IN ALCOHOL CONSUMPTION

Alcohol use varies cross-culturally (World Health Organization 2011), and alcohol consumption in Europe has changed in all countries over the past decades, but in different ways and even in opposite directions (Ministry of Social Affairs and Welfare 2006, Anderson and Baumberg 2007). Since the 1970s, adult per capita alcohol consumption has been in decline in many Western countries (Kerr et al. 2004, Anderson and Baumberg 2007). Finland, together with Norway, Poland and Lithuania, have been exceptions (World Health Organization 2011). There are several reasons behind this development. In Finland, attitudes towards alcohol use have become more liberal. Alcoholic beverages have been more easily obtainable since 1968, when the sale of malt beverages was liberated from the monopoly of Alko. Since 2004, people travelling in European Union countries have been able to import unlimited amounts of tax-free alcoholic beverages from other EU countries for their own use. Nowadays, mild alcoholic beverages and beers are also available in numerous easily accessible places, such as shops, petrol stations, and kiosks with long opening hours. Alcoholic beverages are consumed in a growing number of social events, and alcohol has also become more openly consumed in public places. In addition, advertising keeps alcoholic beverages constantly visible in

public. (Ahlström and Mustonen 2002, Ministry of Social Affairs and Health 2006, Yearbook of Alcohol and Drug Statistics 2011.)

In Finland, total alcohol consumption has increased up until recent years (Ministry of Social Affairs and Health, 2006). We consumed 10.0 liters of pure alcohol per capita in 2010 (10.2 liters in 2009 and 10.4 in 2008) (Yearbook of Alcohol and Drug Statistics 2011), and consumption is further increasing among women, as well as to some extent among men and people of retirement age (Ministry of Social Affairs and Health 2006). The 2008 Drinking Habit Survey showed that some 90% of Finns aged 15 to 69 years had consumed at least one kind of alcoholic beverage during the previous twelve months. The number of alcohol consumers was greatest among women and men in the age group of 30 to 49 years: 93% had had consumed alcohol during the previous year. In contrast to previous decades, only a minor difference was recorded between men and women in the proportion of alcohol consumers. An exception was the oldest age group, where more women reported abstaining from alcohol than men. (Mäkelä et al. 2010.)

The home remains the most popular drinking venue for Finnish people: in 2008 about three in four drinking occasions among both men and women took place in their own or somebody else's home (Mustonen et al. 2009). It has been typical in the Finnish drinking culture to drink large amounts at one time to reach inebriation (Mäkelä et al. 2009). Among men, binge-drinking occasions have increased in the youngest age group (15–29 y). Increased binge drinking in women has also become evident in all types of drinking occasions, and this was reflected in a sharp increase (from 26% in 2000 to 42% in 2008) in the amount of alcohol consumed by women in binge-drinking situations, as well as the proportion of their total alcohol consumption during the week. This increase in binge consumption by women follows a longer-term trend and reflects the growth of more liberal attitudes in society towards women's drinking. Men's and women's drinking habits have shown a tendency to converge in Finland. Nonetheless women still drink less often and significantly less than men. (Mustonen et al. 2009.)

Alcohol consumption among older adults has also shown an upwards trend (Sulander et al. 2004, Sulander et al. 2006, Helakorpi et al. 2008, Mustonen et al. 2009) in both genders (Sulander 2005, Bjørk et al. 2008). In Finland, 54% of females and 77% of males aged 65 to 84 years had consumed alcohol in 2007 (Laitalainen et al. 2008), and 55% of females and 75% of men in 2009 (Laitalainen et al. 2010). The corresponding figures in 1993 were 38% of females and 68% of males (Laitalainen et al. 2010). The first signs of alcohol problems in older adults have appeared, and increasing numbers of clients in substance abuse services exceed the age of 50 years (Nuorvala et al. 2008). Furthermore, alcohol-attributable conditions have become the most common cause of death for both genders in Finland. Although the mortality rate has increased most in the middle-

aged, there has also been a significant increase in the population over 65 years (Official Statistics of Finland: Causes of Death. http://www.stat.fi/til/ksyyt/ indexen.html).

2.3 DEFINITIONS OF ALCOHOL CONSUMPTION

2.3.1 DRINKS AND RISKY DRINKING

The concept of a "standard drink" is used when discussing alcohol consumption. The limits of the "standard drink" vary in different countries from 8 g of ethanol in the United Kingdom to 19.75 g in Japan (House of Commons Science and Technology Committee, UK 2012). In Finland, a "standard drink" contains about 12 g of absolute alcohol (The Finnish Current Care Guidelines 2010. http://www.kaypahoito.fi/web/kh/suositukset/naytaartikkeli/tunnus/ khp00049). This is equivalent to one bottle of beer (33 cl), one glass of wine (12 cl), one glass of port wine or madeira (8 cl) or one shot of spirit (4 cl).

Definitions of risky alcohol consumption also vary from one county to another (House of Commons Science and Technology Committee, UK 2012). In Finland, the general thresholds of risky drinking for healthy adults (18–65 years) are 24 drinks (280 g) per week for men and 16 (190 g) per week for women. Heavy episodic drinking ("binge drinking") can be defined as the consumption of at least 7 standard drinks (80 g) for men and 5 (60 g) for women on one drinking occasion (The Finnish Current Care Guidelines 2010). It must be emphasized that the guidelines are not "safe drinking levels" but limits based on epidemiological data on alcohol health hazards, which indicate an intervention in individuals' drinking habits in a health care setting (Sillanaukee et al. 1992).

2.3.2 TERMINOLOGY OF ALCOHOL CONSUMPTION

The terminology for different drinker groups is loosely defined internationally and in Finland (Kääriäinen 2010, Seppä et al. 2010). The main terminology is presented in Table 1.

Table 1. Definitions of alcohol consumption (adapted from Room 1991, Dawson et al. 1995, Holbert and Tueth 2004, Kääriäinen 2010).

CONCEPT	DEFINITION	REMARKS
Abstinence	Temporary or permanent abstinence from alcohol.	Can be defined according to time. For example, consuming less than 12 drinks in a 1-year period.
Moderate (sensible, light, social) drinking	Drinking that does not generally cause problems, either for the drinker or for the environment.	Difficult to define. Means different things to different people in different cultures.
Risky drinking	Consumption that exceeds daily, weekly or per-occasion alcohol thresholds.	Various definitions in different countries regarding different age groups.
Hazardous drinking	No harm has yet been incurred by alcohol consumption, but the amount is sufficient to cause harm over time (WHO).	Not a diagnostic term in the International Statistical Classification of Disease (ICD-10).
Alcohol use disorder	Covers the diagnostic categories harmful drinking (or alcohol abuse) and dependence, but not hazardous drinking.	
Harmful drinking	Drinking that has caused physical, social or psychological harm without meeting the criteria for alcohol dependence.	Diagnostic term in ICD-10.
Alcohol abuse	Continued use of alcohol despite significant negative physical, psychological, and social consequences.	Diagnostic term in the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV).
Alcohol dependence (Alcoholism)	Alcohol use leading to significant impairment or distress.	Diagnostic term in ICD-10 and in DSM-IV.
Heavy episodic or binge drinking	Consumption of approximately 5 drinks or more (at least 60g) per occasion.	In Finland: 5 or more drinks for women and 7 or more drinks (at 12 g) for men on one occasion.

The recently updated Current Care Guidelines on the treatment of alcohol abusers have introduced uniform terminology: “problem user” as a general denomination for all those using too much alcohol and “risk user” for those who have not yet caused harm, despite excessive alcohol use. Moreover, this terminology does not necessarily coincide with the classifications of other countries, but these denominations have national historical reasons. (Seppä et al. 2010.)

2.4 OLDER ADULTS AND ALCOHOL

2.4.1 CHANGING CONCEPT OF OLD AGE

The definition of old age has changed from a definition based on age, and between "old age" and "working age" there now is a stage termed the "third age" defined as 55 to 75 (80) years. Actual old age, along with diminished capacity, is considered to start at the age of 80 to 85 years. The tradition of growing old has been replaced by new forms of aging, and behavioral norms defining old age have become more flexible. When compared to earlier generations, older adults now have, on average, a better income, longer retirement times, better health and greater intellectual capital and wealth. (Jyrkämä 2007, Jyrkämä and Haapamäki 2008.)

2.4.2 REASONS FOR DRINKING

Alcohol has been consumed since the beginning of recorded history because of its expected beneficial effects, or in search of pleasure or to avoid negative emotional states (Hanson 1995). The concept of drinking motives is based on the assumption that people drink in order to attain certain valued outcomes (Cox and Klinger 1988, Cooper 1994). Drinking motives have mainly been studied among adolescents and young adults (Williams and Clark 1998, Kuntsche et al. 2005, LaBrie et al. 2007, Lee et al. 2007). Most young people reported drinking for social motives (LaBrie et al. 2007, Lee et al. 2007), some indicated enhancement motives, and only a few reported coping motives (Kuntsche et al. 2005).

Heavy drinking is particularly likely among people who experience stress and drink for coping motives, as well as those whose friends drink heavily and who themselves drink for social motives (Abbey et al. 1993). In other words, drinking motives or reasons are based on the situation, expectancies and personal experience (Cox and Klinger 1988, Carpenter and Hasin 1998).

Older adults seem to have diverse alcohol consumption habits, as do people in other age groups. Based on forty interviews, Tolvanen (1998) found that older people (60–89 years) described their alcohol use in the context of their everyday life, but they did not see it as a question related to ageing. Haarni and Hautamäki (2008) observed in their study of 31 former or present alcohol consumers aged 60 to 75 years that alcohol consumption among older adults has apparently become a part of everyday life. Khan and colleagues (2008) determined that older adults consumed alcohol for social reasons, before and with meals and because alcohol helped them to relax. A Finnish study found that older adults reason their alcohol use as a treatment for health problems (Aira et al. 2008).

2.4.3 AGING BODY AND ALCOHOL

Many factors make older adults more vulnerable to alcohol use than younger adult populations. These include physiological changes as well as an increased frequency of health problems and medication use (Dufour and Fuller 1995, Moore et al. 1999, Oslin 2000, O'Connel et al. 2003). However, the interindividual variability in health, disease, and physiological responses increases with aging, and the health status of older adults varies widely (Spinewine et al. 2007).

As the body ages, there is a reduction in lean body mass and the distribution and volume of water changes. The proportion of water in old body decreases, whereas the proportion of fat increases. Ethanol is distributed almost completely in the water space, and as a result, blood concentrations of ethanol are significantly higher among older adults for a given amount of alcohol. (Oslin 2000, Meier and Seitz 2008.) Alcohol metabolism also changes with age, and older adults are more sensitive to its toxic effects (Meier and Seitz 2008).

Age-related anatomical and physiological changes, especially in the liver, are responsible for the effects of alcohol in the ageing body (Meier and Seitz 2008). Activities of the enzymes that are involved in ethanol metabolism are also affected by age. Although ethanol is primarily metabolized in the liver, a small proportion is also oxidized in the gastric mucosa as the gastric first pass metabolism of ethanol. It has been reported that alcohol dehydrogenase activity in the gastric mucosa drops after the age of 50 or 60 years. It is assumed that this reduced alcohol dehydrogenase activity partly contributes to elevated serum ethanol concentrations in the elderly. (Meier and Seitz 2008.)

2.4.4 RISKS AND BENEFITS ASSOCIATED WITH ALCOHOL USE

The adverse effects of alcohol consumption are well established. Heavy drinking is associated with functional impairments, cardiovascular diseases, certain cancers, liver cirrhosis, depression, epilepsy, hemorrhagic stroke, falls, accidents, and mortality (Rehm et al. 2003, Room et al. 2005). However, for certain patterns of drinking, alcohol consumption appears to be beneficial for vascular events, dementia and diabetes mellitus (Rehm et al. 2003). In addition, in many societies, alcohol consumption provides a means for friends and family to gather, relax, eat, and enjoy each other's company (Ferreira and Weems 2008).

Notwithstanding the harm caused by alcohol consumption, although there are benefits of moderate alcohol consumption for older adults, the clinical implications are uncertain, because many older adults use medications that

interact adversely with alcohol, and drinking may exacerbate some chronic diseases (Oslin 2000, Bobo et al. 2010).

Alcohol and the cardiovascular system
Hazardous drinking increases the risk of cardiovascular disease (i.e. hemorrhagic stroke) (Mukamal et al. 2006). There is also evidence that alcohol intake more easily leads to hypertension in older adults than in younger adults (Wakabayashi and Araki 2010). On the other hand, previous studies have established a J- or U-shaped association between alcohol consumption and atherosclerotic cardiovascular diseases (Mukamal et al. 2006) and diabetes (Carlsson et al. 2005), with light to moderate alcohol users having a lower risk than non-users or heavy-users.

Alcohol and tumors
Ethyl alcohol has recently been defined as a carcinogenic to humans (International Agency for Research on Cancer (IARC) 2010). The relationship between alcohol consumption and the onset of tumors is dose-dependent. The consumption of ≥40 g of alcohol/day represents a risk factor for the onset of tumors in many organs, including the oropharynx, larynx, esophagus, liver, colon-rectum, and breasts (Bagnardi et al. 2001). In particular, in menopausal women, an increased risk of breast cancer has been described. Even a moderate intake of alcohol (3–6 drinks/week) has been reported to be an independent risk factor for the onset of breast cancer (Chen et al. 2011).

Alcohol, bone-joint fractures and rheumatoid arthritis
Alcohol is an important risk factor for falls and bone fractures. Hazardous alcohol consumption can cause acute confusion and orthostatic hypotension, distal sensory-motor neuropathy and myopathy, a reduced spatial assessment ability and ataxia, and reduced bone mineral density, particularly if associated with smoking (Johnston and McGovern 2004). Benefits have also been reported, including positive effects of alcohol/wine intake on bone density in elderly woman (Rapuri et al. 2000, Mukamal et al. 2007). A recent study observed that moderate alcohol consumption is associated with a reduced risk of rheumatoid arthritis in elderly women (Di Giuseppe et al. 2012).

Alcohol and the brain
Alcohol acts on the central nervous system via direct and indirect effects (Caputo et al. 2012). Indirect effects are mainly mediated by malnutrition, causing deficiencies in thiamine, nicotinic acids, B vitamins and folate, leading to neuronal damage (e.g. Wernicke-Korsakoff Syndrome). By contrast, alcohol dementia generally occurs in the absence of nutritional deficit through the direct neurotoxic effect of alcohol (Caputo et al. 2012). Previous studies have suggested that long-term alcohol abuse is detrimental to memory function and can cause neurodegenerative disease. Estimates from various studies have suggested the

prevalence of alcohol-related dementia to be about 10% of all cases of dementia (Weyerer et al. 2011).

It is also reported that light to moderate alcohol consumption is inversely related to incident dementia, including among individuals aged 75 years and older (Weyerer et al. 2011). In a review of 23 studies concerning alcohol consumption and its relationships with incident cognitive decline or dementia in older adults, Peters and colleagues (2008) concluded that small amounts of alcohol may be protective against dementia and Alzheimer's disease, but not for vascular dementia or cognitive decline. In addition, a recent study has reported that a Mediterranean-type diet, also characterized by a moderate intake of wine, could be associated with a slower cognitive decline, a reduced risk of Alzheimer's disease and decreased all-cause mortality in patients with Alzheimer's dementia (Solfrizzi et al. 2011)

Alcohol and psychiatric disorders
The relationship between alcohol use disorders (AUDs) and late-life depression is complex, and it is important to understand whether depression is a result of AUD or vice versa. Almost 20% of individuals aged 65 years and older with a diagnosis of depression have a co-occurring AUD, and more than 90% of older adults with AUDs have a history of depression (Caputo et al. 2012).

Alcohol and mortality
Alcohol consumption and all-cause mortality in the general population shows a J- or U-shaped relationship, indicating that abstainers and heavier drinkers have higher mortality risks compared to light or moderate drinkers (Di Castelnuovo et al. 2006, Ferreira and Weems 2008). However, there have also been studies with contradictory results reporting no such associations, and studies demonstrating a protective effect of increased alcohol consumption (Reid et al. 2002). In Finland, Halme and colleagues (2010) concluded that drinking is a rather common and severe health risk among Finnish elderly males. Their study showed an increased all-cause mortality risk for older males drinking, on average, more than two standard drinks per day.

2.4.5 OLDER ADULTS AND RISKY DRINKING, DEFINITIONS

Due to age-related changes in the aging body, comorbidities and the potential interactions between medications and alcohol (Oslin 2000, Blow and Lawton 2002), the American Geriatrics Society (AGS) and the US National Institute on Alcohol Abuse and Alcoholism (NIAAA) have defined the quantity and frequency of alcohol drinking that is risky for people aged 65 years and older to be no more than seven drinks per week and no more than three drinks on heavier drinking occasions (The American Geriatrics Society 2003, National Institute on Alcohol Abuse and Alcoholism 2005).

However, the AGS definition has been criticized (Lang et al. 2007, Ferreira and Weems 2008), and the definition of moderate drinking for older adults is still under discussion. The US guidelines suggest a lower alcohol intake than many other countries and international guidelines (Ferreira and Weems 2008).

In Finland, the Alcohol Program 2004–2007 issued Finnish recommendations for older adults in 2006 in a publication entitled "Let's find out! Older adults, alcohol and medication" (Ministry of Social Affairs and Health). The Finnish recommendations are similar to the AGS guidelines.

Alcohol consumption and drinking problems are not synonymous (Schutte et al. 1997). Drinking that exceeds the guidelines will not always lead to alcohol-related problems. It is, however, useful to consider a model indicating that the more alcohol a person consumes, the more likely that person is to have alcohol-related problems (Blow and Lawton 2002). Excessive alcohol consumption constitutes a continuum that can be separated into three parts: at-risk drinking, problem drinking and alcohol dependence (Aalto and Holopainen 2008).

2.4.6 MEASURES OF ALCOHOL CONSUMPTION AND ALCOHOL SCREENING INSTRUMENTS IN OLD AGE

Valid and reliable measures of alcohol consumption are key components in the assessment of drinking behavior. A number of studies have argued that self-reported measures of drinking behavior generally provide fairly valid and reliable information (Babor et al. 2000, Del Boca and Darkes 2003). However, self-reported alcohol consumption is likely to be underestimated to some extent (Wilcox and King 2000). Furthermore, some researchers state that reliable information concerning alcohol consumption is very challenging to obtain (Metso et al. 2002, Karisto 2008). In addition, older persons may be less accurate and less familiar with standard ways of reporting intake (Lader and Meltzer 2001). This may be accentuated in elderly people if they perceive that drinking stigmatizes them in any way (Naik and Jones 1994, Dufour and Fuller 1995, Hajat et al. 2004, Kirchner et al. 2007, Rintala 2010). There is some evidence that individuals are more open regarding their drug and alcohol use when completing computerized or pen-and-paper self-report questionnaires than in face-to-face interviews (Del Boca and Darkes 2003).

Crum and colleagues (2002) have studied older adults' (65 years and older) self-reports of alcohol intake when details of quantity-frequency measures were ascertained in the context of a general health and life style questionnaire compared to a direct interview on drinking habits. There was 89% agreement between the

two approaches in classifying drinkers versus nondrinkers. However, drinkers in the heaviest alcohol intake categories had greater differences between the two questionnaire methods, and tended to report lower quantities of alcohol intake when using the more directed questionnaire focusing on drinking behavior.

Feunekes and colleagues (1999) reviewed alcohol intake assessment methods with respect to their capacity to rank individuals according to alcohol intake and their ability to explain the variation in the level of intake in population samples. They found that when researchers asked specifically about the intake of beer, wine, and liquor, this resulted in higher estimates of intake.

To identify alcohol use disorders (AUDs), and to determine the quantity and frequency of drinking and initiate further assessment of alcohol-related problems, a number of screening instruments have been developed to assess alcohol use patterns in adults. Some questionnaires and measures are used both in clinical work and in research. The sensitivity of questionnaires is more important than the specificity in clinical screening (Allen et al. 1997, Anderson et al. 2005). Most commonly used validated screening questionnaires are presented in Table 2.

Table 2. Alcohol screening instruments used in clinical work (modified from Rogers and Wiese 2011, O'Connell et al. 2004)

INSTRUMENT	POPULATION	SENSITIVITY (Older adults)	SPECIFICITY (Older adults)	NUMBER OF QUESTIONS	REMARKS
AUDIT[1] Alcohol Use Disorders Identification Test **AUDIT-C**[2]	Adults	57–96	96–100	10 3	Widely used to detect alcohol-related problems. Also validated for older adults[3].
CAGE[4] Questionnaire	Adults	60–98	56–100	4	Used both as a study measure and in clinical use.
MAST-G[5] Michigan Alcoholism Screening Test - Geriatric Version **SMAST-G**[6] Short version of the test	Adults ≥65 y	95	78	24 10	Developed for older people. Developed for clinical use.

[1)] Babor et al. 1992 and 1994, Allen et al, 1997, Babor et al. 2001, Reinert and Allen 2007; [2)] Bush et al. 1998; [3)] Aalto et al. 2011; [4)] Mayfield et al. 1974, Ewing 1984; [5)] Blow et al. 1992, [6)] Blow et al. 1998.

The Alcohol Use Disorders Identification Test (AUDIT) was developed by the World Health Organization (WHO) as a simple method for screening problem

drinking and to assist in brief assessment (Babor et al. 1992, Babor et al. 1994). AUDIT is well validated in adults under 65 years of age in primary care settings, and there has been some validation in studies on older adults (Allen et al. 1997, Reinert et al. 2007). The full AUDIT consists of 10 questions concerning recent alcohol use (quantity and frequency), alcohol dependence symptoms, and alcohol-related problems. The ordinary recommended cut-off score has been 8. (Babor et al. 2001.) In Finland, the cut-off points are currently 8 for men and 6 for women (Seppä and Aalto 2009). A meta-analysis of the alcohol use disorders identification test for detecting at-risk drinking (Berner et al. 2007) concluded that the AUDIT should be restricted to primary care populations, inpatients, and elderly patients. Aalto and colleagues (2011) reported that when using the standard cut-off point of 8 in older adults, the sensitivity was 0.48. Lowering the cut-off point to 5 led to both a sensitivity and specificity of over 0.85. AUDIT has also a shorter version i.e. AUDIT-C, comprising the first three questions of the AUDIT (Bush et al. 1998), of which have given good results also with older adults (Aalto et al. 2011).

The CAGE test is a brief screening test for lifetime alcohol abuse and dependence (Mayfield et al. 1974, Eving 1984). It comprises four items regarding alcohol use: Cut down, Annoyed by criticism, Guilty about drinking, and Eye-opener drinks. Two positive responses are considered as a positive screen. Among older adults, using a score of one positive improves the sensitivity without greatly lowering the specificity. However, older adults who do not screen positive on the CAGE may still have problems with alcohol use (Adams et al. 1996).

The Michigan Alcoholism Screening Test - Geriatric Version (MAST-G) was developed at the University of Michigan as an instrument for use with older adults in a variety of settings (Blow et al. 1992). The MAST-G was the first major elderly-specific alcoholism screening measure to be developed, with items unique to older problem drinkers. The Short Michigan Alcoholism Screening Test - Geriatric Version (SMAST-G) is a short form of the MAST-G and was developed for use in clinical settings (Blow et al. 1998). MAST-G consists of questions about drinking-related behaviors, feelings about and dependence on drinking. Five positive responses in MAST-G and two in SMAST-G are considered as a positive screen.

One interesting instrument used in interventional research is the *Alcohol-Related Problems Survey (ARPS)*, an alcohol-related risk score developed for research use (especially for intervention trials) specifically for geriatric populations. CARPS is a computerized version of ARPS, ARPS is a short version of it, and CARET is the latest version. ARPS screens for alcohol's effects among persons with declining health and increased medication use (Fink et al. 2002a). ARPS consists of questions about recent alcohol use (quantity and frequency), drinking-related behaviors, tobacco use, feelings about and dependence on drinking, selected medical problems, and functional status (Fink et al. 2002b). CARPS divides alcohol use into three categories: nonhazardous drinking, hazardous drinking

(risks are likely), and harmful drinking (alcohol use appears to have caused medical problems) (Wilson et al. 2007).

O'Connell and colleagues (2004) reviewed self-report alcohol screening instruments that have been studied in older adults with respect to their effectiveness as screening instruments for AUDs in different elderly populations. They conclued that factors affecting the performance of alcohol screening instruments include the culture, the clinical setting, personal characteristics, and the prevalence of AUDs in the population being studied (O'Connell et al. 2004).

2.4.7 PREVALENCE OF DRINKING AND AT-RISK DRINKING AMONG OLDER ADULTS

Comparing the prevalence of alcohol consumption and problem drinking in elderly populations is difficult because of cultural differences, variations in age limits, the definitions of problem drinking, and the instruments used in detection (Aira et al. 2008, Weyerer et al. 2009, Halme et al. 2010, St John et al. 2010).

In a review of cross-sectional and longitudinal studies between 1985 and 1995 recording the alcohol use of older adults living in the community, Lakhani (1997) concluded that on average 40% of older adults were non-drinkers. Abstinence was more common in women and in the most elderly age groups, and the quantity and frequency of alcohol consumption was higher in men than women, being associated with a younger age. The prevalence of alcohol problems was on average 5.1% (0.006%–18%). Concerning longitudinal studies, Laghani reflected on the decline in alcohol consumption with increasing age, but stated that the studies reviewed had not clarified whether this was related to aging or whether it represented a cohort effect.

In another review, Johnson (2000) examined articles from 1995 to 1999 and review articles prior to 1995. He reported that the prevalence of alcohol problems in old age ranged between 2 and 15% in population-based surveys. Johnson stated that the variation in the prevalence rates can be attributed to inconsistency in the methodology and that the differing gender mix is relevant, as predominantly female samples are likely to show lower rates of problem drinking. He summarized that alcohol problems are often under-diagnosed and that the number of older problem drinkers is set to rise. More than one quarter of nursing home residents may have symptoms of active problem drinking.

For this study, papers since year 2000 were selected using MEDLINE, PubMed and CINAHL searches and publications of National Institute of Health and Welfare (THL). In addition, the reference lists of articles were reviewed to find relevant publications. A number of recent cross-sectional and longitudinal studies

have determined the prevalence of alcohol consumption and at-risk drinking in various settings and a summary of these studies is presented in Table 3.

Table 3. Definitions and corresponding prevalence of alcohol use and/or at-risk-drinking and associated factors in older adults.

Study Country	**Sample**	**Method**	**Definitions of alcohol use and/or at-risk drinking**	**Prevalence of at-risk-drinking**			**Associated characteristics**
				Men (%)	Women (%)	All (%)	
Dent et al. 2000 Australia	N1 = 630 N2 = 449 Age ≥ 75 y	Longitudinal. A personal interview survey, community-dwelling.Time points: 2. Figures from baseline.	1) Hazardous range 21–40 g/d for women and 41–60 g/d for men 2) Harmful range >40 g/d for women and >60 g/d for men	1) 6.4 2) 4.9	1) 5.2 2) 1.2		Age for women, being unmarried or widowed for men.
Ruitenberg et al. 2002 The Neatherlands	N = 5 395 Age ≥ 55 y	The Rotterdam Study. Prospective, population-based (including nursing-home residents) interview study.	1) None 2) <1 drink/wk 3) ≥1 drink/wk but <1/d 4) 1–3 drinks/day 5) ≥4 drinks/d			1) 20.6 2) 21.4 3) 28.1 4) 26.7 5) 3.1	
Breslow et al. 2003 US	N1 = 6 180 N2 = 39910 N3 = 2946 Age ≥ 65 y	Three large national surveys: 1) The National Health Interview Survey (NHIS-2000). 2) The Behavioral Risk Factor Surveillance System (BRFSS-2001). 3) The National Household Survey on Drug Abuse (NHSDA-2000).	Moderate drinkers ≤1 drink/d Heavier drinkers >1 drink/d	Moderate: 1) 37.6 2) 38.7 3) 27.2 Heavier: 1) 10.1 2) 10.1 3) 9.2	Moderate: 1) 32.3 2) 27.7 3) 21.5 Heavier: 1) 2.2 2) 2.6 3) 2.4		Male gender.
Hajat et al. 2004 UK	N = 14 962 Age ≥ 75 y	The MRC Trial, Patients of 53 general practices.	1) Never-drinkers 2) Ex-drinkers 3) Moderate drinkers (<21 units/wk (men); <14 units/wk (women) 4) Heavy drinker (>21 units/wk (men); >14 units/wk (women)			1) 16.9 2) 6.1 3) 73.6 4) 3.4	Male gender, younger age, smoking, having more anxiety, good self-perceived health.

Moos et al. 2004a US	N = 1 291 Age 65–75 y	Longitudinal study, community dwelling. Figures from baseline.	1) >7 drinks/w or >3 drinks/d 2) >14 drinks/w or 4 > drinks/d	1) 51.6 2) 31.1	1) 38.8 2) 16.8		Male gender.
Aira et al. 2005 Finland	N = 523 Age ≥ 75 y	Kuopio +75 Study. Cross-sectional, community-dwelling, interview-study. CAGE.	1) Abstainers 2) <1 unit/wk 3) 1–7 units/wk 4) >7 units/wk	1) 34.3 2) 28.0 3) 30.8 4) 7.0	1) 63.5 2) 29.1 3) 7.4 4) 0.0		Male gender, younger age.
Moore et al. 2006 US	N = 4 691 Age 60–74 y	National Health and Nutrition Examination Survey 1971–1975 (NHANES I) and the Follow-up Survey (1992) NHEFS.	Alcohol use alone: 3 drinks/d, ≥4 times/wk or ≥ 4 drinks/d at any frequency. CARET definitions	18	5		Male gender, being married, smoking.
Mukamal et al. 2006 US	N = 4 410 Age ≥ 65 y	The Cardiovascular Health Study (CHS). Prospective cohort study. Figures from baseline.	1) Nondrinkers 2) <1–6 drinks/wk 3) 7–13 drinks/wk 4) ≥14 drinks/wk			1) 49.0 2) 36.4 3) 6.2 4) 8.2	
Lang et al. 2007 US and England	N = 10 710, England N = 2623 Age ≥ 65 y	The US Health and Retirement Study (HRS) and The Health Survey for England/ELSA. Longitudinal studies. Figures from baseline.	1) Nondrinkers 2) 0–1 drinks/d (1–7/wk) 3) 1–2 drinks/d (8–14/wk) 4) >2 drinks/d (>14/wk)	US 1) 63.3 2) 23.2 3) 7.3 4) 5.1 England 1) 9.7 2) 58.2 3) 17.6 4) 14.2	US 1) 81.0 2) 15.3 3) 2.3 4) 0.7 England 1) 20.1 2) 68.0 3) 8.8 4) 2.9		
Kirchner et al. 2007 US	N = 24 863 Age ≥ 65 y	Primary Care Research in Substance Abuse and Mental Health for Elderly (PRISM-E) in 36 primary care clinics.	1) Nondrinkers 2) Moderate drinking: 1–7 drinks/wk 3) At-risk drinking: 8–14 drinks/wk 4) Heavy drinking: ≥ 15 drinks/wk 5) Binge drinking: ≥4 drinks/d			1) 70.0 2) 21.5 3) 4.1 4) 1.1 5) 3.4	Younger age, male gender. At-risk drinking: 7.9% (9.2% men, 2.1% women).

Merrick et al. 2008 US	N = 12 413 Age ≥ 65 y	The Medicare Current Beneficiary Survey (MCBS) 2003. Community-dwelling Medicare beneficiaries. Cross-sectional. Computer-assisted interview.	1) Nondrinkers 2) Within-guidelines drinkers 3) Exceeded the monthly 30-drink limit only 4) Exceeded the single-day limit only (>3 drinks/d) 5) Exceeded both limits			1) 65.0 2) 26.0 3) 3.7 4) 2.2 5) 3.1	Younger age, male gender, higher level of education and income, better functional status, smoking, being divorced, separated or single. Unhealthy drinking: 9% (16% men, 4% women).
Castro-Costa et al. 2008 Brazil	N = 400 Age > 60 y	Brazilian National Alcohol Survey (BNAS). Cross-sectional, community-dwelling, interview-study.	1) Heavy drinking >7 drinks/wk 2) Binge-drinking >3 drinks/one occasion 3) Alcohol dependence			1) 12.0 2) 10.4 3) 2.9	Younger age, male gender. Binge drinking: younger age, better income. Depression was associated with alcohol dependence but not with risky drinking.
Blazer and Wu 2009 US	N = 4 326 Age ≥ 65 y	US National Survey on Drug Use and Health.	1) No Use 2) Low risk < 2 drinks/d 3) At-risk ≥ 2 drinks/d 4) Binge ≥ 5 drinks at the same occasion			1) 39.2 2) 33.4 3) 13.0 4) 14.5	Younger age, male gender.
Weyerer et al. 2009 Germany	N = 3 224 Age ≥ 75 y	Structured clinical interview. Patients of 138 general practitioners.	1) Abstainers 2) Moderate drinking 3) At-risk drinking (>20g of alcohol for women and >30g of alcohol for men)	1) 26.6 2) 61.3 3) 13.3	1) 62.4 2) 34.0 3) 4.1		Male gender, younger age, higher education, living with a spouse or not alone, current smoking, better mobility, fewer depressive symptoms.
St John et al. 2009 Canada	N = 1 028 Age ≥ 65 y	Longitudinal study. Manitoba Study of Health and Aging (MSHA). Cross-sectional, community-dwelling interview study. CAGE. Time points: 2. Figures from baseline.	1) Never-users 2) Alcohol users: have used alcohol and CAGE < 1 3) Alcohol misusers: have used alcohol and GAGE ≥ 1			1) 21.3 2) 64.8 3) 13.9	Male gender, depressive symptoms, poor self-rated health, impairments in IADLs.

Laitalainen et al. 2010 Finland	N = 2 400 Age 65–84 y	Health Behaviour and Health among Finnish Elderly.	1) Not at all 2) More seldom than once a month 3) 1–2 times a month 4) At least once a week 5) Every day	1) 19.6 2) 20.2 3) 24.1 4) 32.5 5) 5.0	1) 34.0 2) 26.9 3) 20.1 4) 17.0 5) 1.3		Male gender.
Halme et al. 2010 Finland	N = 1 569 Age ≥ 65 y	Health 2000 Study. Cross-sectional, community-dwelling interview study.	1) Abstainers 2) <1/wk 3) 1–7/wk 4) 8–14/wk 5) ≥15/wk	1) 31.1 2) 19.1 3) 29.6 4) 8.9 5) 11.4	1) 59.4 2) 26.5 3) 12.9 4) 1.1 5) 0.2		Male gender, age, higher education, regular smoking, living alone.
Buja et al. 2011 Italy	N = 3 404 Age 65–84 y	Italian Longitudinal Study on Aging (ISLA). Respective cohort study.	1) Abstainers 2) Former drinkers 3) ≤12 g/d 4) 13–24 g/d 5) >24 g/d	1) 7.7 2) 17.6 3) 19.0 4) 27.7 5) 30.9	1) 29.5 2) 22.1 3) 29.6 4) 13.8 5) 5.0		Male gender.

Recent studies defining at-risk drinking in line with the guidelines of the American Geriatrics Society and National Institute on Alcohol Abuse and Alcoholism (>7 drinks/ week or > 3 drinks/ occasion) have reported a prevalence (age ≥65 y) from 2.2% to 38.8% among women and from 9.2% to 51.6% among men.

2.4.8 CHARACTERISTICS ASSOCIATED WITH PROBLEM DRINKING IN OLDER ADULTS

Demographic and background factors
According to several studies, overall alcohol use declines as an individual ages (Grant et al. 2004, Moos et al. 2004b, Moore et al. 2009, Moos et al. 2009, Livingston and Room 2009, Weyerer et al. 2009, Platt et al. 2010). In most studies, older adults have been found to consume less alcohol as they age, but a relatively high proportion continue to engage in hazardous alcohol consumption (Breslow and Smothers 2004, Zhang et al. 2008, Moos et al. 2010a).

Men are more likely to both use and misuse alcohol than women (Moore et al. 2009, Rehm et al. 2009, St John et al. 2009). Some studies on adults of various ages have reported that gender differences in alcohol use have declined (Björk et al. 2008, Keyes et al. 2008, St John et al. 2009). Bobo and colleagues (2010) focused on women and studied alcohol use trajectories in two cohorts of US women with baseline ages of 50 and 65 years. The follow-up times were 8 and 10 years. They found that most women did not markedly change their drinking behavior after the age of 50. However, some increased their alcohol use substantially, whereas others continued to exceed recommendations concerning alcohol consumption. Dent and colleagues (2000) from Australia reported that the proportion of drinking at hazardous or harmful levels among older adults aged 75 years and over was not significantly related to sex or age or any other background variable examined, except that men who were never married or widowed were more likely to drink at more harmful levels than other men.

In addition to age and male gender, problem alcohol consumption among older adults has also been associated with relative financial security, an active lifestyle, better health, and a good functional status (Hajat et al. 2004, Balsa et al. 2008, Merrick et al. 2008). In addition, a higher level of education, being divorced or single, and self-reported depression were associated with a higher prevalence of problem drinking (Merrick et al. 2008, Halme et al. 2010). In some studies, living with a spouse or being married has been associated with at-risk drinking (Moore et al. 2006, Weyerer et al. 2009). Previous studies have also reported a higher risk of alcohol problems among smokers (Schutte et al. 1998, Hajat et al. 2004, Moos et al. 2004b, Moore et al. 2006, Merric et al. 2008, Hirata et al. 2009, Weyerer et al. 2009, Halme et al. 2010). Moreover, some studies have detected an association

between alcohol use and medical problems (Brennan et al. 2005, Moore et al. 2005, Sorocco and Ferrell 2006).

Social factors

Depression, anxiety, loneliness, a lack of social support, and boredom have frequently been reported to be precipitants of alcohol problems in old age (Johnson 2000, Kirchner et al. 2007, St John et al. 2009). In their longitudinal studies, Moos and colleagues (2010a) reported that older adults who had higher baseline levels of alcohol consumption, more frequent participation in social activities, more friends who approved of drinking, relied on substances for tension reduction, and had more financial resources were more likely to engage in risky alcohol consumption. The quality of the relationship with the spouse also had an influence on alcohol consumption (Moos et al. 2010b). The influence of the partner's drinking on a spouse's alcohol use was stronger for men than for women (Moos et al. 2011).

Life history

Some studies (Gee et al. 2007, Haarni and Hautamäki 2008, Bobo et al. 2010) have investigated older adults' trajectories of alcohol consumption and characterized them as abstainers, in decline, stable, curvilinear and increasing trajectories. Alcohol abuse can appear at any age. Around one-third of the elderly people have late-onset alcohol abuse problems (late-onset alcoholism) (Holbert and Tueth 2004). Previous studies have documented various risk factors for the development on late-onset alcoholism, such as a high alcohol intake in earlier life, more time and opportunities to drink, and physical illnesses causing pain or insomnia (Goldstein et al. 1996).

Retirement

Retirement is accompanied by many life changes and has been considered as a one potential risk factor for unhealthy drinking unique to late life (Ekerdt 1989). However, Chan and colleagues reported that the total alcohol intake decreases after retirement (Chan et al. 2007). Kuerbis and Sacco (2012) carried out a review in which they discussed three theories (social network theory, stress and coping theory, and role theory) that inform the relationship between drinking and retirement and reviewed research exploring the impact of retirement on alcohol use. They reviewed 13 articles by addressing three questions: 1) How does retiring/being retired affect alcohol consumption or problem drinking? 2) What aspects of the retirement process influence drinking behavior? 3) For whom is retirement a risk or protective factor? They concluded that there is little or no direct effect of retirement on drinking behaviors or alcohol problems. Instead, the contextual aspects and individual attributes in conjunction with retirement, such as high job satisfaction or workplace stress, appear to increase the overall use and problems with alcohol. (Kuerbis and Sacco 2012.)

2.5 DRUGS AND ALCOHOL IN OLDER ADULTS

2.5.1 EPIDEMIOLOGY OF DRUG USE AMONG OLDER ADULTS

Older adults have multiple morbidities and thus use many medications (Pitkälä et al. 2006). Over the past few decades, the use of drugs has significantly increased among older adults (Haider et al. 2007, Hajjar et al. 2007, Jyrkkä et al. 2009). Approximately 90% of older adults take medications (Barat et al. 2000, Linjakumpu et al. 2002a, Aira et al. 2005, Haider et al. 2007), and the number of drugs increases with advancing age (Linjakumpu 2002b, Jyrkkä et al. 2006). The use of psychotropic drugs is also increasing in Finland (Ilomäki et al. 2008); more than one-third of the Eastern Finland population aged ≥75 years uses at least one psychotropic drug (Hartikainen et al. 2003).

In Finland, Linjakumpu and colleagues studied data from Lieto, a municipality in south-western Finland, and reported that 78% of the home-dwelling older adults aged ≥64 years used at least one prescription drug in 1990–1991 and 88% in 1998–1999 (Linjakumpu et al. 2002a). The mean number of prescription drugs rose from 3.1 to 3.8 (Linjakumpu et al. 2002a). Every fourth person was taking at least one psychotropic drug in both surveys (Linjakumpu et al. 2002b). In a population-based sample, home-dwelling older people in Sweden consumed a mean of 4.3 drugs in 2001–2004 (Haasum et al. 2012). In a large study from Sweden, the mean number of dispensed drugs among older people in 2005 was 5.5 (Johnell and Fastbom 2009). In Kuopio, a city in eastern Finland, Jyrkkä et al. reported that 98% of older adults aged ≥ 75 years were using some medication, and 90% used medication regularly in 1998, while the figure was 97% in 2003 (Jyrkkä et al. 2006). The average number of medicines in use increased from 6.3 to 7.5 during the follow-up period (Jyrkkä et al. 2006).

2.5.2 ALCOHOL AND MEDICATION INTERACTIONS

Of particular importance to older adults are the potential harmful interactions between alcohol and medications. Analyzing the interaction between alcohol and medicines is particularly challenging in cases where multiple medicines are involved. Use of multiple medications is a risk by itself for adverse drug reactions (ADRs) and drug–drug interactions (DDIs) (Field et al. 2001, Fialova et al. 2005).

Many drugs have the potential to interact with alcohol (Table 4). Two types of alcohol-medication interactions exist: pharmacokinetic and pharmacodynamic interactions. In pharmacokinetic interactions, alcohol interferes with drug absorption, distribution, metabolism, and excretion. In pharmacodynamic interactions, alcohol enhances the effects of the drug, particularly in the central

nervous system (CNS). (Weathermon and Crabb 1999, Hosia-Randel 2010.) In addition, alcohol consumption may directly influence some of the diseases for which medications are taken (Moore et al. 2007). Negative interactions between alcohol and medication can occur in various situations that differ based on age-related changes in the body and brain, the amount of alcohol consumed, the types and amounts of drugs used, the timing of alcohol and medication consumption, the types and number of chronic conditions, and functional status (Weathermon and Crabb 1999, Moore et al. 2007).

In pharmacokinetic interactions, the presence of alcohol directly interferes with the normal metabolism of the drug and can take two forms: 1) The breakdown and excretion of the affected medications are delayed, because the medications must compete with alcohol for breakdown by cytochrome P450 (CYP). 2) The metabolism of the affected medications is accelerated, because alcohol enhances the activity of medication-metabolizing cytochromes. When alcohol is not present simultaneously to compete for the cytochromes, increased cytochrome activity results in an increased elimination rate for the medications these enzymes metabolize. (Weathermon and Crabb 1999.) In pharmacodynamic interaction, alcohol alters the effects of the medication without changing the medication's concentration in the blood.

Table 4. Potential alcohol–drug interactions with some medication (modified from Weathermon & Crabb 1999 and Moore et al. 2007)

DRUG CLASS	TYPE OF INTERACTION	CLINICAL EFFECTS
Opioids (N02A)	Alcohol enhances the effects on the CNS	Drowsiness, sedation, decreased motor skills
Antiepileptic (N03A)	Alcohol may interfere with the effectiveness of the medication; used to treat conditions that may be worsened by concomitant alcohol use	Seizures
Antipsychotics (N05A)	Alcohol enhances the effects on the CNS	Drowsiness, sedation
Anxiolytics (N05B)	Alcohol enhances the effects on the CNS	Drowsiness, sedation, decreased motor skills
Hypnotics/sedatives (N05C)	Alcohol inhibits the metabolism and produces a depressant effect on the CNS	Sleepiness, disorientation, incoherence, confusion
Antidepressants (N06A)	Alcohol may interfere with the effectiveness of the medication; used to treat conditions that may be worsened by concomitant alcohol use	Depression
Insulin sulfonylureas metformin (A10BA02)	Increased levels of lactic acid in the blood after alcohol consumption	Risk of hypoglycemia. Nausea, headache. Lactate acidosis
Warfarin (B01AA03)	Acute alcohol intake may increase anticoagulation by decreasing warfarin metabolism Chronic alcohol ingestion decreases anticoagulation by increasing warfarin metabolism	Decreased or increased INR, bleeding and blood clot risks
Hydroxizine N05BB01	Alcohol enhances the effects on the CNS	Drowsiness, sedation
Metronidazole J01XD01	Mechanism unknown	Disulfiram-like reaction
Tinidatzole J01XD02	Mechanism unknown	Disulfiram-like reaction
Disulfiram N07BB01	The metabolites of disulfiram inhibit CYP2E1 and ALDH enzymes, which catalyze alcohol metabolism. This may lead to very high systemic levels of acetaldehyde and rapidly developing toxic effects	Facial flushing, headache, tachycardia, hypotension, nausea and vomiting; rarely hallucinations and delirium
Griseofulvin D01AA08	Not established	Disulfiram-like reaction
Prazosin C02CA01		Accentuated alcohol-induced hypotension
Tacrolimus D11AH01	Unknown	Facial flush/rash

In Kuopio, in eastern Finland, a study (Aira et al. 2005) revealed that 44% of the participants (n = 523) used alcohol. Most alcohol drinkers used medications on a regular basis (86.9%), among them medicines known to have a number of potential interactions with alcohol. Pringle and colleagues (2005) reported that 19% of AI drug users reported concomitant alcohol use, compared with 26% of non-AI drug users. Onder and colleagues (2002) suggested that after adjusting for

potential confounders, moderate alcohol consumption was associated with a 24% increase in the risk for an adverse drug reaction.

2.6 DETECTION OF ALCOHOL-RELATED PROBLEMS AND BRIEF INTERVENTION IN OLD AGE

The signs and symptoms of alcohol problems in older adults may not only differ from those of younger persons, but may also be present at lower levels of alcohol consumption (Dudour and Fuller 1995, Aalto and Holopainen 2008). Alcohol problems among older adults have been referred to as the "invisible" or "silent epidemic" (O'Connell et al. 2003). However, older adults do respond well to alcohol treatment (Dufour and Fuller 1995, Oslin et al. 2005, Aalto and Holopainen 2008).

Alcohol use disorders in older adults are underestimated, under-identified, under-diagnosed, and undertreated for various reasons (Lakhani 1997, Johnson 2000, O'Connell et al. 2003, Stevenson 2005). Older adults are more likely to hide their alcohol problems (Letizia and Reinbolz 2005, Rintala 2010), and doctors and other health care professionals often fail to recognize and diagnose their alcohol misuse (Naik and Jones 1994). Furthermore, physicians and other health care professionals are reluctant to ask older adults about their alcohol consumption due to poor understanding of alcohol consumption and associative factors in old age (Aira et al. 2003, Masters 2003, Burman et al. 2004, D'Amico et al. 2005). Both patients and health care professionals may assess alcohol-related harm as being a result of aging or some disease. Furthermore, health care professionals may consider alcohol use to be too personal and sensitive a matter for discussion. This may be especially emphasized in older adults. (Aalto and Holopainen 2008, Levo 2008). However, early detection is critical in preventing alcohol-related problems. The first step in the treatment of problem users is to recognize that the problem exists.

According to Aira and Haarni (2010), asking questions about alcohol was seen by older adults to be a duty of doctors. However, alcohol was seldom brought up in medical consultation, and alcohol consumption was sometimes underestimated because of shame and fear of being stigmatized (Aira and Haarni 2010).

In controlled clinical trials by Fleming and colleagues (1999) and Mundt and colleagues (2005), the brief intervention group demonstrated a significant reduction in alcohol use and the frequency of hazardous drinking compared with the control group. According to Christensen and colleagues (2006), trials of alcohol consumption in older populations are still rare. However, they suggest that even brief patient education may reduce drinking levels in primary care

populations, and that for some alcohol users, integrated primary care may be more useful than specialized care.

According to a study conducted in the US by Moore and colleagues (2011), asking about health behaviors and providing information and feedback on alcohol use was associated with a reduction in at-risk drinking and the amount of drinking in an older population in primary health care. Even simply providing information on recommended drinking limits may be enough to cause reductions in both at-risk drinking and the amount of alcohol used (Moore et al. 2011). The authors also reported that older at-risk drinkers typically had multiple risks, most of them because of the combined use of alcohol and medications and/or the use of alcohol in the presence of comorbidity (Moore et al. 2011).

Most people consult a physician or other health worker at least once a year, and most contacts are made for primary health care (Babor and Higgins-Biddle 2001). Primary care is thus in a good position to identify persons whose drinking is risky to their health. Aira and Haarni (2010) proposed that discussion of alcohol consumption with elderly people should take the form of motivational interviewing. Because of the delicacy of the subject, the conversation should be tactful and not critical. Asking all patients about their alcohol consumption when inquiring about their life style habits or medication could be a good way to initiate discussion on alcohol. (Letizia and Reimbolz 2005, Levo 2008, Aira and Haarni 2010.)

The Alcohol Screening Test for Older Adults ≥ 65 years ("Yli 65-vuotiaiden alkoholimittari") questionnaire, developed in Finland, is especially targeted at screening and advising older adults. The questionnaire consists of 11 questions about recent alcohol use (quantity and frequency), reasons for drinking, concomitant alcohol and medication use, drinking-related behaviors and alcohol-related problems (Huohvanainen et al. 2010). This questionnaire is to certain extent in clinical use in Finland. Patient educational material is also available under the title "Let's find out - Aging, alcohol and drugs", which provides information for the elderly on their use of alcohol and on decision making about alcohol, alcohol use and related issues.

2.7 IMPLICATIONS FROM PREVIOUS RESEARCH FOR THE PRESENT STUDY

Previous studies from different countries have reported great differences in the prevalence of alcohol consumption and risky drinking in older adults. This may partly be due to different definitions and methods of measurement. Several characteristics are related to alcohol consumption and at-risk drinking in older

adults. Alcohol consumption also depends on the cultural context and cohort life-styles. Of particular importance to older adults are the potential harmful interactions between alcohol and medications. Less attention has been paid to the causes of alcohol consumption: what older adults themselves consider as the reasons for their alcohol consumption. In Finland, research concerning substance abuse in older adults has been sparse. The present study provided information on the alcohol consumption of community-dwelling older adults.

3 AIMS OF THE STUDY

This study explored the dimensions of alcohol consumption among community-dwelling older adults in Espoo. The specific aims were:

1. To examine the prevalence and at-risk drinking patterns in community-dwelling older adults and their associations with socio-demographic and health-related factors.

2. To investigate what the older adults themselves consider to be the reasons for their alcohol consumption.

3. To investigate the medicinal use of alcohol by individuals aged 65 years and older.

4. To investigate the prevalence of potentially harmful interactions between alcohol and drugs among older adults.

4 SUBJECTS AND METHODS

4.1 SAMPLE

The cross-sectional data for this study were gathered with a postal questionnaire in May 2007, from community-dwelling older adults (≥ 65 years) living in Espoo. In 2007, Espoo was a medium-sized city with 238 047 inhabitants with 10.2% people aged > 64 years. Of these older adults, 58.4% were women. After permission was granted from the Coordinating Ethics Committee of the Hospital District of Helsinki and Uusimaa and the City of Espoo, a postal questionnaire was sent to a stratified random sample (N = 2 100) from the Espoo Population Register. In order to explore the prevalence of alcohol consumption among the oldest old, stratified sampling was used to retrieve older cohorts. A stratified random sample of 350 was retrieved from each five-year age cohort (65–69 years, 70–74 years, 75–79 years, 80–84 years, 85–89 years, 90 years and over).

The questionnaire was re-sent after three month to the non-responders. Of the random sample, 31 had a native language other than those used on the inquiry form (Finnish or Swedish), 16 were deceased, 92 lived in permanent institutional care, and the mailing address of 14 individuals had changed and was therefore unknown. Thus, the number of potential community-dwelling respondents was 1947, of whom 1 395 returned the questionnaire. The response rate for the community-dwelling elderly was 71.6%. (Figure 2.)

In papers I and III, the study population consisted of all the respondents (n = 1395). The inclusion criteria for paper II were reported alcohol consumption and information on the reasons for drinking. The inclusion criterion for paper IV was sufficient information about medication. (Figure 2.)

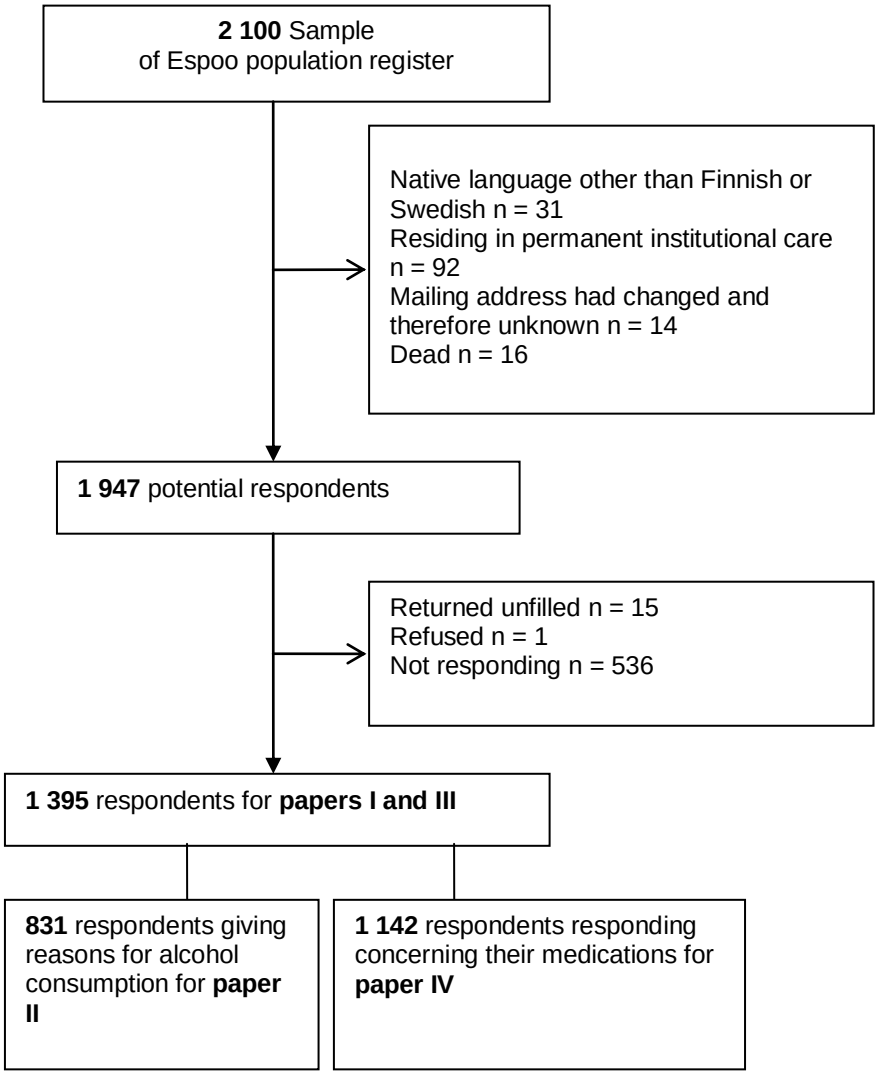

Figure 2. Flow chart of the data gathering process

4.2 DATA COLLECTION

A structured questionnaire was developed for this study. A large proportion of the questions were retrieved from previous epidemiological studies in which the questions had been validated (Valvanne 1992, Pitkälä et al. 2001 and 2004, Routasalo et al. 2009). The alcohol-related questions included in the inquiry were retrieved from the clinical guidelines and questionnaire for alcohol use in older adults (Ministry of Social Affairs and Health 2006), which is adjusted from NIAAA guidelines (National Institute on Alcohol Abuse and Alcoholism 2005; The American Geriatrics Society 2003) and AUDIT (Babor et al. 2001). The questionnaire was piloted prior to the postal survey on 17 elderly individuals to ensure that the questions were easy for elderly people to understand and answer.

The questionnaire (see Appendix 1) consisted of demographic variables (marital status, gender, age, education, former job, living conditions, income and challenging life events; questions 1-10) and health- and functioning-related variables (19 questions; questions 11-29 in Appendix 1). Respondents were asked to list their medical diagnoses (question 17) and prescribed medication (question 20). The Charlson comorbidity index, a weighted (weights of 1, 2) linear index that takes into account the number and severity of predefined co-morbid conditions (Charlson et al. 1987, Tilvis 2009), was used to estimate the burden of co-morbidity. Smoking was asked about with one question (question 62). The dimensions of psychological well-being were charted by 11 questions (questions 30–40 in Appendix 1). In addition, the social contacts and satisfaction with the contacts were inquired with several questions (questions 41–51). Categorizations were performed for some of these variables (see papers I–IV).

The quantity and frequency of alcohol consumption were ascertained by inquiring: 1) "How often do you have a drink containing alcohol, including any beer, cider, wine, or liquor/spirits?" 2) "On a typical day when you drink, how many drinks do you have? (One drink (12 grams of alcohol) = can or bottle (330 ml) of beer, 12 cl of wine, 4 cl of liquor/spirits (one shot-glass), or 8 cl of sherry or madeira or aperitif)," and 3) "How often do you have three or more drinks on one occasion?" Problems related to alcohol consumption were asked about as follows: 1) "Have you fallen or injured yourself when you have used alcohol (never/ yes, but not during the last year/ yes, during the last year)?"; 2) "Have you forgotten to take your medication when you have used alcohol (never/ sometimes/ often)?"; 3) "Have any of your relatives or friends or a doctor or someone else been concerned about your drinking or suggested that you should cut down your drinking (never/ yes, but not during the last year/ yes, during the last year)?", and 4) "Have you been concerned about your own drinking (yes/ no)?"

At-risk drinking for both males and females was defined by taking into account the frequency of use and the portions consumed on one occasion. An at-risk drinking status was defined as consuming 1) >7 drinks per week or 2) >3 drinks several times per week or 3) >5 drinks on a typical day when alcohol is consumed (The American Geriatrics Society. Clinical guidelines for alcohol use disorders in older adults). At-risk users were computed by: drinking alcohol at least four times per week and two portions per occasion; drinking at least three portions at a time several times per week; drinking more often than 2 to 3 times per week and at least 3 to 4 portions per occasion; drinking at least once a week a minimum of three portions at a time; or drinking at least five portions of alcohol per occasion. Categories of alcohol use other than at-risk drinking included moderate drinking defined by drinking alcohol at least once a month and using at least one portion of alcohol on a typical alcohol-consuming day. Others were defined as minimal/non-users.

Self-reported causes of alcohol consumption were asked about with the question "What are the reasons for you to drink alcohol?" followed by nine alternative response statements based on the findings of previous studies (Moore et al. 2005, Kirchner et al. 2007, Haarni and Hautamaki 2008, Aira et al. 2008), each with yes/no options, and one open-ended statement with a possibility to answer if there were other reasons for drinking (question 57 in Appendix 1).

Respondents were invited to list the medications prescribed by their doctors (question 20 in Appendix 1). The drugs were coded according to their Anatomical Therapeutic Chemical (ATC) classification index (ATC DDD 2012). The Swedish, Finnish, INteraction X-referencing (SFINX) interaction database was used to assess the possibility of clinically significant drug–alcohol interactions. In addition, the study investigated whether the respondents used central nervous system (CNS) drugs (antipsychotics N05A, antidepressants N06A, anxiolytics N05B, hypnotics N05C, antiepileptic drugs N03A, opioids N02A, hydroxizine N05BB01), warfarin (B01AA03), or hypoglycemics with alcohol, which have been defined as potentially harmful combinations (Krentz et al. 1994, Moore et al. 2007, Kurzthaller et al. 2005, Ilomäki et al. 2008, Camm et al. 2010).

4.3 DATA ANALYSIS

The data were entered into Microsoft Excel 2007. The coded data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 15.0 for Windows, and NCSS statistical analysis and graphics software.

The data were examined with statistical variables, such as frequencies and percentages. The chi-squared test and Fischer's exact test, when appropriate, were used for categorical variables. Continuous variables were compared using the non-parametric Kruskal-Wallis test or the Mann-Whitney U-test for continuous, non-normally distributed variables. Logistic regression analysis was used to determine the independent associates. The odds ratio (OR, 95% confidence interval) was used to analyze deviations in the reasoning for alcohol consumption between "at-risk users" and "moderate users". P-values of <0.05 were considered statistically significant. Confidence intervals were calculated with Confidence Interval Analysis version 1.0 (Gardner & Altman 1989).

Because of the stratified sampling, the older cohorts were over-weighted in proportion to the population of Espoo. To make the results concerning alcohol consumption comparable with the Espoo population, direct adjustments based to the general population of Espoo were computed.

4.4 ETHICAL QUESTIONS

Permission to conduct the study was obtained from the Coordinating Ethics Committee of the Hospital District of Helsinki and Uusimaa and the City of Espoo. When developing the questionnaires, the respondents' right to privacy and anonymity were ensured by formulating the questions so that they did not cause offence.

In the covering letter sent with the questionnaires it was made clear that the completion of this questionnaire was voluntary. In addition, respondents were informed that their answers were confidential and the findings would be reported in such a way that anonymity would be ensured. The returned questionnaire was considered to indicate informed consent to participate in the study. Anonymity and confidentiality were also ensured by giving each respondent a personal ID number. In the analyzed data, there was no information through which the respondents could be identified.

5 FINDINGS

5.1 DESCRIPTION OF THE RESPONDENTS

Of the 1 395 respondents investigated in papers I and III, 62.7% were female and the mean age was 78 years. About half of the respondents were married or in common-law relationships (52.3%). One in five had a high level of education (>12 years). Of the respondents, 34.5% considered their income good and 61.9% as moderate. Subjective health was considered to be good or quite good by 75.7% of respondents. Current smokers comprised 6.7% of the sample. (Table 5). Non-respondents were older (mean 81 years vs. 78 years) and included more females (63.6% vs. 62.7%).

Table 5. Characteristics of the study population.

	All (n = 1 395)	Females (n = 876)	Males (n = 519)	p-value[1]	No- and minimal users (n = 527)	Moderate users (n = 754)	At-risk users (n = 114)	p-value[1]
Age, years, mean	78.0	79.3	77.5	<0.001	82.1	77.0	73.6	<0.001
Males, %	37.3			<0.001	22.8	41.4	77.2	<0.001
Marital status, %				<0.001				<0.001
Married or common-law marriage	52.3	37.8	76.6		37.2	59.5	74.3	
Widowed	34.9	46.1	16.2		48.1	28.8	15.0	
Single, unmarried or divorced	12.8	16.1	7.4		14.7	11.7	10.6	
Living with a spouse	50.2	42.9	61.5	<0.001	34.7	57.8	70.8	<0.001
Education, %				<0.001				<0.001
< 7 years	30.0	33.0	25.1		40.3	25.3	14.9	
7–12 years	48.7	52.1	44.0		46.5	52.4	46.5	
>12 years	20.9	14.9	30.9		14.8	22.3	38.6	
Income, %				<0.001				<0.001
Good	34.5	30.8	40.6		27.5	37.7	44.7	
Moderate	61.9	65.0	56.7		67.2	59.5	53.5	
Poor	3.6	4.2	2.7		5.2	2.8	1.8	
Self-reported health status, %				0.140				<0.001
Healthy or quite healthy	75.7	74.3	77.9		63.0	83.3	82.5	
Unhealthy or very sick	24.3	25.7	22.1		37.0	16.7	17.5	
Independent ability to walk outdoor	69.8	65.2	77.4	<0.001	52.2	79.5	86.0	<0.001
Charlson comorbidity index (SD)	0.93 (1.18)	0.90 (1.16)	1.00 (1.22)	0.177	1.12 (1.32)	0.80 (1.08)	0.92 (1.02)	<0.001
Mean number of drugs (SD)	4.15 (3.12)	4.36 (3.80)	3.80 (3.21)	<0.001	5.15 (3.52)	3.58 (2.77)	3.37 (2.78)	<0.001
Current smokers, %	6.7	0.5	9.7		3.3	6.9	19.3	<0.001
Drinks alcohol, %	62.2	53.5	76.9	<0.001				
At-risk alcohol users, %	8.2	3.0	17.0	<0.001				

1 Differences between the groups were tested with the χ^2 test for categorical variables and Mann-Whitney U-test or Kruskal-Wallis test for non-normally for non-normally distributed continuous variables.

Among the respondents of paper II (n = 831) providing reasons for their alcohol consumption, the mean age was 76.4 years, and 53.3% were female. Among respondents of paper IV (n = 1 142) exploring drug–alcohol interactions, the mean age was 78.7 years and 64.5% were female.

5.2 PREVALENCE AND ASSOCIATED CHARACTERISTICS OF ALCOHOL CONSUMPTION IN OLDER ADULTS

Alcohol consumption and at-risk drinking

Of the 1 395 respondents, 62.2% used alcohol (76.9% of men and 53.5% of women), while 8.2% (n = 114) exceeded the defined at-risk drinking limit. Using direct adjustment based on the general population of Espoo, the overall prevalence of alcohol consumption was estimated to be 71.5% (95% CI 68.6–73.7), while 81.8% (95% CI 78.1–85.5) of men and 63.6% (95%CI 60.1–67.1) of women consumed alcohol. The prevalence of at-risk drinking in the Espoo population was estimated to be 10.8% (95% CI 8.9–12.8).

Men were more likely to exceed the at-risk drinking limit (17.0%) than women (3.0%) in this sample (Table 5). Using direct adjustment, the prevalence of at-risk drinking in the Espoo population was estimated to be 20.6% among older men (95% CI 16.5–24.8) and 4.2% among women (95% CI 2.5–6.0). At-risk drinking was more common in the youngest age groups; 25.4% of men and 7.7% of women aged 65–70 years exceeded the defined at-risk drinking limit. Although the frequency and quantity of alcohol consumption declined with age in both genders, 18.9% of men aged 71–80 years and 11.3% aged 81–90 years exceeded the defined at-risk drinking limit. The corresponding figures in females were 2.5% and 1.4%. (Figure 3.)

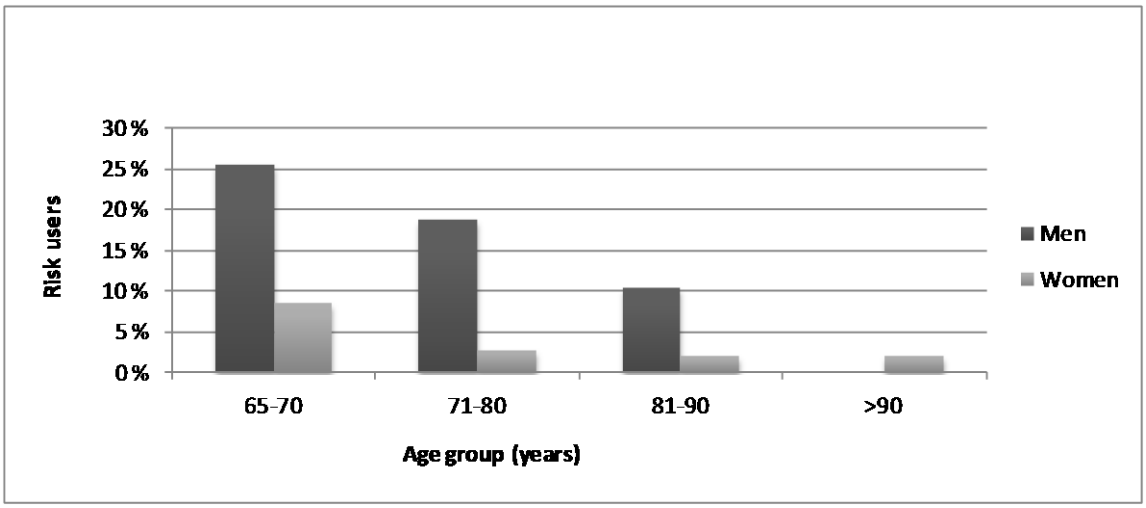

Figure 3. Prevalence of at-risk alcohol consumption according to gender and age group.

Relationship of at-risk drinking with socio-demographic and health-related factors

The bivariate analysis revealed that at-risk alcohol consumption was associated with being married or in a common-law relationship, living with a spouse, a high level of education, a good income and the ability to walk outdoor. The self-reported health status, the Charlson comorbidity index, and the mean number of regular medications did not differ between at-risk drinkers and the non-risk group. However, at-risk users had a better functional status than the non-risk group. Current smokers were more likely to be at-risk drinkers (Table 5).

Of the at-risk drinkers, 5.3% (vs. 0.7% of the non-risk group) had fallen or injured themselves during the previous year ($p < 0.001$), and 15.4% (vs. 2.4% of the non-risk group) had forgotten to take their medication sometimes or often ($p < 0.001$). Nearly one in five of the at-risk individuals stated that either their relatives or their friends had been concerned about their drinking during the previous year, whereas the respective figure for the non-risk group was 0.4% ($p < 0.001$). Furthermore, 21.9% of those in the at-risk drinking group were concerned about their own drinking (See Table 3 in paper I).

Independent socio-demographic associates of at-risk alcohol consumption were assessed with a logistic regression model that included all those characteristics that were significantly associated with at-risk alcohol consumption in bivariate analyses (gender, age class, living with a spouse, education, current smoking, ability to walk outside). According to this analysis, male gender (OR 4.62, 95% CI 2.87–7.41), age (OR 0.62, 95% CI 0.47–0.83), current smoking (OR 2.99, 95% CI 1.68–5.31), and a higher educational level (OR 1.72, 95% CI 1.27–2.33) predicted at-risk drinking, whereas living with a spouse and the ability to walk outdoor independently lost their significance.

5.3 REASONING FOR ALCOHOL CONSUMPTION IN OLDER ADULTS

Among the respondents, the younger age groups reported more often than the older age groups that they used alcohol "for having fun, celebration, and for social reasons". The proportion reporting using alcohol "for medicinal purposes" increased with age, being 9.8% in the age group 65–70 years, and 46.6% in the oldest age group. Although the proportion reporting social reasons and celebration as the reason for using alcohol declined with age, nevertheless 47.3% of the age group 81–90 and 39.7% of age group 91 years and over consumed alcohol for fun or celebration. The most common reason for using alcohol among the age groups from 65 up to 90 years was "for having fun or celebration." The oldest age group (>91 years) used alcohol most commonly "for medicinal purposes." Alcohol was

consumed "with meals" in all age groups, although this was more common in younger age groups. (See Table 3 in paper II.)

A comparison between genders of older adults' reasoning revealed no differences in using alcohol "for having fun and celebration" or "for medicinal purposes," "for social reasons," or "with meals." The male respondents reported more often than the females that they used alcohol "as a pastime" or "as a sauna drink and a thirst-quencher," or "because everybody uses it". (See Table 4 in paper II.)

A larger proportion of the "at-risk users" than the "moderate users" suggested that they were using alcohol due to their "meaningless life," in "relieving anxiety," "relieving loneliness," and "relieving depression", "as a pastime" and "because everybody uses it" (Figure 4).

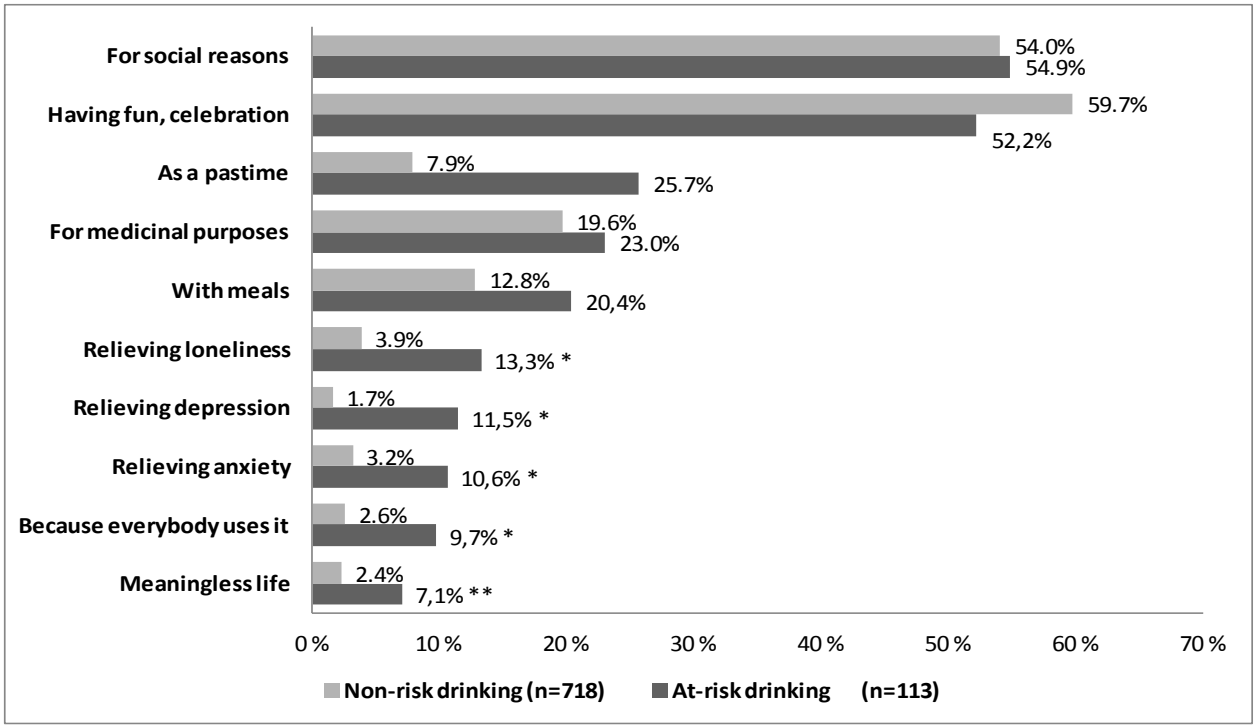

Figure 4. Reasons for alcohol consumption in older adults.

5.4 DRINKING ALCOHOL FOR MEDICINAL PURPOSES

Of the 1 395 respondents, 17.3% responded that they used alcohol for medicinal purposes. The medicinal consumption of alcohol was more common in the oldest age group. Both genders used this self-medication equally. Marital status did not differ between those who used alcohol as a medicine and those who did not. A high income was associated with a lower frequency of using alcohol for medicinal purposes. (See Table 1 in paper III.)

The frequency of alcohol consumption was higher among those using alcohol for medicinal purposes than among others. However, the typical amount of alcohol consumed did not differ between the groups. Those using alcohol for medicinal purposes had more often forgotten to take their daily medications than those not using alcohol as a medicine. In addition, their relatives or friends had more often been concerned about their drinking during the previous year than those not using alcohol as a medicine (See Table 1 in paper III).

Those considering themselves as unhealthy or very unhealthy used alcohol more often for medicinal purposes than those considering themselves as healthy or very healthy. Those who used alcohol for medicinal purposes had a higher Charlson comorbidity index and higher mean number of regularly used drugs (see Table 1 in paper III). When considering the diagnoses respondents reported, using alcohol for medicinal purposes was associated with prior myocardial infarction, asthma, rheumatoid arthritis/osteoarthritis, dementia and depression. Those using alcohol to self-medicate had fallen during the last 6 months or suffered from a fracture in adulthood more often than the others (see Table 2 in paper III). However, in logistic regression analysis adjusted for age and income, only depression remained statistically significantly associated with using alcohol for medicinal purposes (OR 1.6 (95% CI 1.1–2.4)).

The most common conditions for which alcohol was used as self-medication were cardiovascular diseases (34.4%), sleep disturbances (22.1%), a common cold (19.9%) and indigestion (14.0%). Alcohol was also used for relaxation (6.8%), stimulation (6.3%), pain relief (3.2%) and the general prevention of illnesses (3.6%). Furthermore, 8.6% of respondents reported some other reasons for using alcohol, including a doctor's prescription, vertigo, faintness, hangover, and red wine for anemia.

5.5 PREVALENCE OF POTENTIAL ALCOHOL AND DRUG INTERACTIONS

Of the respondents, 1 142 (81.9%) reported using at least one drug. The "minimal or non-alcohol users" usually had a higher number of diagnoses and poorer subjective health than the "at-risk" or "moderate users". The mean number of medications was 4.2 among "at-risk alcohol users", 4.0 among "moderate users" and 5.4 among "minimal/non-users" ($p < 0.001$). (See Table 1 in paper IV). The distribution of diagnoses among the respondents is presented in Table 6.

Table 6. Distribution of diagnoses among the groups using various amounts of alcohol (n = 1 142).

	At-risk users (n = 90) %	Moderate users (n = 625) %	Minimal or non-users (n = 427) %	p-value Crude[1]	Adjusted*
Hypertension	51.9	53.4	58.1	0.345	0.526
Coronary heart disease	24.3	28.5	43.4	<0.001	0.012
Prior myocardial infarction	5.6	5.4	12.1	0.005	0.010
Prior stroke	1.5	2.3	5.8	0.034	0.0085
Asthma	16.9	15.2	21.2	0.127	0.314
Osteoarthritis	38.2	40.7	50.7	0.013	0.364
Diabetes	25.7	16.9	25.5	0.010	0.0087
Dementia	4.5	7.0	14.2	0.002	0.262
Depression	10.8	13.5	23.3	0.001	0.089
Prior or current diagnosis of cancer	20.5	18.2	22.7	0.306	0.40

[1)] Differences between the groups in categorical variables were tested with the chi-squared test or Fisher's exact test and for non-normally distributed continuous variables with the Kruskal-Wallis test.
*) Adjusted for gender and age

Of the drug users, 42.1% were on drugs having significant interactions with alcohol (AI drugs) (Table 7). Among "at-risk alcohol users", 42.2% were on AI drugs, whereas the respective figure among "moderate users" was 34.9% and among "non/minimal users" 52.7% ($p < 0.001$). The mean number of AI drugs in these groups was 0.67 (SD 0.98), 0.48 (SD 0.74), and 0.80 (SD 0.96), respectively. One in ten of "at-risk users" and "moderate users" were on warfarin (B01AA03) or hypnotics/sedatives (N05C). The "at-risk users" used metformin more commonly than the other two groups (13.3% vs. 5.6% vs. 8.4%, $p = 0.0089$) (Table 7).

Table 7. Prevalence of use of potentially alcohol-interactive drugs among different alcohol consumer groups (n = 1 142).

Medication	At-risk users (n= 90) %	Moderate users (n = 625) %	Minimal or non-users (n = 427) %	p-value Crude[1]	Adjusted*
Antipsychotics (N05A)	2.2	2.1	3.7	0.252	0.575
Anxiolytics (N05B)	6.7	3.7	7.5	0.022	0.053
Hypnotics/sedatives (N05C)	11.1	10.6	17.8	0.003	0.175
Antidepressants (N06A)	4.4	7.0	10.8	0.038	0.181
Antiepileptic (N03A)	5.6	1.8	3.3	0.062	0.091
Opioids (N02A)	3.3	0.8	1.6	0.108	0.159
Warfarin (B01AA03)	11.1	9.3	15.7	0.007	0.024
Metformin (A10BA02)	13.3	5.6	8.4	0.015	0.0089

[1)] Differences between the groups in categorical variables were tested with the chi-squared test or Fisher's exact test and for non-normally distributed continuous variables with the Kruskal-Wallis test.
* Adjusted for gender and age

Among “at-risk users” concomitantly taking AI drugs, 13.8% reported have fallen or injured themselves when using alcohol, whereas the respective figure among the others was 4.1% ($p < 0.001$).

5.6 SUMMARY OF THE FINDINGS

In the present study, 62.2% of the respondents (n = 1 395) consumed alcohol, including 53.5% of the women and 76.9% of the men. Moreover, 8.2% of the respondents drank in excess of the guidelines for persons aged 65 years and over (The American Geriatrics Society 2003, the US National Institute on Alcohol Abuse and Alcoholism 2005, Ministry of Social Affairs and Health 2006). Using direct adjustment based on the general population of Espoo, the overall prevalence of alcohol consumption was estimated at 71.5% (95% CI 68.6–73.7), while 81.8% (95% CI 78.1–85.5) of men and 63.6% (95% CI 60.1–67.1) of women consumed alcohol. The prevalence of at-risk drinking in the Espoo population was estimated to be 10.8% (95% CI 8.9–12.8). Several demographic and health-related factors were associated with at-risk alcohol consumption.

Older adults mentioned several reasons for their alcohol consumption. Alcohol was also used for medicinal purposes. The reasons given for the use of alcohol differed between age groups, men and women, and between at-risk users and non-risk users.

The concomitant use of drugs with potential interactions with alcohol was common. Of the drug users, 62.2% (715 persons) also used alcohol. Among the “at-risk users”, “moderate users” and “minimal/nonusers”, 42.2%, 34.9%, and 52.7%, respectively, were on drugs potentially causing significant interactions with alcohol.

6 DISCUSSION

6.1 STUDY POPULATION AND METHODS

For this study, a stratified random sample of older adults living in the City of Espoo aged ≥ 65 years (N = 2 100) was drawn from the Population Register. A questionnaire was mailed in May 2007, and one reminder was sent. The response rate (71.6%) was good, indicating representativeness of community dwelling older people in Espoo. A questionnaire was used because the objective was to obtain a representative sample of community-dwelling older adults living in the City of Espoo at reasonable cost, and previous studies have indicated few or no differences in reported alcohol use between personal interviews and mailed questionnaires (Bongers 1998), or between telephone interviews and face-to-face interviews (Greenfield et al. 2000). It is challenging to investigate alcohol consumption, especially in older adults, due to the sensitive nature of the topic.

It is equally challenging to obtain reliable responses to alcohol-related questions in Finland and in countries where the alcohol culture is more liberal and alcohol use is more casual (Karisto 2008). People usually underestimate their alcohol consumption. Therefore, the quantities and differences between the at-risk drinkers and non-risk drinkers reported in this study are probably an underestimation of the true situation. However, this study found that a significant proportion of at-risk drinkers and problems related to drinking among older people.

The questionnaire used in the present study was validated in previous surveys on older people (Valvanne 1992, Pitkälä et al. 2001 and 2004, Routasalo et al. 2009), and as it was originally developed for a larger study project, not all the questions were used in the present study. The alcohol-related questions included in the inquiry were retrieved from the clinical guidelines and questionnaire for alcohol use in older adults (Ministry of Social Affairs and Health 2006), which is adjusted from NIAAA guidelines (National Institute on Alcohol Abuse and Alcoholism 2005, The American Geriatrics Society 2003) and AUDIT (Babor et al. 2001). AUDIT consists of some simple questions that are easy for older people to understand (e.g. questions concerning falls and injuries, or whether friends and relatives have been worried about the respondent's alcohol consumption). A pilot interview study (N = 17) was conducted before the actual study, and the wording of some questions was subsequently formulated in a simpler way.

Self-reported alcohol consumption is generally considered to be as accurate as other measures of drinking (Babor et al. 2000). However self-reported alcohol consumption is likely to be generally underestimated to some extent, and also in elderly people, especially if they perceive that drinking stigmatizes them in any

way (Naik and Jones 1994, Hajat et al. 2004, Kirchner et al. 2007, Rintala 2010). This study attempted to minimize this underestimation by asking questions about alcohol consumption as one part of an overall health and lifestyle questionnaire. The proportion of heavy drinkers may also be underestimated due to non-response. Furthermore, due to the sensitive nature of alcohol issues, the response options for the amounts and frequency of alcohol consumption were defined in a way that resulted in an inability to bring out abstainers when analyzing the results. The present study also relied on the self-reporting of diagnoses and medication, which assumed that individuals were aware of them.

In the present study, drinking motives were inquired in such a way that the respondents could tick their positive responses. This may have overestimated their positive responses. However, complicated questions with both positive and negative items would have raised the problem that the oldest old persons may not have been able to understand the questions properly (Routasalo et al. 2009). In addition, the structured questionnaire used may not have included all the reasons that older people have for their drinking. For example, enhancement motives were not inquired. However, a very large proportion of older people considered as alcohol consumers (95.7%) reported the reasons for their alcohol use, and as many as 220 responded to the open ended questions and reported their own reasons.

The high response rate (71.6%) supports the validity of this study. However, notwithstanding the problems of measurement based on questionnaires and self-reporting, the high response rate provides useful information on general aspects of alcohol consumption among older adults. The sample was selective, including older adults only from one city of Finland. However, the sample was highly representative of this city, as it consisted of a representative sample of old adults aged 65 years and over living at home. A limitation of the study is its cross-sectional nature, and causal relations between alcohol consumption and health-related factors cannot therefore be concluded. The findings may not be generalizable to other populations. Espoo is one of the healthiest and wealthiest cities in Finland, and its older population may therefore differ from other parts of the country.

6.2 DISCUSSION OF THE FINDINGS

6.2.1 PREVALENCE OF ALCOHOL CONSUMPTION AND AT-RISK DRINKING

The age-adjusted proportion of respondents using alcohol (71.5%) in this study is somewhat higher than the statistics of the Finnish National Public Health Institute, in which 65.2% of Finnish older adults aged 65–84 years had consumed alcohol in the preceding year (77% of males and 54% of females) in 2007

(Laitalainen et al. 2008). Halme and colleagues (2010) studied a cohort derived from a nationally representative sample of Finns aged > 65 years. In their study, 68.9% of men and 40.6% of women consumed alcohol. The prevalence of alcohol consumption recorded in this study, 81.8% of men and 63.6% of women, exceeded the findings in earlier Finnish studies.

In the study of Aira and colleagues (Aira et al. 2005) from the Kuopio region, respondents were aged 75 years and older and 44% of them had used alcohol during the preceding years, including 65% of men and 36% of women. The corresponding age-adjusted figures in this study were 55.5% for all respondents, and 73.1% for men and 45.6% for women aged 75 years and over (data not shown).

Comparing the prevalence of at-risk alcohol consumption in elderly populations is difficult because of variations in the age limits, the definitions of drinking groups and the instruments used in detection. In a representative sample of Finnish older people (Halme et al. 2010) with a similar age range, 20.3% of males and 1.2% of females exceeded the limit of 7 drinks per week. This is a smaller proportion than in the present study, in which 20.6% of men and 4.2% of women drank in excess of the guidelines for persons over 65 years old. In the study of Aira and colleagues (2005), 7% of men and 0% of women were found to exceed the limit of 7 drinks per week. In this study, 10.8% of men and 1.8% of women aged 75 years and over exceeded the defined at-risk limit (data not shown).

There may be several reasons for the differences between the figures from these Finnish studies. Firstly, the respondents were younger in the study of Laitalainen and colleagues, and older in the study of Aira and colleagues than in the present study. According to many previous studies, alcohol consumption declines with age (e.g. Hajat et al. 2004, Aira et al. 2005, Kirchner et al. 2007, Merric et al. 2008, Castro-Costa et al. 2008, Weyerer et al. 2009). The differing age ranges of participants may partly explain differences between the results of the above-cited studies. Secondly, there may be also cultural differences behind the figures, and the surveying of a residential area may additionally have affected the results. Espoo is one of the cities forming the capital metropolitan area in Finland, whereas Kuopio is a medium-size city located in a more rural environment, and respondents in the study of Halme and colleagues resided throughout Finland. It is known that self-reported alcohol consumption is likely to be underestimated to some extent, especially among older adults if they perceive that drinking stigmatizes them in any way (Naik and Jones 1994, Hajat et al. 2004, Kirchner et al. 2007). It is possible that the alcohol culture is more liberal in the capital area than in other parts of the country, and this may particularly affect the responses of women. Karisto (2008) reported that the alcohol culture of the place of residence predetermines a person's alcohol consumption habits.

Despite cultural differences, the proportion of at-risk users is fairly consistent with some previous US studies with a similar definition of at-risk alcohol consumption to the present study (Lang et al. 2007, Kirchner et al. 2007, Merric et al. 2008). However, Moos and colleagues (2004) also reported much higher figures from the US. There are differences in the figures describing the use of alcohol and at-risk use. This may be a result of the performance of the alcohol screening instruments being affected by the culture, clinical setting, personal characteristics, and the prevalence of AUDs in the population being studied (O'Connell 2004).

6.2.2 CHARACTERISTICS ASSOCIATED WITH AT-RISK DRINKING

The findings of the present study mostly support earlier study findings on associated characteristics of at-risk alcohol consumption. The frequency and quantity of alcohol consumption also declined with age in the present study. However, nearly one in five men aged 71–80 years, and one in ten men aged 81–90 years exceeded the defined at-risk drinking limits. Consistently with earlier studies, at-risk alcohol use was associated with male gender and a younger age (cf. Hajat et al. 2004, Moos et al. 2004a, Aira et al. 2005, Moore et al. 2006, Kirchner et al. 2007, Merrick et al. 2008, Castro-Costa et al. 2008, Weyerer et al. 2009, Halme et al. 2010).

In the present study, at-risk drinking among women was rare, but more common than in earlier Finnish studies (Aira et al. 2005, Halme et al. 2010). In Finland, low levels of drinking among women can be attributed to cultural factors such as the social undesirability of hazardous drinking among females (Tolvanen and Jylhä 2005). Furthermore, gender differences in consumption might represent cultural norms in drinking learned at much earlier ages (Gee et al. 2007).

The results of the present study correspond with previous research, indicating that a higher alcohol consumption among older adults is associated with a higher socioeconomic status (Merric et al. 2008), and a higher level of education (Merric et al. 2008, Weyerer et al. 2009, Halme et al. 2010). Contrary to this study, being divorced or single, or living alone has in some earlier studies been associated with a higher prevalence of problem drinking (Merric et al. 2008, Halme et al. 2010).

Self-reported health, comorbidity, or use of medications did not differ between the at-risk drinking group and the moderate users group. The non- and minimal users were older, more often women and widowed, and had more comorbidities and medication and a poorer ability to walk outside. Smoking was more common among respondents exceeding the defined limit of at-risk alcohol consumption, and this supports earlier study findings (e.g. Hajat et al. 2004, Moore et al. 2006, Merric et al. 2008, Weyerer et al. 2009, Halme et al. 2010).

The present study suggests that at-risk drinking predisposes to adverse events. Previous studies have shown that alcohol use is a risk factor for injurious falls (Stenbacka et al. 2002, Kaukonen et al. 2006). At-risk alcohol consumers had also forgotten to take their medication more often than the non-risk consumers. The erratic use of warfarin is a well-known problem for clinicians related to at-risk drinking. However, this aspect has received little attention in research. Diseases and the use of medications were not associated with lower alcohol consumption, but disabilities were. Among those in need of another person's help, there were no at-risk drinkers.

The cross-sectional nature of the present study does not allow an evaluation of whether older adults reduced their alcohol consumption when they became older, had more illnesses, or received more medications, or whether these findings reflect changing trends in the lifestyle of older cohorts. However, several prior studies have suggested that the cohorts born later actually use more alcohol than the older cohorts (Björk et al. 2008, Trevisan et al. 2008, Sulander et al. 2009,).

In many countries, the definitions of risky drinking for older adults are the same as for adults of working age, although older adults are recommended to drink less (House of Commons and Technology Committee, UK 2012). Although it has been recommended that older adults (65 years and over) consume no more than one standard drink per day, some findings indicate that people older than 65 years consuming up to two drinks per day had no greater disability or mortality than those consuming up to one drink per day (Lang et al. 2007). Kirchner and colleagues (2007) reported similar health parameters between those who drank one to seven drinks weekly and those who consumed eight to 14 drinks per week. Old age is a long period of time, and interindividual differences in factors such as health, diseases, and the use of drugs increase with aging, with the health status of older adults varying widely (Spinewine et al. 2007). The drinking guidelines and definitions of moderate alcohol consumption for older adults are under discussion.

6.2.3 Reasoning for alcohol consumption in older adults

In previous studies, subjective reasons for alcohol consumption of older adults have received little attention. The previous studies have mainly focused on predictors of alcohol consumption in populations with alcohol problems (Moos et al. 2010). Older adults have diverse reasons for consuming alcohol according to previous Finnish studies (Tolvanen 1998, Haarni and Hautamäki 2008). In the present study, social reasons were the most common reasons for alcohol consumption, which is in line with prior studies performed among young people (LaBrie et al. 2007; Lee et al. 2007). Older adults in all age groups also consumed

alcohol with meals, consistently with previous findings (Khan et al. 2008). Encouragement or enhancement motives, which were the second most commonly reported reasons for drinking in young people (Kuntsche et al. 2008), were not reported by our respondents, even in the open responses. This is possibly not relevant for older adults, and they may no longer need alcohol for enhancement. Coping motives appeared particularly in the "at-risk users" group; a larger proportion of them than the "moderate users" reported that they use alcohol because of their "meaningless life," in "relieving anxiety," "relieving loneliness," and "relieving depression."

Depression has been associated with alcohol misuse in prior studies (St John et al. 2008). There was a clear difference between the "at-risk users" and the "moderate users" in the present study. The proportions in the two groups were similar with respect to how they reported drinking for social reasons, and using alcohol for medical reasons. In order to target prevention and in early intervention programs, health professionals should pay attention to alcohol consumption in older people and discuss their reasons for drinking.

There may be also cultural differences underlying the reasons for drinking in old age cohorts (Kerr et al. 2004, Karisto 2008, Kerr et al. 2009). Consistently with a previous study by Brennan and colleagues (1990), there may also be differences in the reasons for drinking between men and women.

6.2.4 USE OF ALCOHOL FOR MEDICINAL PURPOSES

The use of alcohol for medicinal purposes has received little attention in research. Consistent with previous findings (Aira et al. 2008), such alcohol use in both genders was not uncommon in older adults. Also consistent with the results of Aira and colleagues (2008), the medicinal consumption of alcohol was more common in the oldest age group and in persons with chronic conditions.

The most commonly mentioned medical conditions for which alcohol was used were strikingly similar to a previous study by Aira and colleagues (Aira et al. 2008). In their study compared with the present one, alcohol was used for cardiovascular diseases (38% vs. 34.4%), sleep disturbances (26% vs. 22.1%), mental problems (23%), and a common cold (10% vs. 19.9%). The respondents in the present study did not mention mental conditions as a reason for self-medicating with alcohol, even though a diagnosis of depression was associated with using alcohol for medicinal purposes. However, those mentioning alcohol as a relaxant (6.8%) or stimulant (6.3%) may include respondents using alcohol for mental problems. The use of alcohol to treat a common cold (19.9%) or indigestion (14.0%) was more common in the present study than in the study of Aira and

colleagues. Some (3.6%) of the respondents mentioned using alcohol to prevent illnesses. Some studies have investigated the use of alcohol to self-medicate pain in the general population (Brennan et al. 2005, Riley and King 2009), which was rare in the present study (3.2%). This self-treatment did not appear in the study findings of Aira and colleagues (2008).

Consistent with the study of Aira and colleagues (2008), the use of alcohol for medicinal purposes was associated with fairly frequent use, but the amounts consumed on a typical day were small. However, in the present study, the use of alcohol for medicinal purposes was associated with forgetting to take medicines, worries among relatives, as well as falls and fractures. Older people may have misbelieves concerning the medicinal use of alcohol.

6.2.5 Prevalence of potential alcohol and drugs interactions

The concomitant use of alcohol and alcohol-interactive drugs (AI drugs) was slightly more common than in a previous Finnish study (Aira el al. 2005). In the present study, falls and injuries were more common among "at-risk users" using AI drugs than among others. Previous studies have pointed out that the concomitant use of alcohol and drugs with central nervous system effects increases the risk of falls (Stenbacka et al. 2002, Hartikainen et al. 2007). Alcohol with sedatives can reduce awareness and balance, which in turn can increase the risk of injurious falls (Stenbacka et al. 2002). Alcohol consumption and the use of psychotropic drugs have become more prevalent among older adults (Linjakumpu et al 2002, Ilomäki et al. 2008).

According to SFINX, alcohol and warfarin do not have significant interactions. However, many reports argue that alcohol has an influence on the metabolism of warfarin. It may either induce or reduce warfarin metabolism. Alcohol consumption can cause dangerously high or insufficient warfarin activity, depending on the patient's drinking habits (Weathermon and Crabb 1999). Excessive alcohol consumption may also expose individuals to irregular life patterns, unhealthy eating, and forgetting medications. The use of warfarin may expose individuals to a higher risk of serious bleeding (Weathermon and Crabb 1999, Camm et al. 2010), especially when falling. In the present study, 11% of the "at-risk alcohol users" were on warfarin. Warfarin requires skillful dose management and patient communication to achieve the best outcomes. It is important that patients are aware of warfarin–alcohol interactions and doctors of their patients' alcohol consumption.

Alcohol can potentiate the effects of metformin and expose individuals to lactate asidosis. Metformin was the most commonly used oral hypoglycemic of the present

study. Of the "at risk-users" 13.3% were on metformin, 6.7% used sulfonylureas, and 1.1% insulin. The latter may expose individuals to hypoglycemia.

The problems and adverse events related to alcohol–drug interactions depend on the quality and quantity of both medication and alcohol used, as well as the regularity and simultaneity of their consumption in daily life (Weathermon and Crabb 1999, Adams 2002, Moore et al. 2007). The present study provided a picture of the use of alcohol and potential AI drugs, but it does not allow an evaluation of whether alcohol and drugs are actually used concomitantly in everyday life, and what kinds of adverse events they expose users to.

6.2.6 STRENGTHS AND LIMITATIONS OF THE STUDY

Strengths of the study
The present study provided information on alcohol consumption among older adults aged 65 years and over. The representative sample and high response rate (71.6%) supports the validity of this study. The stratified sampling method also provided data from the highest age groups of the Espoo population. Findings related to the age group and gender differences in the use of alcohol, older adults' own reasoning for alcohol use, drug–alcohol interactions and drinking for medicinal purposes are still little studied topics in gerontology. Sequencing by age groups and gender provided some group-specific information of practical use in care and services for elderly people.

Limitations of the study
Self-reported alcohol consumption may be biased by inaccurate and incomplete reporting and underreporting. This may be particularly accentuated in older adults if they perceive drinking to stigmatize them in any way (Naik and Jones 1994, Hajat et al. 2004, Kirchner et al. 2007). However other studies have found that questionnaires can provide useful estimates of alcohol intake, and that people in population studies have little reason to underreport their alcohol consumption (Crum et al. 2002). The proportion of problem drinkers may also be underestimated due to non-response.

The alcohol indicator used in this study was not optimal to provide an exact assessment of the use of alcohol. Since the planning of this survey, AUDIT has been validated for older adults and would have been the best option to use.

Due to the stratified sampling method, the unadjusted alcohol use values are likely to be an underestimate of the true values for the population of Espoo, and adjusted values are therefore presented to the extent that is possible and necessary. One limitation of the study was the sample size, which remained fairly small when

assessing the at-risk drinking group in more precise detail, and the study therefore provided a rather general picture of the studied issues.

7 CONCLUSIONS

Alcohol consumption, including at-risk consumption, is prevalent among community-dwelling older adults, particularly among males, despite advanced age, comorbidities, and the multiple use of medications. Health care professionals should be aware of this occurrence.

Several characteristics are related to alcohol consumption and at-risk drinking in older adults, and the findings are supported by previous studies.

Older adults have diverse alcohol consumption habits, similarly to people in other age groups. The most commonly reported reasons for alcohol consumption were “for having fun and celebration” and “for social reasons”. However, at-risk alcohol users may use alcohol due to their “meaningless life”, and in “relieving depression, anxiety or loneliness”. Alcohol is also often consumed for medicinal purposes.

The concomitant use of drugs having potential interactions with alcohol was common. Older adults have many chronic conditions and take medicines that may have interactions with alcohol. They are possibly unaware of the risky consequences of using both alcohol and medicines.

8 CHALLENGES FOR PRACTICE AND EDUCATION AND IMPLICATIONS FOR FUTURE RESEARCH

Challenges for practice and education

The number of community-dwelling older adults is increasing. Hazardous alcohol consumption has been identified as a risk for older adults. The present study revealed that alcohol consumption, including at-risk consumption, is prevalent among community-dwelling older adults. This is creating a challenge for health and social care systems.

Older adults are a heterogeneous group, and at-risk drinking may be difficult to recognize. Alcohol-related discussion, questioning and screening for alcohol consumption in older adults should be routine in health and social services. The findings of the present study may help health and social care professionals to identify those at risk of harmful alcohol consumption.

Health care professionals should educate and monitor older adults concerning their alcohol consumption and the related potential risks. These professionals need to improve their abilities to discuss issues related to alcohol consumption in older adults. Asking patients and clients about their alcohol consumption when inquiring into their lifestyle habits or medication could be a good way to initiate discussion on alcohol. Because of the delicacy of the subject, the discussion should be tactful and not criticizing (Levo 2008, Aira and Haarni 2010). Older adults' own awareness of alcohol-related issues and experiences of life, values, and attitudes should be explored.

Alcohol assessment tools and brief counseling or brief intervention with tailored information for older adults could be integrated with existing assessment arrangements (Holmberg et al. 2008). The benefits of this could be an improvement in the quality of life, as well as referral and access to appropriate services, and prevention of the physical, social, and psychological harm caused by alcohol. To handle this task, health care professionals should receive specific education on alcohol-related issues in old age, communication skills, and motivational interviewing.

Furthermore, there is a need for appropriate services for older adults with alcohol problems, and team work in a nexus of social and healthcare professionals, including specialists in geriatrics, gerontology, and mental health and substance abuse.

Implications for future research

There are many interesting implications for future research. Although alcohol consumption in older adults and its health-related effects have been studied, there is a shortage of information on how drinking varies across sociodemographic and alcohol-consumer groups. Understanding the relationship between alcohol and age requires data with multiple observations over an extended period of time. We know relatively little about the extent to which late-life personal and social factors and stressors predict high-risk alcohol consumption and drinking problems among adults as they mature from the ages of 55–65 to 75–85, and even to very high ages. In addition, more information is needed on how well life history predicts drinking and how help-seeking behavior predicts problem alcohol consumption. There is a scarcity of longitudinal studies exploring causal relationships between alcohol consumption in older adults and their problems and adverse events.

In addition, more information and randomized controlled trials are needed to develop alcohol-related services for older adults and to implement brief alcohol counseling and brief intervention in Finland.

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APPENDIX 1

65 vuotta täyttäneiden espoolaisten alkoholinkäyttö ja sen yhteydet terveysongelmiin, hyvinvointiin ja eläkeiän kriiseihin.

ALUKSI KYSYMME TAUSTATIETOJANNE

1. Mikä on siviilisäätynne?

1. naimaton (ei koskaan naimisissa)
2. naimisissa
3. avoliitossa
4. asumuserossa (vuodesta _____)
5. eronnut (vuodesta _____)
6. leski (olen ollut leskenä _____ vuotta)

2. Mikä on sukupuolenne?

1. nainen
2. mies

3. Ikänne _____

4. Mikä on korkein suorittamanne koulutus?

1. kansakoulu tai vähemmän
2. ammattikoulu
3. keskikoulu
4. lukio
5. opistoasteen ammattikoulutus
6. korkeakoulu

5. Minkälaisessa työssä olette toiminut pääsääntöisesti elämänne aikana?

1. maanviljelys, karjanhoito, metsätyö, emännän työt
2. tehdas-, kaivos-, rakennus-, tai muu vastaava työ
3. toimistotyö, henkinen työ, palvelutyö
4. muu, mikä?

6. Milloin jäitte pois töistä?

1. olen vielä työelämässä säännöllisesti
2. olen osa-aikaisesti työelämässä
3. alle vuosi sitten
4. 1- 5 vuotta sitten
5. yli 5 vuotta sitten

7. Missä asutte?

1. kotona
2. pysyvästi kodinomaisissa olosuhteissa, missä _____
3. palvelutalossa
4. pysyvästi vanhainkodissa tai hoivakodissa
5. pysyvästi sairaalassa

8. Jos asutte kotona tai kodinomaisissa olosuhteissa, asutteko

1. yksin
2. puolison kanssa (puolison ikä ___vuotta)
3. lapsen kanssa tai lapsen perheessä
4. sisaruksen kanssa
5. jonkun muun tai muiden kanssa, kenen

_____

9. Miten tulette taloudellisesti toimeen?

1. hyvin
2. kohtuullisesti
3. huonosti

10. Oletteko kokenut jonkun tai joitakin seuraavista elämäntapahtumista viimeisen kahden (2) vuoden aikana?

a. oletteko sairastunut vakavasti? 1. kyllä 2. en
b. onko läheisenne tai perheenjäsen sairastunut vakavasti? 1. kyllä 2. ei
c. oletteko joutunut vakavaan onnettomuuteen? 1. kyllä 2. en
d. oletteko jäänyt leskeksi? 1. kyllä 2. en
e. onko joku muu läheisenne kuollut? 1. kyllä 2. ei
f. oletteko eronnut tai muuttanut erilleen puolisostanne? 1. kyllä 2. en
g. oletteko muuttanut? 1. kyllä 2. en
h. oletteko joutunut rikoksen tai epäoikeudenmukaisuuden uhriksi? 1. kyllä 2. en
i. onko teillä ollut taloudellisia vaikeuksia? 1. kyllä 2. ei

SEURAAVAKSI KYSYMME NYKYISESTÄ TERVEYDENTILASTANNE JA TOIMINTAKYVYSTÄNNE

11. Millaisena pidätte terveydentilaanne tällä hetkellä?

1. pidän itseäni terveenä
2. pidän itseäni melko terveenä
3. pidän itseäni sairaana
4. pidän itseäni hyvin sairaana

12. Verrattuna tilanteeseen vuosi sitten, onko terveydentilanne nyt yleisesti ottaen

1. paljon parempi kuin vuosi sitten
2. jonkin verran parempi kuin vuosi sitten
3. suunnilleen samanlainen kuin vuosi sitten
4. jonkin verran huonompi kuin vuosi sitten
5. paljon huonompi kuin vuosi sitten

13. Missä määrin fyysinen kipu estää teitä tekemästä päivittäisen elämänne kannalta tarpeellisia asioita?

1. ei lainkaan
2. vähän
3. kohtuullisesti
4. paljon
5. erittäin paljon

14. Pystyttekö vaivatta liikkumaan sisällä?

1. kyllä
2. tarvitsen kepin tai rollaattorin
3. pystyn liikkumaan itsenäisesti pyörätuolilla
4. tarvitsen toisen henkilön apua
5. en pysty liikkumaan lainkaan sisällä

15. Pystyttekö vaivatta liikkumaan ulkona?

1. kyllä
2. tarvitsen kepin tai rollaattorin
3. pystyn liikkumaan itsenäisesti pyörätuolilla
4. tarvitsen toisen henkilön apua
5. en pysty kävelemään lainkaan ulkona

16. Muistinne on mielestänne

1. muistini on ikääni nähden hyvä
2. muistini on huono
3. muistini on erittäin huono

17. Tiedättekö sairastaneenne seuraavia sairauksia viimeisen 12 kuukauden aikana

1. sokeritautia	1. kyllä	2. en
2. sydänveritulpan eli sydäninfarktin	1. kyllä	2. en
3. muuta sydänsairautta	1. kyllä	2. en
4. korkeaa verenpainetta	1. kyllä	2. en
5. aivohalvauksen	1. kyllä	2. en
6. vatsahaavan (maha- tai pohjukkaissuolen haavauma)	1. kyllä	2. en
7. toistuvasti tai usein virtsateiden tulehduksia	1. kyllä	2. en
8. astmaa tai muuta pitkäaikaista keuhkosairautta	1. kyllä	2. en
9. nivelreumaa tai nivelrikkoa (eli nivelkulumia)	1. kyllä	2. en
10. dementia	1. kyllä	2. en
11. masennusta	1. kyllä	2. en
12. onko teillä todettu syöpä?	1. kyllä	2. ei

milloin? _____

mikä syöpä? _____

13. onko teillä todettu Parkinsonin tauti?	1. kyllä	2. ei

18. Oletteko kaatunut viimeisen puolen vuoden aikana? 1. kyllä 2. en

19. Onko teillä ollut luunmurtumia aikuisiässä?

Mitä murtumia?_____

Milloin? _____

20. Luetelkaa lääkärin teille määräämät lääkkeet

lääke	annostus
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

21. Kuinka usein syötte lämpimän aterian

1. päivittäin
2. muutamana arkipäivänä viikossa
3. viikonloppuisin
4. en syö lämmintä ateriaa

22. Kuinka tyytyväinen olette unenne laatuun?

1. erittäin tyytyväinen
2. melko tyytyväinen
3. ei tyytyväinen eikä tyytymätön
4. melko tyytymätön
5. erittäin tyytymätön

23. Pystyttekö itse huolehtimaan päivittäisistä toiminnoistanne (pukeutuminen, peseytyminen, syöminen, WC-käynnit)?

1. kyllä, hoidan kaiken itse
2. tarvitsen ulkopuolista apua ajoittain
3. tarvitsen ulkopuolista apua vähintään päivittäin

24. Saatteko apua silloin kun sitä tarvitsette?
1. kyllä 2. en

25. Näettekö lukea?
1. kyllä 2. en

26. Kuuletteko tavallista puhetta? (kuulolaitteella tai ilman)
1. kyllä 2. en

27. Harrastatteko jotain sydämen sykettä nostattavaa liikuntaa vähintään kaksi tuntia viikossa? 1. kyllä 2. en

28. Liikutteko päivittäin ulkona vähintään puoli tuntia?
1. kyllä 2. en

29. Onko Teillä jokin säännöllinen harrastus
1. kyllä 2. ei

Jos on, niin mikä
_____
_____

SEURAAVAKSI MUUTAMA KYSYMYS ELÄMÄNASENTEISTANNE

30. Oletteko tyytyväinen elämäänne?
1. kyllä 2. en

31. Tunnetteko itsenne tarpeelliseksi?
1. kyllä 2. en

32. Onko Teillä tulevaisuudensuunnitelmia?
1. kyllä 2. ei

33. Onko Teillä elämänhalua?
1. kyllä 2. ei

34. Koetteko, että selviydytte hyvin elämän jokapäiväisistä vaatimuksista?
1. kyllä, aina
2. kyllä, yleensä
3. joskus
4. harvoin
5. ei koskaan

35. Tuntuuko teistä, että voitte suuressa määrin vaikuttaa siihen, mitä tapahtuu elämässänne?
1. kyllä, aina
2. kyllä, yleensä
3. joskus
4. harvoin
5. ei koskaan

36. Oletteko masentunut?
1. harvoin tai ei koskaan
2. toisinaan
3. usein tai aina

37. Kärsittekö yksinäisyydestä?

1. harvoin tai ei koskaan
2. toisinaan
3. usein tai aina

38. Kuinka onnelliseksi tai onnettomaksi tunnette itsenne tällä hetkellä?

1. erittäin onnelliseksi
2. melko onnelliseksi
3. melko onnettomaksi
4. erittäin onnettomaksi
5. en osaa sanoa

39. Miten luonnehtisitte tällä hetkellä yleistä elämänasennettanne?

1. erittäin myönteiseksi
2. melko myönteiseksi
3. melko kielteiseksi
4. erittäin kielteiseksi
5. en osaa sanoa

40. Tunnetteko elämänne tällä hetkellä turvalliseksi vai turvattomaksi?

1. erittäin turvalliseksi
2. melko turvalliseksi
3. vaikea sanoa
4. melko turvattomaksi
5. erittäin turvattomaksi

SEURAAVAKSI KYSYMME TEILLE TÄRKEISTÄ IHMISISTÄ JA SEURAELÄMÄSTÄNNE

41. Kuka Teille on läheisin ihminen?

1. puoliso
2. lapsi tai lapset
3. lapsenlapsi tai lapsenlapset
4. sukulainen
5. ystävä
6. naapuri
7. joku muu, kuka?

42. Tuntuuko Teistä että läheisenne ymmärtävät Teitä?

1. eivät ymmärrä minua
2. ymmärtävät minua hieman
3. ymmärtävät minua kohtalaisesti
4. ymmärtävät minua melko hyvin
5. ymmärtävät minua erittäin hyvin

43. Onko Teillä lapsia (elossa olevia)?

1. kyllä 2. ei

44. Kuinka usein tavallisesti tapaatte jotakuta lapsistanne?

1. kerran vuodessa tai harvemmin
2. useita kertoja vuodessa
3. vähintään kerran kuukaudessa
4. 4noin kerran viikossa
5. useita kertoja viikossa

45. Tapaatteko lapsianne niin usein kuin haluaisitte?

1. kyllä 2. en

46. Onko Teillä ystäviä, joihin pidätte säännöllisesti yhteyttä?

1. kyllä 2. ei

47. Kuinka usein tavallisesti tapaatte jotakuta ystävistänne?

1. kerran vuodessa tai harvemmin
2. useita kertoja vuodessa
3. vähintään kerran kuukaudessa
4. noin kerran viikossa
5. useita kertoja viikossa

48. Tapaatteko ystäviänne niin usein kuin haluaisitte?

1. kyllä 2. en

49. Oletteko tyytyväinen läheisiin ihmissuhteisiinne?

1. erittäin tyytyväinen
2. melko tyytyväinen
3. en tyytyväinen mutten tyytymätönkään
4. melko tyytymätön
5. erittäin tyytymätön

50. Jos koette itsenne yksinäiseksi tai surulliseksi, minkä koette olevan sen syinä?

a. puolison kuolema ____ vuotta sitten 1. kyllä 2. ei
b. muiden läheisten omaisten puuttuminen 1.kyllä 2. ei
c. ystävien vähäisyys 1. kyllä 2. ei
d. oma sairaus ja heikentynyt toimintakyky (esim. vaikeudet liikkua, puhevaikeudet, huono kuulo tai näkö) 1. kyllä 2. ei
e. asuinolot (esim. asuminen syrjässä, hankalat kulkuyhteydet jne.) 1. kyllä 2. ei
f. perhehuolet (esim. perheenjäsenen työttömyys, vakava sairaus, alkoholismi) 1. kyllä 2. ei
g. elämän tarkoituksettomuuden tunne 1. kyllä 2. ei
h. jokin muu syy, mikä? _____
_____

51. Menetittekö lapsena ollessanne toisen tai molemmat vanhempanne?

1. en
2. kyllä,

menetin äitini ollessani ____ vuotias
menetin isäni ollessani ____ vuotias

LOPUKSI KYSYMME MUUTAMAN KYSYMYKSEN NAUTINTO-AINEISTA, KUTEN ALKOHOLIN KÄYTTÖTOTTUMUKSISTANNE JA TUPAKOINNISTANNE. KYSYMYKSET POHJAUTUVAT KANSAINVÄLISEEN AUDIT-KYSELYYN. VASTATKAA MAHDOLLISIMMAN REHELLISESTI. YKSITTÄISIÄ VASTAAJIA EI TUNNISTETA TUTKIMUSTULOKSISSA.

52. Kuinka usein nautitte olutta, siideriä, viiniä tai väkeviä? Ottakaa mukaan myös ne kerrat, jolloin nautitte alkoholia ”vain lääkkeeksi” enemmän kuin ruokalusikallisen.

1. Noin kerran kuukaudessa tai harvemmin
2. 2 - 4 kertaa kuukaudessa
3. 2 -3 kertaa viikossa
4. 4 kertaa viikossa tai useammin

53. Kuinka monta annosta olette yleensä ottanut niinä päivinä, jolloin olette nauttinut alkoholia (1 annos = yksi pullo ruokakaupan olutta, siideriä tai lonkeroa **TAI** yksi pieni lasillinen (12 cl) puna- tai valkoviiniä **TAI** yksi pieni lasillinen (8 cl) sherryä, madeiraa, vermuttia **TAI** muuta väkevää viiniä tai pieni määrä väkeviä (4 cl))

1. vähemmän kuin 1 annoksen
2. 1 annoksen
3. 2 annosta
4. 3 - 4 annosta
5. 5 tai enemmän

54. Kuinka usein juotte kerralla kolme annosta tai enemmän?

1. en koskaan
2. kerran kuussa tai harvemmin
3. kerran viikossa
4. useita kertoja viikossa

55. Oletteko kaatunut tai muuten loukannut itseänne otettuanne alkoholia?

1. ei
2. on, mutta ei viimeisen vuoden aikana
3. kyllä, viimeisen vuoden aikana

56. Onko joku läheisenne, lääkäri tai joku muu ollut huolissaan alkoholinkäytöstänne tai ehdottanut, että vähentäisitte juomista?

1. ei
2. on, mutta ei viimeisen vuoden aikana
3. kyllä, viimeisen vuoden aikana

57. Mikä on syynä kun käytätte alkoholia? (voitte rengastaa useamman kuin yhden vaihtoehdon)

hauskanpito, juhla	1. kyllä	2. ei
merkityksetön elämä	1. kyllä	2. ei
käytän alkoholia lääkkeenä	1. kyllä	2. ei
seuran vuoksi	1. kyllä	2. ei
masennus	1. kyllä	2. ei
ahdistuksen lievittäminen	1. kyllä	2. ei
yksinäisyyden lievittäminen	1. kyllä	2. ei
ajankuluksi	1. kyllä	2. ei
koska muutkin käyttävät	1. kyllä	2. ei
muu syy, mikä _____		

58. Oletteko käyttänyt alkoholia lääkkeeksi?

1. en
2. kyllä, millaisia vaivoja olette pyrkinyt sillä lievittämään?

_____
_____
_____
_____
_____

59. Onko Teille käynyt niin, että olette unohtanut ottaa lääkkeet alkoholin käytön takia

1. ei koskaan
2. joskus
3. usein

60. Oletteko unohtanut muita asioita alkoholin käytön vuoksi?

1. ei koskaan
2. joskus
3. usein

61. Oletteko huolissanne omasta alkoholinkäytöstänne?

1. kyllä
2. en

62. Tupakoitteko tai oletteko joskus tupakoinut?

1. en ole koskaan tupakoinut, enintään joskus kokeillut
2. olen tupakoinut joskus lyhyehkön ajan
3. en tupakoi nykyisin, olen lopettanut _____-vuotiaana
4. harvemmin kuin kerran viikossa
5. viikoittain, muttei päivittäin
6. päivittäin _____ savuketta
7. päivittäin piippua tai sikareja

Olisitteko halukas osallistumaan syksyllä 2007 jatkotutkimukseen? Tutkimus sisältää terveystarkastuksia ja tapaamisia eläkeläisten ryhmissä noin kerran viikossa 3 kuukauden ajan. Tavoitteena on ikäihmisten terveyden ja hyvinvoinnin edistäminen. Me järjestämme tarvittaessa kuljetukset tapahtumiin.

1. kyllä 2. en

Miten ikäihmisten tilannetta voisi Espoossa kehittää? Mitä palveluita toivoisitte?

LÄMPIMÄT KIITOKSET VAIVANNÄÖSTÄNNE!

Mitä mieltä olitte kyselystä? Kirjoittakaa mielipiteenne tähän. Otamme mielellämme vastaan palautetta.