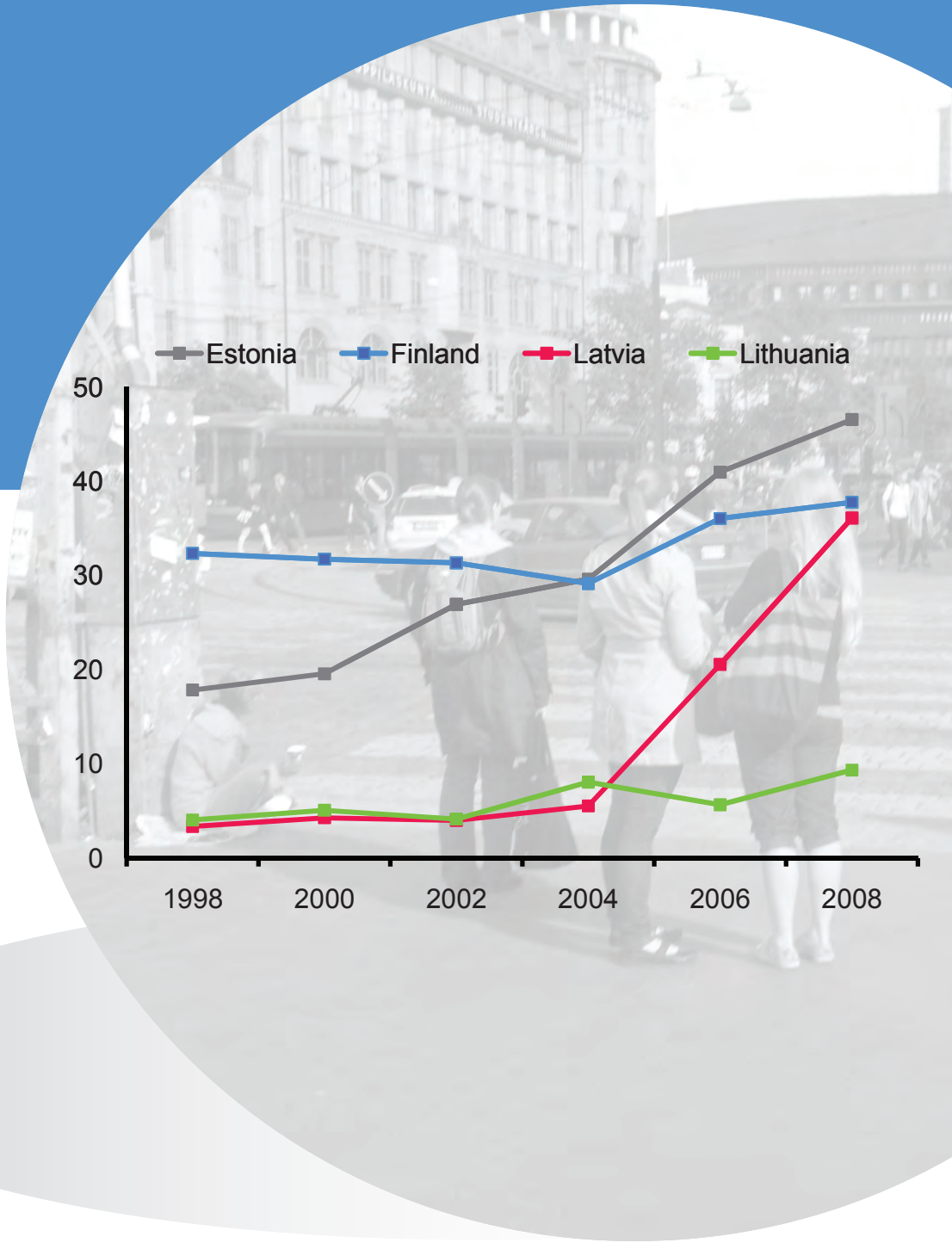
Ritva Prättälä
Satu Helakorpi
Noora Sipilä
Risto Sippola
Katri Sääksjärvi
(Eds.)

Social Determinants of Health Behaviours

Finbalt Health Monitor 1998–2008

REPORT



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Authors

Estonia

Mare Tekkel, National Institute for Health Development
Tatjana Veideman, National Institute for Health Development

Finland

Ritva Prättälä, National Institute for Health and Welfare
Katja Borodulin, National Institute for Health and Welfare
Satu Helakorpi, National Institute for Health and Welfare
Pia Mäkelä, National Institute for Health and Welfare
Tomi Mäkinen, National Institute for Health and Welfare
Noora Sipilä, National Institute for Health and Welfare
Risto Sippola, National Institute for Health and Welfare

Latvia

Anita Villerusa, Riga Stradins University
Inese Gobina, Riga Stradins University
Iveta Pudule, Centre of Health Economics

Lithuania

Jurate Klumbiene, Lithuanian University of Health Sciences
Janina Petkeviciene, Lithuanian University of Health Sciences

The Finbalt group

Jurate Klumbiene, Lithuanian University of Health Sciences, Lithuania
Ritva Prättälä, National Institute for Health and Welfare, Finland (coordinator)
Iveta Pudule, Centre of Health Economics, Latvia
Mare Tekkel, National Institute for Health Development, Estonia

Editorial board of the book

Ritva Prättälä, National Institute for Health and Welfare, Finland
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Noora Sipilä, National Institute for Health and Welfare, Finland
Risto Sippola, National Institute for Health and Welfare, Finland
Katri Sääksjärvi, National Institute for Health and Welfare, Finland

Contributors of the Finbalt Health Monitor

In addition to the authors of this book the following persons have actively participated in the Finbalt Health Monitor project since 1994.

Estonia

Anu Kasmel, Estonian Centre for Health Education and Promotion
Andrus Lipand, Estonian Centre for Health Education and Promotion

National Institute for Health Development (NIHD) was constituted in 2003 on the basis of Institute of Experimental and Clinical Medicine, Estonian Centre for Health Promotion and Education (the last official name of this institution), and Public Health and Social Training Centre.

Finland

Pekka Puska, National Institute for Healh and Welfare
Aulikki Nissinen, National Institute for Health and Welfare
Ville Helasoja, National Public Health Institute
Laura Paalanen, National Institute for Health and Welfare
Kati Vähäsarja, National Public Health Institute
Antti Uutela, National Institute for Health and Welfare

National Institute for Health and Welfare (THL) was founded 2009 following the merger of STAKES and the National Public Health Institute (KTL). Since then the responsibility of organizing the Finbalt Health Monitor in Finland was transferred from KTL to THL.

Latvia

Daiga Grinberga, Centre of Health Economics
Vilnis Dzerve, University of Latvia, Research Institute of Cardiology
Biruta Velika, Centre of Health Economics
Aija Rituma, Health Promotion Centre
Sandijs Zile, Health Promotion Centre, Health Promotion State Agency, Public Health Agency
Nikola Tilgale, Public Health Agency
Ainars Rutks, Public Health Agency

Since 1997 Health Promotion Centre was responsible for conducting Finbalt Health Monitor in Latvia. In 2004 it was reorganized to Health Promotion State Agency. In 2007 Health Promotion State Agency was included in Public Health Agency. Since 1st September 2009 Public Health Agency was liquidated and the function of public health monitoring transferred to the Centre of Health Economics.

Lithuania

Vilius Grabauskas, Medical Academy, Lithuanian University of Health Sciences
Vilma Kriaucioniene, Medical Academy, Lithuanian University of Health Sciences
Edita Sakyte, Medical Academy, Lithuanian University of Health Sciences
Liudmila Dregval, Medical Academy, Lithuanian University of Health Sciences

Kaunas University of Medicine was responsible for conducting Finbalt Health Monitor in Lithuania. Since 1st of September 2010 University was reorganized into Lithuanian University of Health Sciences.

Foreword

The Finbalt project has an interesting and complicated history. In Finland, the national health behaviour monitoring system started in 1978. It was very much inspired by the experience of the North Karelia Project where rapid monitoring of target health behaviours was found to be a strong tool of the intervention on NCD related lifestyles.

The annual health behaviour monitoring (so called AVTK surveys) in Finland was also used for the evaluation of major national health promotion programmes. The national TV smoking cessation programmes and later multiple risk factor TV programmes "Keys to Health" were prominent ones. The AVTK surveys showed the usefulness of the TV programmes.

Inspired by the good experience of the Finnish TV programmes, we suggested to our Estonian colleagues in the late 1980's to have a Finnish-Estonian smoking cessation TV programme. Such TV programme – which operationally was quite a complicated one – took place in the winter of 1989–90. This coincided with the great political change: the reindependence of Estonia and the other Baltic states.

As a continuation of the Finnish-Estonian collaboration, and inspired by the good Finnish experiences, we then suggested to our Estonian colleagues at the Estonian centre of Health Promotion to carry out a national health behaviour survey in Estonia – following the Finnish model. The idea was not only to evaluate the TV programme in Estonia, but also to be a basis for health behaviour monitoring in Estonia. It was also thought that monitoring in health behaviour changes in Estonia during the years after the great political transition would be of particular interest.

To carry out this first survey in Estonia in 1990 was a major challenge in those circumstances. The society was under major change, a national survey by mail was a pioneering experience and the technical problems were numerous. Nevertheless, the Estonian colleagues, with support from Finland, succeeded well and the survey was well implemented.

Based on this encouraging experience two follow-up lines emerged. First, Estonia was strongly recommended to repeat the survey and thus start a national health behaviour monitoring system. This was, indeed, accomplished, based on surveys every second year. Later on the monitoring was taken over by the developed Estonian National Institute for Health Development.

Second, the idea came up that this could take place also in the other Baltic States, and develop to a Finnish-Baltic collaboration. Joint meetings took place in Kaunas and in Riga. The first survey was carried out in Lithuania in 1994 and in Latvia in 1998.

During the initial joint meetings also the name "Finbalt Health Monitor" was invented as the name of this collaborative project. The collaboration has, indeed, been very good and fruitful. Responsible principle investigators and teams have been energetically working in all four countries.

In the early years, the Finnish National Public Health Institute (KTL) was able both professionally and materially to contribute to the project. This involved helping the meetings financially, some training and publication of the reports. From the very beginning it was felt important to keep high professional standard of the procedures and ensure good and comparable quality of the data.

In the early years, the implementation of the surveys in the post Soviet Union Baltic countries was faced with many big problems. The financial situation was very difficult, mail system was under major problems, there was big shortage of gasoline, the mail survey system was new and odd etc.

Over the years the project has brought about much useful data and experiences. The monitoring has been a strong basis for national health promotion, NCD prevention and public health – as expected. Numerous and international publications have been produced.

I want to thank everybody within the Finbalt group over the years for the very good, sincere and useful collaboration, and to congratulate for the great achievements. We are also grateful to the Ministries of Health of our countries for the support during these project years.

This 10-year report is a milestone document of this exciting, complicated and successful project that certainly is also a good example of successful international health collaboration. I want especially thank Dr. Ritva Prättälä who very soon after myself took over the overall coordination of the Finbalt project. And I want also to congratulate everybody who has contributed to this important publication.

Helsinki, 9 May 2011

Pekka Puska, Director General
National Institute for Health and Welfare – THL

Abstract

Ritva Prättälä, Satu Helakorpi, Noora Sipilä, Risto Sippola & Katri Sääksjärvi (Eds.). Social Determinants of Health Behaviours – Finbalt Health Monitor 1998–2008. National Institute for Health and Welfare (THL). Report 25/2011. 116 pages. Helsinki, Finland 2011.
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This study was carried out as a part of the Finbalt Health Monitor, a collaborative project between Estonia, Finland, Latvia and Lithuania. The purpose of the report is to describe ten-year trends and socio-demographic differences in smoking, alcohol consumption, food habits, physical activity, Body Mass Index and behaviours related to traffic safety, as well as, self-assessed health in Estonia, Finland, Latvia and Lithuania during 1998–2008.

Finbalt collaboration started gradually in the early 1990s. The data of this study originate from health behaviour surveys carried out in all Baltic countries and Finland every second year since 1998. The cross-sectional surveys are based on random samples from the national population registers. The survey questionnaire comprises of both questions shared with all countries and questions of local interest. The shared questions have been repeated in similar form in every survey.

The results indicate more similarities than differences in health behaviours between countries. Especially in regard to smoking, food habits and traffic behaviours the differences between Finland and the Baltic countries have diminished, as the behaviours have become healthier in the Baltic countries. Moreover, the countries seem to be approaching each other in regard to the socio-demographic patterns in health behaviours and self-reported health. This rapprochement is a significant progress, as the starting point of the Finbalt Health Monitor in the 1990s was the contrast in health conditions around the Baltic Sea, Finland showing increase and the Baltic countries decrease in life-expectancy.

There remain, however, several public health concerns that need effective action in all countries. The results do not show diminishing gender or socio-economic differences. The low educated are more often daily and passive smokers, eat less vegetables, are less physically active and assess their health less often as good compared to the higher educated. Daily smoking, frequent heavy episodic drinking and high volume of alcohol consumption are more common among men than women in all countries. In addition, women eat more vegetables, are less often overweight, and are more physically active while commuting compared to men.

The result of diminished differences between the countries is in line with the assumption that social, economic and political changes influence health behaviours. During the last decade all countries have experienced economic growth, identification to the Western European economies and adaptation of the national systems to the European Union, the process having however started earlier in Finland than in the Baltic countries. These changes might have had an effect on health behaviours through increases in material living standard, reforms in health care systems and integration in European health policies and health promotion.

Despite the positive overall picture of health behaviours, the results are alarming in regard to socio-economic and gender differences, high levels of alcohol consumption, increasing prevalence of overweight and obesity and insufficient physical activity. In order to tackle health inequalities in Estonia, Finland, Latvia and Lithuania, the countries should pay more attention to policy measures that improve chances for health-enhancing behaviours among men and lower educational groups.

Keywords: health behaviours, health, survey, socio-demographic differences, trends, Finland, Estonia, Latvia, Lithuania

Tiivistelmä

Ritva Prättälä, Satu Helakorpi, Noora Sipilä, Risto Sippola & Katri Sääksjärvi (toim.) Terveyskäyttäytymisen sosiaaliset määrittäjät – Finbalt Health Monitor 1998–2008. Terveyden ja hyvinvoinnin laitos (THL). Raportti 25/2011. 116 sivua. Helsinki 2011.
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Tämä tutkimus toteutettiin osana Suomen, Viron, Latvian ja Liettuan Finbalt Health Monitor -yhteistyöprojektia. Tutkimuksen tarkoitus on kuvata tupakoinnin, alkoholinkäytön, ruokatottumusten, liikunnan, painoindeksin, liikennekäyttäytymisen ja koetun terveyden muutoksia ja väestöryhmittäisiä eroja vuosina 1998–2008.

Finbalt-yhteistyö alkoi suomalaisten aloitteesta 1990-luvun alussa ja laajeni asteittain kaikkiin kolmeen Baltian maahan. Tämän tutkimuksen aineistona on käytetty Suomessa ja Baltian maissa vuodesta 1998 lähtien joka toinen vuosi tehtyjä terveyskäyttäytymiskyselyjä. Kyselyt pohjautuvat kansallisista väestörekistereistä poimittuihin otoksiin, ja aineisto on poikkileikkausaineisto. Kyselylomakkeeseen on kuulunut jokaisessa osallistujamaassa samanlaisena toistettuja kysymyksiä ja näiden lisäksi maakohtaisia kysymyksiä. Maille yhteiset kysymykset ovat pysyneet muuttumattomina jokaisella kyselykierroksella.

Tutkimustulosten mukaan maiden erot eri terveyskäyttäytymisen osa-alueilla ovat pienentyneet ja maiden kesken on nähtävissä nykyään enemmän samankaltaisuuksia kuin eroja. Erityisesti tupakoinnissa, ruokatottumuksissa ja liikennekäyttäytymisessä Suomen ja Baltian maiden väliset erot ovat kaventuneet, mikä juontuu käyttäytymisen muutoksesta terveellisemmäksi Baltian maissa. Tämän lisäksi väestöryhmittäiset erot terveyskäyttäytymisessä ja terveydessä ovat samankaltaistuneet. Tämä muutos on merkittävä edistysaskel, koska Finbalt Health Monitor -projektin lähtökohta 1990-luvun alussa oli terveydessä havaittu ero Baltian maiden ja Suomen kesken; Suomessa elinajanodote kasvoi ja Baltian maissa laski.

Vaikka terveyskäyttäytymisessä on tapahtunut edistystä, on osa tuloksista kansanterveyden näkökulmasta huolestuttavia. Kaikissa maissa havaittiin, että terveyskäyttäytymisen ja koetun terveyden sosioekonomiset ja sukupuolierot eivät ole pienentyneet. Matala koulutustaso on kaikissa maissa yhteydessä yleisempään tupakointiin, yleisempään ympäristön tupakansavulle altistumiseen, vähäiseen liikunnan harrastamiseen, vähäiseen kasvisten syöntiin ja huonompaan koettuun terveyteen. Miehet ovat naisia useammin tupakoitsijoita ja käyttävät alkoholia naisia runsaammin ja humalahakuisemmin. Naiset puolestaan syövät miehiä useammin kasviksia, ovat harvemmin ylipainoisia ja liikkuvat työmatkoillaan enemmän.

Maiden havaittu samankaltaistuminen on yhtäpitävä oletuksen kanssa, että sosiaaliset, taloudelliset ja poliittiset muutokset vaikuttavat terveyskäyttäytymiseen. Kahden viime vuosikymmenen aikana kaikissa maissa on koettu merkittävää talouskasvua, maat ovat identifioituneet syvemmin länsi-eurooppalaiseen markkinatalouteen ja sopeuttaneet kansallisia järjestelmiään Euroopan Unionin toimintaan, joskin prosessi on alkanut aikaisemmin Suomessa kuin Baltian maissa. Näihin muutoksiin kytkeytyvä elintason nousu, terveydenhuoltojärjestelmien kehitys ja eurooppalaiseen terveyspolitiikkaan ja terveydenedistämistoimintaan integroituminen on saattanut myötävaikuttaa terveyskäyttäytymisen parantumiseen.

Vaikka raportin antama yleiskuva terveyskäyttäytymisen muutoksesta on positiivinen, ovat tulokset sosioekonomisista ja sukupuolieroista, korkeasta alkoholinkulutuksesta, ylipainon ja lihavuuden lisääntymisestä sekä riittämättömästä liikunnan harrastamisesta hälyttäviä. Jotta terveyden eriarvoistumiseen voidaan vaikuttaa, on Suomen, Viron, Latvian ja Liettuan keskityttävä sellaiseen toimintaan, joka edistää erityisesti alempien sosioekonomisten ryhmien ja miesten terveyskäyttäytymistä.

Avainsanat: terveyskäyttäytyminen, terveys, kysely, sosioekonomiset erot, trendit, Suomi, Viro, Latvia, Liettua

Contents

1 Introduction

Noora Sipilä & Ritva Prättälä & the Finbalt group

Finland, Estonia, Latvia and Lithuania are geographically close (Figure 1) and have many cultural ties. However, the countries have gone through different stages of economic, social and public health development since the mid-20th century. Thus, the Baltic Sea region provides a unique opportunity for the study of any phenomena related to social changes.

The starting point of Finbalt Health Monitor project was the contrast in health conditions around the Baltic Sea in the early 1990s – the increase of life expectancy in Finland vs. decrease in the Baltic countries. The project focused on behavioral risk factors of non-communicable diseases because they are the major causes of mortality. In order to plan health promotion and disease prevention programs, information on health behaviours is necessary. Social changes may influence the health and lifestyle of individuals. Therefore, following trends in health behavior was considered important right from the start of the Finbalt Health Monitor project.

The origins of the Finbalt project are in the Finnish North Karelia project, a demonstration program for prevention of cardiovascular diseases (1). In the project various evaluation and information procedures were developed, one of which was a health behavior questionnaire. In 1978 the questionnaire was transferred to the national level because it was considered a useful instrument for health professionals and administrators to evaluate the effectiveness of national health policy and health promotion activities. Since then the national cross-sectional mail survey has been carried out every year by the National Institute for Health and Welfare (THL) (until 2009 National Public Health Institute, KTL).

In collaboration with the National Institute for Health and Welfare of Finland, the health behavior monitoring system was launched in Estonia in 1990 (2). The first survey coincided with a Finnish-Estonian smoking cessation program. In Lithuania the first national health behavior survey was carried out in 1994 (3), and thereafter, similarly to Estonia every second year. Latvia joined the project in 1997 (4). The survey was carried out simultaneously in all Baltic countries and Finland for the first time in spring 1998.

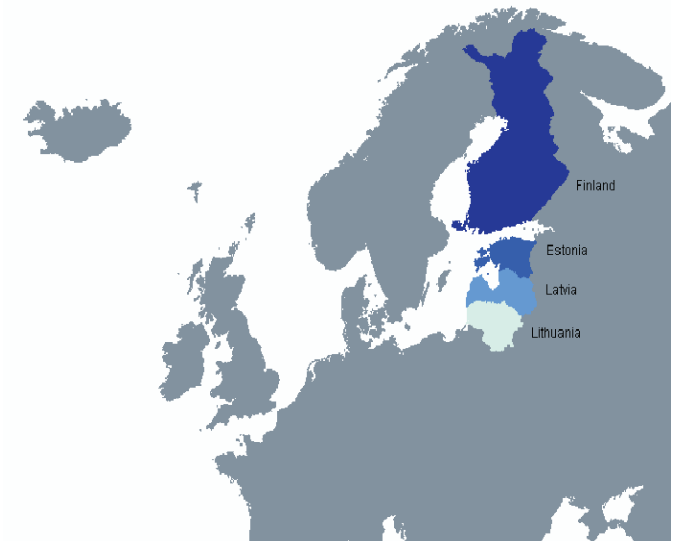

Figure 1. The Finbalt countries.

The purpose of this report is to describe the trends of health behaviours, Body Mass Index (BMI), self-assessed health, and traffic safety and their socio-demographic differences in Estonia, Finland, Latvia, and Lithuania in 1998–2008. The main questions to be answered are: has the prevalence of health behaviours changed in any country and are there socio-demographic differences in regard to health behaviours, health and BMI? The trends will be interpreted in the light of socio-economic and public health situation in the participating countries. The result chapters are dealing with trends and socio-demographic variation of smoking, alcohol consumption, food habits, physical activity, BMI, behaviours related to traffic safety and self-assessed health.

1.1 Social, political and economic background

Finland and the Baltic countries have all a long history of being between the Eastern and Western Europe. The Baltic Sea has provided an important economic and cultural link between the countries. The countries are influenced by both the Scandinavian and the Central European culture and politics, and also by Anglo-American ideologies. All countries have also historical ties with Russia and the Soviet Union. Trade and politics, as well as linguistic relations and religions, have all contributed to the interaction between the countries.

Finland reached independence from Russia in 1917 and was identified with Western economy, culture and everyday life. After World War II Finland experienced a rapid transition from an agrarian society into a modern Scandinavian welfare state. Integration of Finland with other European countries strengthened when Finland joined the EU in 1995 and the European Monetary Union in 1998. In 2002 Finland changed over to use the euro as the official currency. At the beginning of the 1990s Finnish economy suffered a major economic recession. The overall economic situation started to improve in 1994 and since the beginning of the 21st century, there has been a rapid growth in national economy (5).

All the Baltic countries had a period of independence between 1920 and 1940; thereafter they were incorporated into the Soviet Union. After World War II the centralized Soviet rule led to reorientation of the economic structure. Industrial plants reshaped the economy, in particular in Estonia. Lithuania remained more agricultural than the other two Baltic countries. Lithuania became independent in 1990, Estonia and Latvia in 1991. The process of political, economical and cultural transition proceeded in a different manner in each Baltic country in the 1990s. Estonia proceeded further than the other two, at least in the reform of the economy. In Estonia and Latvia, the establishment of market economy pushed social policy issues aside. The process in Lithuania was less dramatic and more emphasis was laid on social security (6).

In 2004 the integration of Estonia, Latvia and Lithuania with Western economics and politics went forward as the countries became members of the EU and the North Atlantic Treaty Organization (NATO). The process of entering these organizations as well as the financial support received especially from the EU has advanced the economic and political change of the societies (7). During the last ten years all the Baltic countries have experienced constant economic growth, although recently there have been signs of decreasing economic activities and growing inflation rates (7, 8).

Despite the rapid economic growth in the Baltic region the material living standard still differs between Finland and the Baltic countries. In Finland the real gross domestic product (measured in PPP$) was about three times higher than in the Baltic countries in the middle of 1990s. However the relative gap between countries has decreased during the last decades (9) (Figure 2).

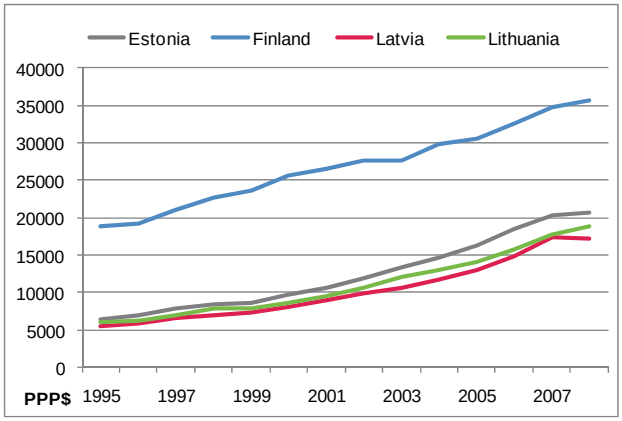

Figure 2. Real GDP in PPP$ in Estonia, Finland, Latvia and Lithuania in 1995–2008[1] (9).

1.2 Public health

Non-communicable diseases are one of the main concerns of public health in all Finbalt countries. Cardiovascular diseases are the leading cause of death in every country; they account from 40% (in Finland) to approximately 50% (in the Baltic countries) of all deaths (7, 10–13). As seen in the Figure 3, the overall mortality from cardiovascular disease has been at a lower level in Finland during past 20 years compared to Baltic countries, even though all Baltic countries show a decrease in cardiovascular mortality since the peak in the mid-1990s (9).

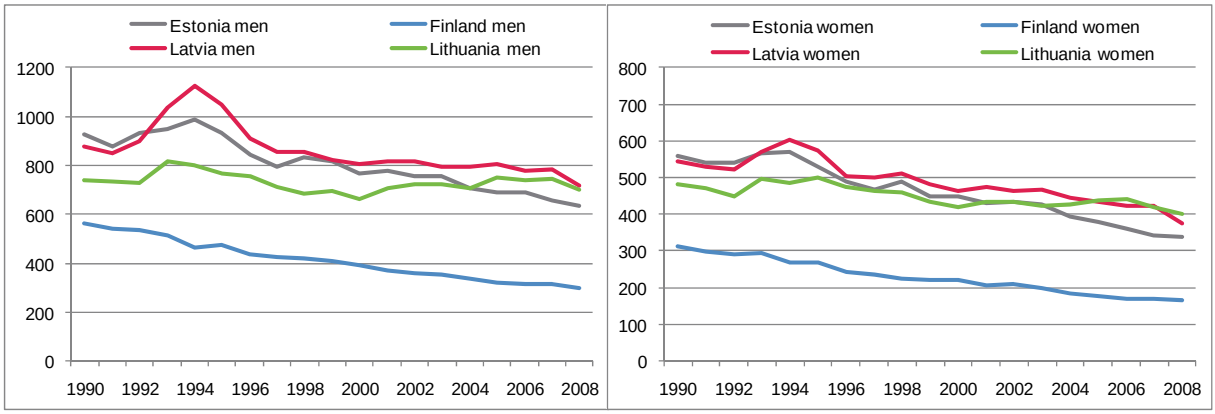

Figure 3. Age-standardised death rate for diseases of the circulatory system per 100 000 persons in Estonia, Finland, Latvia and Lithuania in 1990–2008 in men and women (9).

Cancer is the second most common cause of death in all four countries, and it constitutes approximately one fifth of all deaths in every country (7, 10–13). Similarly to the diseases of the circulatory system, the cancer mortality is higher in the Baltic countries than in Finland, especially among men (Figure 4). In addition, the death rate of cancer has been decreasing in Finland, in particular within men since 1990s whereas the cancer mortality in the Baltic countries has been more volatile (9).

[1] "GDP expressed in purchasing power parity (PPP) is adjusted to the relative domestic purchasing power of the national currency as compared to the US dollar, rather than using the official exchange rate. Multipliers (PPPs) are estimated periodically, using the cost of the standard basket of goods". (9).

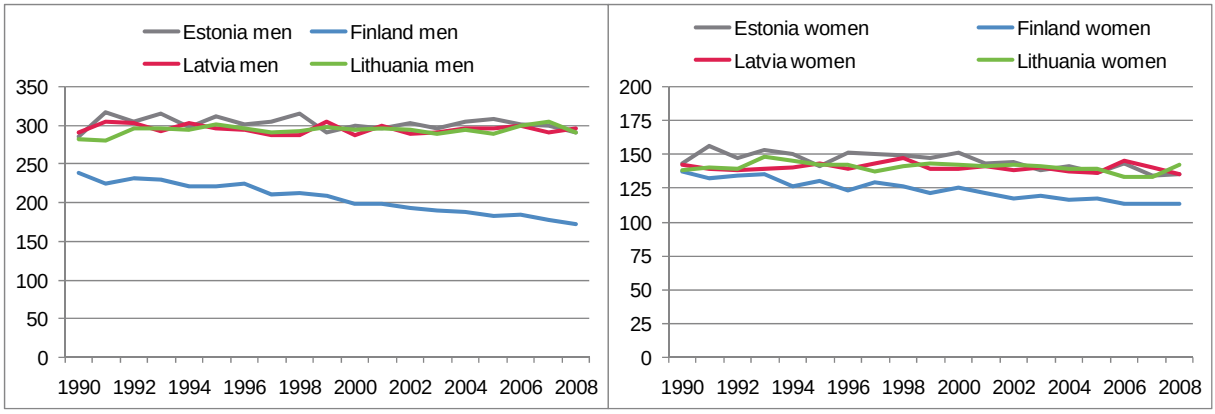

Figure 4. Age-standardised death rate for malignant neoplasms per 100 000 persons in Estonia, Finland, Latvia and Lithuania in 1990–2008 in men and women (9).

Alongside with cancer and cardiovascular diseases, accidents, alcohol-related causes, suicides and other external causes of death are one of the main factors of mortality in Finland and the Baltic countries (7, 10–13). The death rate of external causes has been decreasing substantially in all Baltic countries since the sharp increase in the mid-1990s but only Estonia and Latvia have reached a level lower compared to the one at the beginning of the 1990s (Figure 5). In Finland the decline in mortality from external causes has been more modest but the overall level of mortality has been at a lower level compared to the Baltic countries during the last decades.

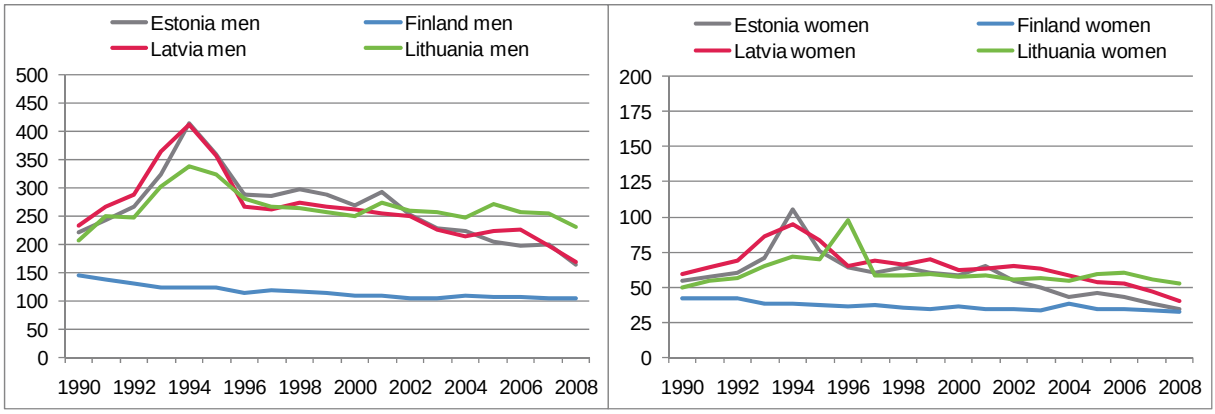

Figure 5. Age-standardised death rate for external causes of death per 100 000 persons in Estonia, Finland, Latvia and Lithuania in 1990–2008 in men and women (9).

Major part of non-communicable diseases is caused by few risk factors closely linked to unhealthy lifestyles and unfavourable physical and social environments. Smoking, excessive use of alcohol, unhealthy nutrition, lack of physical activity, obesity, and high blood pressure or cholesterol are the main threats to healthy life expectancy in most industrialized countries (14, 15).

Health behaviours are a major public health issue, as they have been shown to act as mediating factors between poor socio-economic situation and poor health alike excess mortality (16, 17). In the Baltic countries, socio-economic mortality differences are larger than the European average. In Finland mortality differences by socio-economic position are below the European average but far from the lowest in Europe (16).

Smoking

Smoking is one of the most important behaviours affecting health: it is associated with increased risk of mortality and morbidity from several cancers, cardiovascular diseases and chronic respiratory disease (15). In all the Finbalt countries there is a clear educational gradient in smoking: daily smoking is more prevalent within less educated. Also gender differences are clear: men smoke everywhere more often than women, however the relative gap between men and women is smallest in Finland (18).

Measures aiming to reduce overall smoking and especially smoking among people with low socio-economic status are important. Lithuania has instituted comprehensive tobacco control legislation since regaining independence. These efforts have included e.g. the law on tobacco control, total ban on tobacco advertising, smoking ban in the bars and restaurants and other enclosed spaces, the ratification of WHO Framework Convention on Tobacco Control (FCTC), excise tax increase, ban on tobacco advertising, and smoking ban in the bars, restaurants and other enclosed spaces and excise.

Estonian tobacco legislation was amended in 2007 and it is now in compliance with the relevant EU law. Estonian tobacco legislation prescribes stricter requirements to the packaging, sales, sales promotion and sponsorship of tobacco products.

In Latvia the law on tobacco control was introduced in 1997 and the National multisectoral coordinating body for tobacco control has excisted since then. Latvian coalition on smoking control was established in 2004, when it also became a member of European Network for Smoking Prevention (ENSP) as Latvia joined the European Union. Since then the Latvian coalition on smoking control has been e.g. promoting activities in tobacco control, creating an information system about the consequences of tobacco use, supporting and promoting the implementation of WHO Framework Convention on Tobacco Control (FCTC), promoting smoke free environment and monitoring tobacco industry activities. Several strengthening requirements regarding tobacco sales, a ban of advertising, restrictions in packaging and smoke-free public and work places has been added to the initial antitobacco law step by step following international movement of FCTC and regulations of the EU.

In Finland the aim of the new Tobacco Act (entered into force in 2010) is to put an end to the use of tobacco products. The objective is especially to prevent children and young people to take up smoking. Strict legislative measures complement earlier restrictions: smoking prohibitions are now e.g. expanded in facilities used by children and adolescents, the joint facilities of apartment house companies, outdoor events and hotel rooms (19).

Alcohol consumption

The excessive use of alcohol increases largely the burden of diseases: it is a risk factor for several cancers and cirrhosis of the liver. In addition, alcohol dependence is a disorder in itself. Furthermore, alcohol use is a notable mediator for injuries, violence and accidental deaths. Both patterns of drinking and drinking volume are relevant to health (15).

Finland and the Baltic countries have traditionally thought to represent Northern European drinking pattern characterized by drinking spirits, episodic binge drinking and non-everyday drinking (20). In addition, drinking habits follow a socio-demographic pattern in the Finbalt countries: frequent drinking has found to be more common among the highly educated, young people and those living in urban areas whereas binge drinking is more prevalent among the low-educated and in some part among young people (21).

Finland and the Baltic countries differ by their alcohol control policy. The Baltic countries lay in the middle group in the European alcohol control policy comparison, whereas Finnish alcohol policy is among one of the strictest (22). Estonian National Alcohol Policy focuses on two issues: youth alcohol consumption and alcohol related accidents and violence. In Lithuania the National Programme for Alcohol Control and the Law on Alcohol Control aim at reducing alcohol consumption, accessibility and harm for society. In Latvia the Program for Reduction of Alcohol

Consumption and Restriction of Alcohol Addiction aims at reduction of absolute alcohol consumption per capita to less than 6 litres per year, especially among young people and at reduction of alcohol related road accidents and criminal offences. Law on turnover of alcoholic beverages (2004) contains restrictions on the sells of alcoholic beverages and limitations on alcohol advertising.

Finnish alcohol policy is based on strict control of the availability, extensive state monopoly on production and high prices. However, in 2004 the excise duty rates for alcohol were lowered and alcohol prices decreased. The aim of the weakening of alcohol policy was e.g. to curb the travellers' alcohol imports from Estonia and to maintain the tax base of alcohol and jobs in alcohol industry. Negative public health consequences of the policy change have been observed, as alcohol-related harms, such as liver disease deaths, have increased especially among the worst-off parts of the Finns. (23).

Unhealthy food habits, physical inactivity and overweight

Unhealthy food habits, e.g. use of sugar and saturated fats, together with physical inactivity are severe risk factors to obesity and to several non-communicable diseases e.g. coronary heart disease and type 2 diabetes (15). All Finbalt countries have issued recommendations for nutrition and food consumption to reduce the risk of preventable chronic and diet-related diseases.

The National Food and Nutrition Strategy was approved by the Government of Lithuania in 2003 in order to reduce the prevalence of diet-related diseases and to improve population health. Estonian Nutrition and Food Recommendations were issued in 2006 and they pay attention e.g. to the curbing of excessive use of food supplements that has emerged as a new issue among individuals with higher income in developed societies. In Latvia the National Food and Nutrition Strategy was approved by the Government in 2003. The Latvian nutrition recommendations were issued by the Ministry of Health for different age groups in 2003–2008. The Finnish nutrition recommendations were renewed in 2005 and they are consistent with the new Nordic Nutrition Recommendations approved in 2004. The new Finnish recommendations include also physical activity. (24).

Food habits have developed to a healthier direction in the Finbalt countries and the dietary behaviour has become closer to recommendations (25–27). However, there remain clear differences in food habits between socio-economic groups in each country: the highly educated consume healthier food compared to the low educated, even though countries differ in the consistency of the social gradient (28).

Despite the favourable changes in food behaviour, overweight remains an important public health concern in Finland and the Baltic countries: approximately half of the adult population in each country is either overweight or obese (29). Obesity has shown to be associated consistently with older age in both genders in the Finbalt countries. In addition, the low level of education has proven to associate with more prevalent obesity, especially among women in each country (29).

One of the main reasons behind the obesity epidemic worldwide is the imbalance between energy intake and physical activity level (30). Regular physical activity has many health effects: it reduces the risk of many non-communicable diseases e.g. cardiovascular diseases and diabetes by improving glucose metabolism, reducing body fat and lowering blood pressure (15). Hence, the health risk caused by physical inactivity is substantial (31).

Large part of the population in the Baltic countries does not meet the recommendations of sufficient everyday physical activity (32) and physical inactivity is a public health concern also in Finland. The frequent participation in physical activity is, however, more common in Finland, as two thirds of Finns exercise 2–3 times a week or more compared to one third of Estonians and Lithuanians (33). There is evidence that leisure-time physical inactivity and other unhealthy behaviours cluster (32), which can lead to substantial differences in health among population.

Public health care systems

The public health care is an important part of the public health system together with disease prevention and control, prevention programs, health protection and health monitoring. Both in Finland and in the Baltic countries health care services are mainly publicly organized. The health care systems of the Baltic countries have experienced large reforms since the re-independence at the beginning of 1990s. Reforms have reshaped the whole health care system: they have included e.g. decentralization, privatization, restructuring of the health services, new financing models, introduction of a health insurance system, implementation of a general practitioner or family medicine model and harmonization of legislation in order to meet with European Union standards (7, 8, 34, 35).

Despite the rapid change and development of the health care systems in the Baltic countries there still remain several challenges e.g. the lack of human resources in the health care sector (7), the deficient overall access to the health care services especially among low income-groups, and strong reliance of health care financing on out-of-pocket money (7, 8). In Finland there have not been major reforms of the health care system since 1997. At the beginning of the 1990s Finnish health care was influenced by severe economic recession, the state subsidy reform in 1993 and the membership of the European Union. The recent challenges to the health care system are growing number of older persons and pressure for cost containment. (5).

1.3 Studies related to Finbalt Health Monitor

The Finbalt Health Monitor project has provided a rich and profitable data source for researchers interested in public health issues. The data have been utilized successfully in several studies published in internationally refereed publications. Internationally published studies have mainly focused on particular health behaviours or health issues e.g. smoking (18), alcohol consumption (21), food habits (28), physical activity (36), obesity (29) and self-reported health (37).

The previous studies based on the Finbalt data have demonstrated some rapid changes in health behaviours in the Baltic countries. However, gender and socio-economic differences seem to have been rather stable over time. Generally, women and higher socio-economic groups have healthier behaviours than men and the lower socio-economic groups.

In addition to the international publications the data have been used widely in national level: several studies have been published in nationally refereed publications together with the national basic reports of each survey round. The data on health behaviour have been included in the statistical yearbooks of the Baltic countries and the data have been used for evaluation of national health programmes and strategies. In addition, the data have been used regulary in PhD dissertations and in Master and Bachelor theses in each country. The complete list of the Finbalt Health Monitor related publications can be found on the website of the project[2].

Despite the large scale of Finbalt Health Monitor related publications the data have been used scarcely for the long term trend analyses of several health and health behaviour indicators. This report is the first one to analyze systematically ten-year trends and socio-demographic patterns in the four Finbalt countries. Each result chapter focuses on one domain of health behaviour or health: smoking, alcohol consumption, food habits, physical activity, overweight and obesity, traffic safety and self-assessed health. In order to provide a general picture of changes and variation, the same analytical strategy has been followed throughout the report. In each result chapter we present first the overall trends among men and women whereafter the educational and rural-urban differences will be described.

[2] The website of the project is found on: www.thl.fi/finbalt

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2 Material and methods

Satu Helakorpi & Risto Sippola & the Finbalt group

2.1 Data collection

The nationally representative cross-sectional postal surveys of the Finbalt Health Monitor project have been carried out every second year in Estonia, Finland, Latvia, and Lithuania. The project began in 1990 in Estonia and Finland. Lithuania joined in 1994 and finally Latvia in 1998. The target population of the surveys has consisted of a random sample of the Estonian population aged 16–64, the Finnish population aged 15–64, the Latvian population aged 15–64 and the Lithuanian population aged 20–64. The samples have been drawn from the national population registries of the respective countries. The response rates in the surveys have varied between 59% and 68% in Estonia, between 64% and 70% in Finland, between 51% and 80% in Latvia, and between 59% and 74% in Lithuania (Table 1). The response rates have decreased over the years in Estonia, Finland and Latvia since 2002.

Table 1. Sample size (n), number of respondents (n) and eligible response rates (%) in the surveys of the Finbalt Health Monitor project in 1998–2008.

	Estonia [1]	Finland[2]	Latvia[3]	Lithuania[4]
1998				
Sample size (n)	2000	5000	3002	3000
Respondents (n)	1362	3505	2318	1874
Response rate (%)	68	70	77	61
2000				
Sample size (n)	2000	5000	3000	3000
Respondents (n)	1376	3468	2400	2195
Response rate (%)	68	70	80	74
2002				
Sample size (n)	2000	5000	3000	3000
Respondents (n)	1338	3259	2029	1883
Response rate (%)	67	65	68	64
2004				
Sample size (n)	5000	5000	3000	3000
Respondents (n)	3074	3369	1798	1822
Response rate (%)	63	68	60	62
2006				
Sample size (n)	5000	5000	3000	3000
Respondents (n)	2867	3255	1584	1739
Response rate (%)	59	65	55	59
2008				
Sample size (n)	5000	5000	3000	3000
Respondents (n)	3004	3216	1522	1763
Response rate (%)	62	64	51	61

1 age range 16–64 years, stratified sample and crude response rate in 1998–2002.
2 age range 15–64 years.
3 age range 15–64 years and stratified sample.
4 age range 20–64 years.

The questionnaire, mailed between April and June (except in Latvia in 2006, mailed between September and December), with one to three reminders, has remained essentially unchanged over the study years. In Finland the questionnaire has been in Finnish or Swedish and in Estonia and Latvia it has been in Estonian, Latvian or Russian, except in 2002 in Estonia where only Estonian questionnaires were sent with short Russian introduction. In Lithuania only the questionnaire in Lithuanian has been used. To obtain maximal comparability between the participating countries, the methodology and questionnaires used in the surveys have been harmonized, though there have been some modifications in the sampling method. Since 1998 all countries have followed the common Finbalt Heath Monitor protocol and procedures to conduct the survey (1).

Before every Finbalt monitoring survey an English version of the questionnaire has been prepared and agreed on in project meetings involving experts from all participating countries. In the project group there are medical, nutritional and social science researchers, as well as health administrators. The working language of the team is English.

When planning the English version, the project steering committee has decided on the importance of each question to the system: the questions habe been collectively classified into "obligatory", "recommended" or "optional". The obligatory questions deal with socio-demographic background, health (health services, diseases, self-rated health), smoking, food habits, height, weight and physical activity.

In all countries there are ethnic groups that do not speak the main language of the country. Efforts have been made to allow respondents to answer in their native language. In Finland the languages are Finnish and Swedish; the Swedish-speaking Finns have been identified on the basis of the population register. In modifying and translating the Finnish questionnaire suitable for the Baltic countries, detailed face to face discussions in the project team have been the most effective way to avoid misinterpretations. Translation procedures have not been completely identical in each country and professional translators have not been used in all cases. The original Finnish questions were first translated into English by the Finnish researchers. The first Estonian and Russian translations were made as teamwork by the Estonian and Finnish researchers, later translation-back-translation procedures have been adapted. In Lithuania the English version has been translated by two independent translators into Lithuanian. Both translations have been analysed by a third person, after which an agreement of the final version of the questionnaire has been achieved.

The questionnaire has contained about 100 questions. The shared part of the Finbalt Health questionnaire has had about 70 questions. Additionally, each of the participating countries has included questions of local interest. The self-administered questionnaire has included questions on the following main topics: 1) socio-demographic characteristics (gender, year of birth, marital status, nationality, place of residence, number of children, education, occupation), 2) health services and health status (frequency of visiting a physician and dentist, blood pressure and blood cholesterol testing, self-rated health, chronic disease, symptoms, use of medication), 3) health behaviour (smoking, food habits, physical activity, alcohol consumption), 4) changes in health behaviour (reported change, attempts to change, advice to change) and 5) recognition of health promotion programs and participation in them.

2.2 Subjects

The analyses of this report deal with the 20–64-years-old respondents of the surveys carried out every even year between 1998 and 2008. The socio-demographic background variables used in the analysis were: gender, age, education and level of urbanization. The detailed description of subjects is given in the Table 2.

2.3 Study variables

Background variables

The background variables are included in the analysis in order to describe the variation in health and health behaviour in all four countries. Moreover, they should be reliable, comparable and measurable in each country in the study period. Following these principles, gender, age, education and the level of urbanization were used as background variables in the analyses. Age was aggregated to 15-year age groups: 20–34, 35–49 and 50–64. In all countries education has been measured as the total number of self-reported school years.

For the analyses the school years were divided into two groups: the lower educational group comprised those who had studied none to 13 years, and the higher educational group those who had studied 14 years or more. The study year 1998 in Latvia and 2004 in Estonia make exceptions: 2004 in Estonia the lower education group comprised those who had studied 0–12 years and the higher educational group those who had completed at least vocational or academic education, because the total number of self-reported school years was missing for this year. 1998 in Latvia lower educational group comprised those who had primary, secondary or vocational education and the higher education group those who had studied in the university.

In all four countries the level of urbanization was based on an administrative classification of the residence of the respondent. Each country has been divided into two categories according to urbanization: metropolitan centre and the other part of the country. In Estonia and Latvia the metropolitan centre included the capital city area, in Finland the province of Uusimaa, and in Lithuania five largest Lithuanian cities.

Variables of health behaviours

The variables used for trend examinations of health behaviours and health were: 1) daily smoking and passive smoking 2) daily consumption of fresh vegetables, use of butter or mixture of butter and oil on bread, use of vegetable oil and margarine in cooking, frequent consumption of meat and meat products 3) moderate to heavy drinking and heavy episodic drinking, 4) leisure-time and commuting physical activity, 5) Body Mass Index 6) good self-rated health and 7) use of reflector, use of seat belt and driving under the influence of alcohol. A detailed description of the variables is given in each chapter of this report.

Table 2. Characteristics of the data in the Finbalt Health Monitor surveys.

	Men (%)						Women (%)					
	1998	**2000**	**2002**	**2004**	**2006**	**2008**	**1998**	**2000**	**2002**	**2004**	**2006**	**2008**
AGE												
Estonia												
20–34	33.9	32.9	33.7	36.8	34.3	32.7	30.6	30.7	30.9	30.8	31.8	33.9
35–49	38.3	34.9	34.7	33.3	31.7	35.2	38.0	34.8	35.2	33.2	33.4	32.5
50–64	27.8	32.1	31.6	29.9	34.0	32.2	31.4	34.4	33.9	36.0	34.8	33.7
Total (n)	528	495	484	1186	1009	1160	695	735	719	1595	1576	1598
Finland												
20–34	30.0	26.7	27.5	27.5	23.6	24.2	30.7	31.1	29.3	28.8	28.8	27.4
35–49	34.9	39.7	34.0	34.1	35.7	32.5	37.8	35.0	36.6	35.3	33.5	33.0
50–64	35.1	33.6	38.5	38.4	40.8	43.3	31.6	33.9	34.1	35.8	37.7	39.6
Total (n)	1551	1440	1365	1382	1346	1275	1647	1748	1603	1675	1634	1694
Latvia												
20–34	39.1	36.4	38.3	35.1	34.5	34.5	34.5	31.4	33.9	30.6	30.2	29.7
35–49	32.4	36.2	35.5	33.5	35.2	30.7	34.2	34.9	32.2	34.5	33.2	34.0
50–64	28.4	27.3	26.2	31.4	30.3	34.8	31.3	33.7	34.0	34.9	36.5	36.3
Total (n)	928	922	775	647	614	566	1159	1218	1013	932	810	818
Lithuania												
20–34	36.0	35.2	30.1	29.9	29.6	29.9	33.4	32.3	31.9	32.1	31.8	28.9
35–49	36.0	38.1	40.4	39.4	39.6	40.5	37.0	38.3	42.6	37.0	34.3	37.1
50–64	28.0	26.6	29.6	30.7	30.8	29.6	29.6	29.4	25.6	30.9	34.0	34.0
Total (n)	820	991	835	775	723	726	1050	1199	1045	1030	1016	1005
EDUCATION												
Estonia												
low	75.9	69.8	76.1	85.2	64.0	66.4	65.2	62.5	63.6	77.7	56.2	50.6
high	24.1	30.2	23.9	14.8	36.0	33.6	34.8	37.5	36.4	22.3	43.8	49.4
Total (n)	514	484	469	1180	984	1107	687	718	703	1584	1509	1540
Finland												
low	69.7	67.0	64.6	63.5	63.8	59.2	60.7	53.7	54.1	50.7	46.9	45.8
high	30.3	33.0	35.4	36.5	36.2	40.8	39.3	46.3	45.9	49.3	53.1	54.2
Total (n)	1523	1414	1333	1357	1329	1256	1620	1727	1568	1654	1615	1656
Latvia												
low	81.3	66.3	67.0	57.1	66.1	67.5	76.4	54.4	52.2	47.1	55.6	51.9
high	18.7	33.7	33.0	42.9	33.9	32.5	23.6	45.6	47.8	52.9	44.4	48.1
Total (n)	918	892	758	618	599	554	1149	1179	990	910	790	806
Lithuania												
low	73.2	75.5	59.9	66.8	65.7	56.2	61.2	63.0	51.7	54.7	52.3	39.7
high	26.8	24.5	40.1	33.2	34.3	43.8	38.8	37.0	48.3	45.3	47.7	60.3
Total (n)	796	961	820	756	703	719	1026	1178	1036	1009	989	987
LEVEL OF URBANIZATION												
Estonia												
metropol.	28.5	29.8	25.7	23.9	23.5	25.0	30.5	29.7	28.4	27.8	27.2	31.2
other	71.5	70.2	74.3	76.1	76.5	75.0	69.5	70.3	71.6	72.2	72.8	68.8
Total (n)	520	493	483	1186	1009	1160	686	731	714	1595	1576	1598
Finland												
metropol	25.6	23.8	23.7	25.5	24.9	26.7	25.3	26.0	26.7	26.4	29.4	26.5
other	74.4	76.2	76.3	74.5	75.1	73.3	74.7	74.0	73.3	73.6	70.6	73.5
Total (n)	1551	1440	1365	1382	1346	1275	1647	1748	1603	1675	1634	1694
Latvia												
metropol.	29.0	26.8	27.5	28.7	28.2	29.2	30.0	31.8	31.0	32.2	30.1	30.9
other	71.0	73.2	72.5	71.3	71.8	70.8	70.0	68.2	69.0	67.8	69.9	69.1
Total (n)	928	922	775	647	614	566	1159	1218	1013	932	810	818
Lithuania												
metropol.	41.6	40.3	53.1	36.1	44.5	45.4	47.2	44.5	56.2	41.5	43.9	50.5
other	58.4	59.7	46.9	63.9	55.5	54.6	52.8	55.5	43.8	58.5	56.1	49.5
Total (n)	820	991	835	775	722	725	1050	1199	1045	1030	1015	1003

2.4 Analyses of the data

The Finbalt data consist of Estonian (1990−2008), Finnish (1990−2008), Latvian (1998−2008) and Lithuanian (1994–2008) data. The data have been combined from year 1998 to 2008 with harmonized variable names and coding. The harmonization process consisted mainly of recoding the variables but also included combination of variables and harmonization in the handling of missing data.

To enhance our knowledge of the data, basic tables of the harmonized variables were made for each country separately for men and women[1]. Dichotomized indicators were constructed on the basis of information gained from these tables and by knowledge gathered from previous studies. These indicators are a simple representation of health behaviours that are easy to interpret. Further analysis was decided to be based on these indicators and to be done separately for men and women.

The main objective of the analysis is to compare changes of health behaviours by background variables in time for each country separately. Also pooled representations of the whole study period were made to confirm the differences between background variable groups by increasing study population in the subgroups in case where there was not enough statistical power and the differences did not change in time. The differences between countries were set to be secondary objects and therefore in cases where health behaviour questions vary between countries or study years the indicators have been made so that the comparability in time is better than between countries.

2.5 Statistical methods

Binomial proportions were calculated to estimate the prevalence of people living up to the different criteria of healthy/unhealthy behaviour. As known from previous studies the association between time and each indicator of health behaviour is not linear in most cases. Therefore 95% confidence intervals were used to analyze the differences during the study period and between countries so that each time point and country could be compared to another.

To handle the effect of different age distributions among countries and time points, directly age standardized proportions were also calculated. The 5-year age group standardization was made separately for men and women. The age distribution of Europe in 1995–2000 by gender was used as age distribution of standard population (2).

The exact binomial 95% confidence intervals were used in non standardized proportions and normal approximation was used in calculation of 95% confidence intervals for standardized proportions. All the analysis were made using SAS version 9.1.

[1] Basic tables are available as a pdf document on http://www.thl.fi/finbalt.

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3 Smoking

Jurate Klumbiene & the Finbalt group

3.1 Introduction

Smoking is the most important preventable risk factor for a great number of diseases, e.g. cardiovascular diseases, chronic obstructive pulmonary disease and cancer. The large inequalities in smoking are important causes of socioeconomic inequalities in health in many European countries (1, 2).

The exposure of non-smokers to tobacco smoke is referred to as passive smoking or involuntary smoking or second-hand smoking. Almost a half of the world's children are exposed to tobacco smoke, the majority of them at home (3). Globally, about one third of adults are regularly exposed to second-hand tobacco smoke (4). Passive smoking causes a variety of adverse health effects in non-smokers.

3.2 Methods

In our surveys the smoking status of the respondents was obtained using the following questions: 'Have you ever smoked?', 'Have you ever smoked at least 100 times?', 'Have you ever smoked regularly/daily (i.e. almost every day for at least one year)?' and 'When did you last smoke?' The analysis of daily smoking involved the respondents who had smoked regularly/daily for at least one year and who indicated having smoked during the day of filling in the questionnaire or day before it.

Passive smoking at home was measured by asking whether somebody smoked at home. The prevalence of passive smoking at home was analyzed among non-smoking population in each country. The age-standardized prevalence rates were used for the analysis.

3.3 Daily smoking

During the period 1998–2008 men were more often daily smokers than women in all Finbalt countries (Fig. 1). This gender difference in smoking was smallest in Finland and largest in Lithuania.

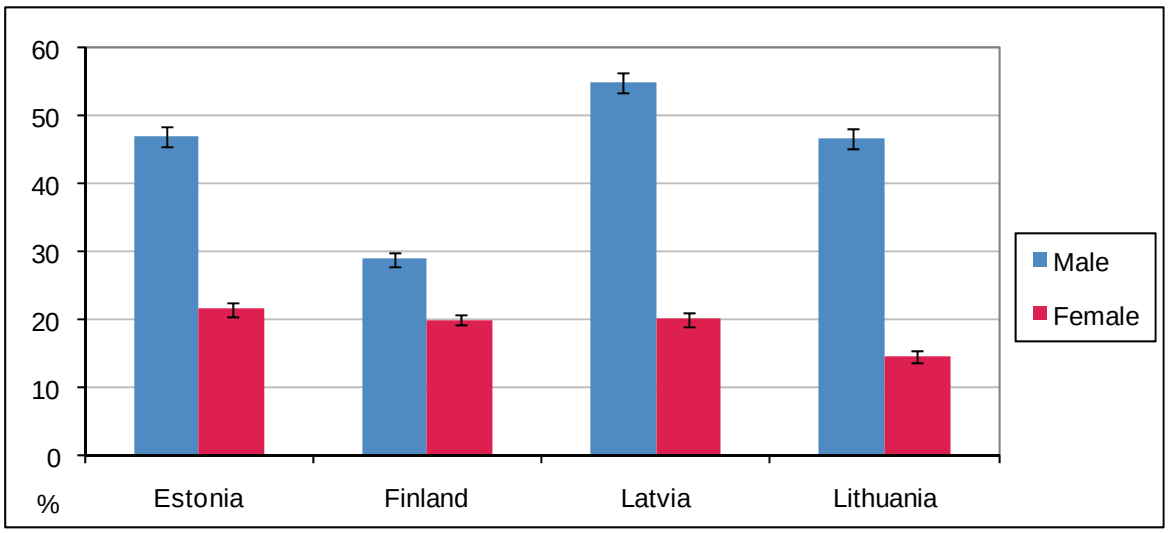

Figure 1. Age-standardized prevalence of daily smoking among men and women, all study years from 1998 to 2008 pooled together, (%).

The age standardized prevalence of daily smoking among men was the highest in Latvia (55%, 95% CI: 53–56) and the lowest in Finland (29%, 95% CI: 28–30). Among women it was the lowest in Lithuania (15%, 95% CI: 14–16).

Over the period of ten years the most significant decrease in the prevalence of daily smoking among men was found in Lithuania: from 51% (95% CI: 48–55) in 1998 to 39% (95% CI: 35–42) in 2008 (Fig. 2). In Latvia and Estonia the decline was not statistically significant. However, in Estonia a slight increase in smoking prevalence between 1998 (47%, 95% CI: 43–52) and 2004 (53%, 95% CI: 50–56) was followed by significant decrease in 2008 reaching 42% (95% CI: 39–45). In 2008 Finnish men smoked less than in 1998: 26% (95% CI: 23–29) and 32% (95% CI: 30–35) respectively.

The data in the Figure 3 demonstrate the trends in age-standardized prevalence of daily smoking among women in the Baltic countries and Finland. The proportion of smoking women remained stable in all countries. In 2008 approximately every fifth women smoked daily in these countries.

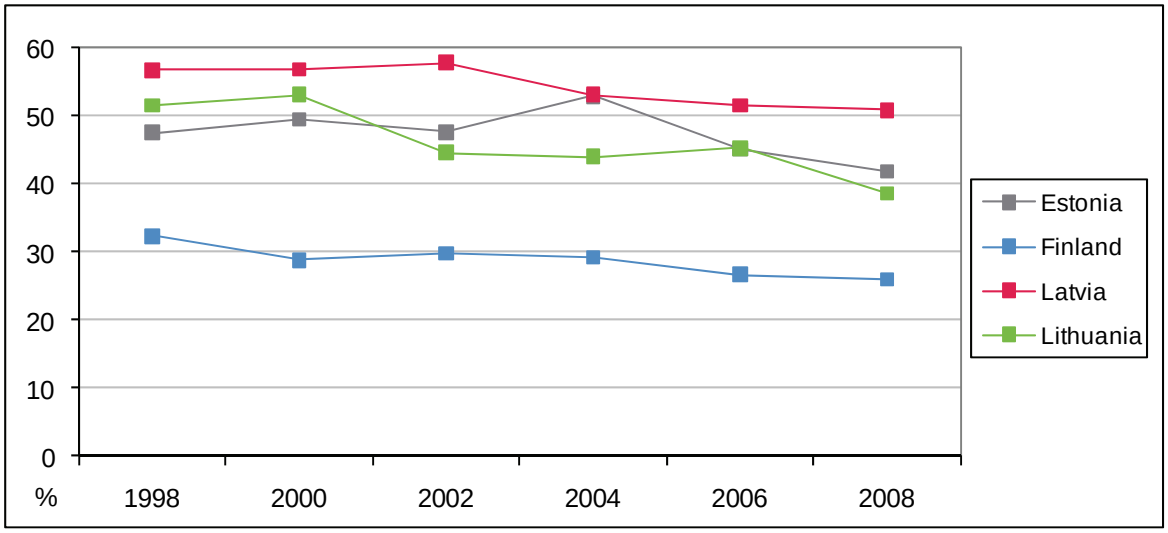

Figure 2. Trends of age-standardized prevalence of daily smoking among men from 1998 to 2008, (%).

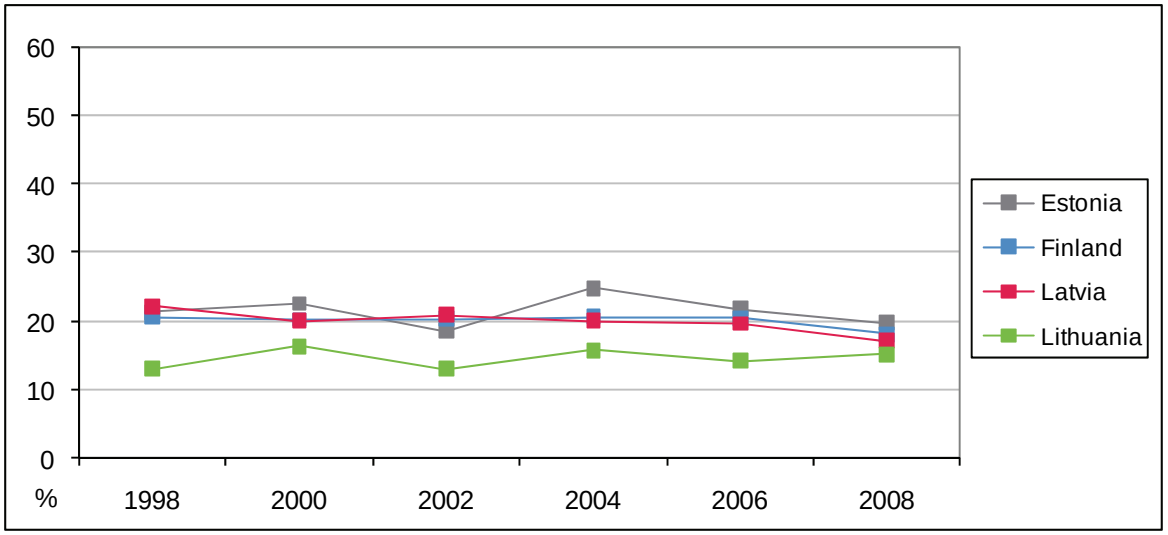

Figure 3. Trends of age-standardized prevalence of daily smoking among women from 1998 to 2008, (%).

The age differences in daily smoking were similar in all countries, the prevalence being higher for participants aged 20–34 and 35–49 compared to the participants aged 50–64 in both genders (Fig. 4–5). Although the tendency of the decrease in the prevalence of daily smoking among men was found in all age groups in all countries, a statistically significant decline was estimated only among men aged 35–49 in Finland and in Lithuania. Over the ten years the age differences in daily smoking among men disappeared in all countries, except in Lithuania, where middle aged men smoked most frequently in 2008. In 1998 the oldest women smoked least often in all four countries. Because of the systematic but not significant decrease in the prevalence of daily smoking in the youngest age group in Estonia, Finland and Latvia and no changes of it among the older women, the age differences of daily smoking among women in these countries disappeared in 2008. Over the study period the prevalence of daily smoking among the elderly women has increased in Lithuania from 5% (95% CI: 3–8) in 1998 to 11% (95% CI: 8–15) in 2008. However, Lithuanian women aged 50–64 still smoked less often compared to the women of younger age groups.

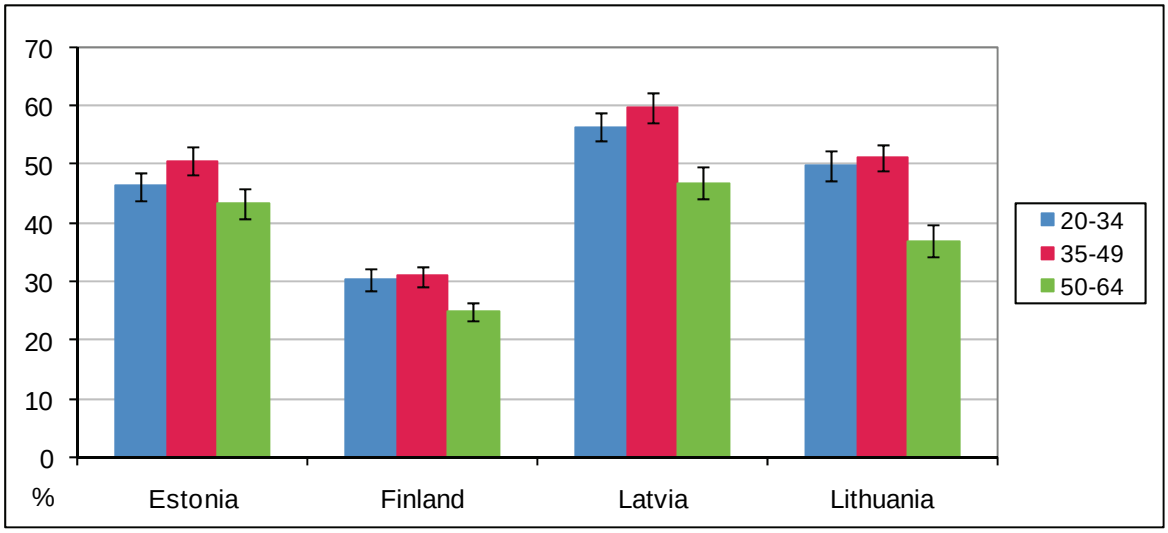

Figure 4. The prevalence of daily smoking among men by age, all study years from 1998 to 2008 pooled together, (%).

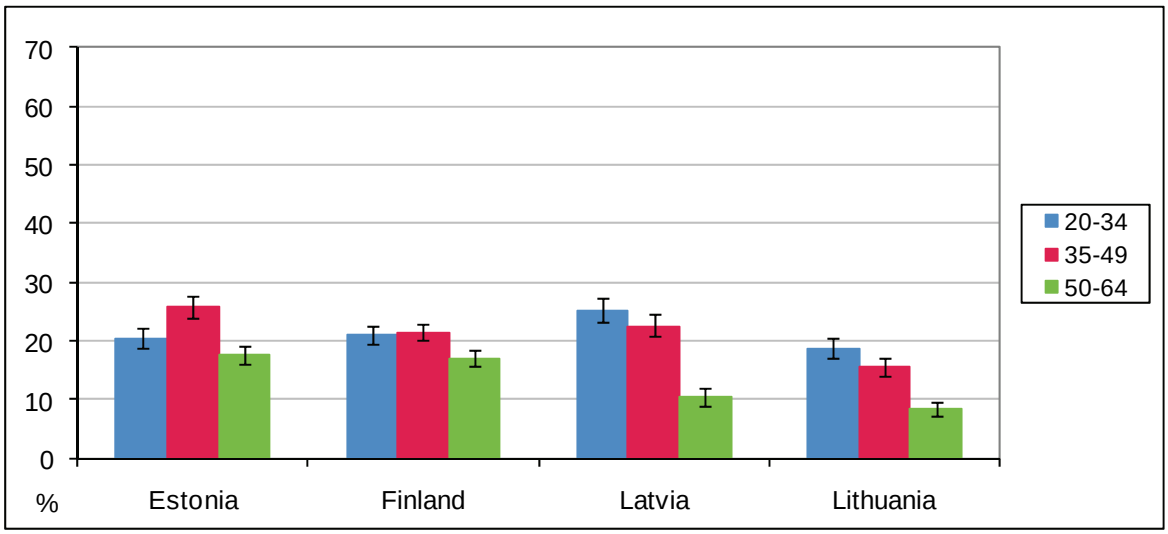

Figure 5. The prevalence of daily smoking among women by age, all study years from 1998 to 2008 pooled together, (%).

The educational gradient in daily smoking among men was similar in all four countries (Fig. 6). Men with low education smoked more often than men with high education. Smoking was most common among Latvian men with low education (62%, 95% CI: 60–63). Among the low educated it was least prevalent in Finnish men (36%, 95% CI: 35–38). The prevalence of daily smoking among highly educated men varied from 18 % (95% CI: 17–19) in Finland to 41% (95% CI: 38–43) in Latvia.

An educational gradient in smoking was evident also in women (Fig. 7). In all countries the highly educated women smoked less than those with low education. The lowest educational gradient in daily smoking among women was observed in Lithuania. The prevalence of daily smoking was 17% (95% CI: 16–18) among the low educated Lithuanian women, and 13% (95% CI: 12–14) among the highly educated women. The magnitude of the educational differences in smoking among Estonian, Finnish and Latvian women was similar.

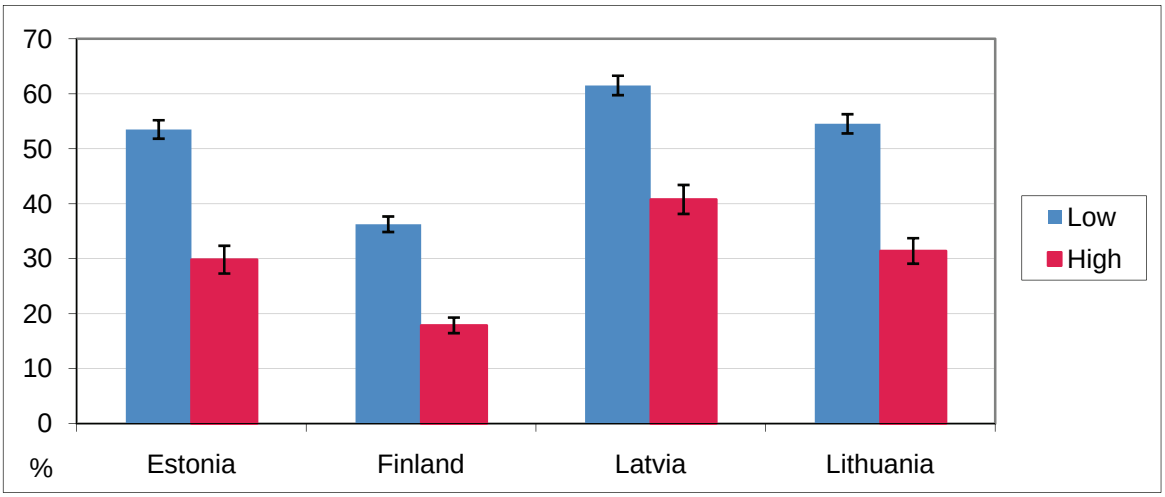

Figure 6. Age-standardized prevalence of daily smoking in men by educational group, all study years from 1998 to 2008 pooled together, (%).

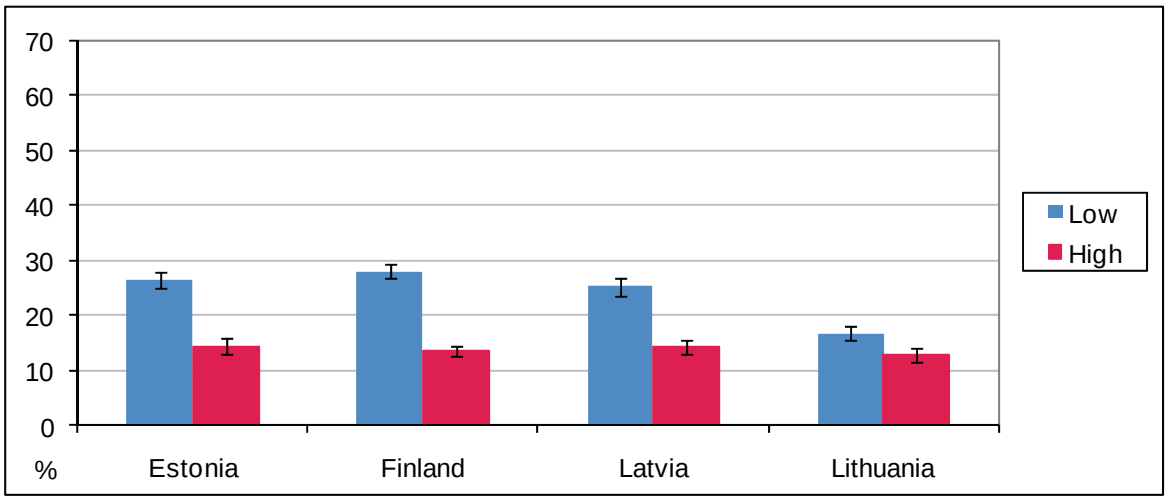

Figure 7. Age-standardized prevalence of daily smoking in women by educational group, all study years from 1998 to 2008 pooled together, (%).

Over the period of ten years the educational differences in smoking among men remained similar in all countries. The prevalence of daily smoking among highly educated men decreased in Estonia, Finland and Lithuania, however, this decline was not statistically significant (Fig. 8). The proportion of smokers among low-educated men remained stable in all countries, except in Lithuania, where it diminished from 56% (95% CI: 52–60) in 1998 to 45% (95% CI: 42–52) in 2008.

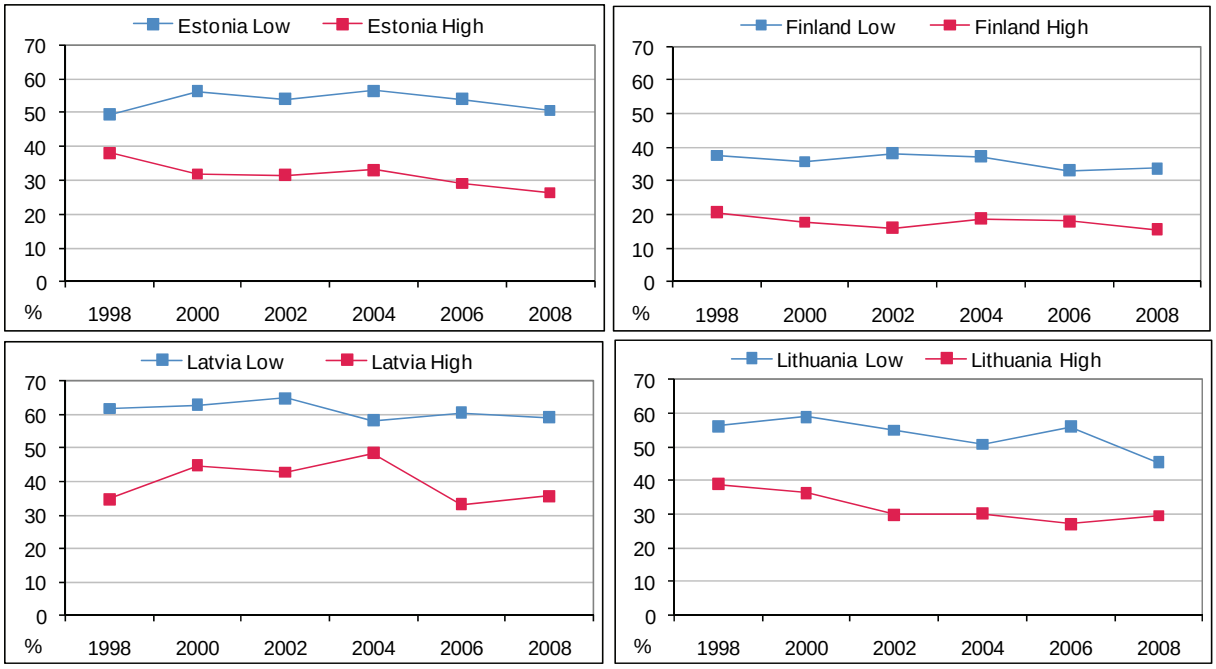

Figure 8. Trends of age-standardized prevalence of daily smoking among men from 1998 to 2008 by educational group, (%).

No differences were observed in the trends of daily smoking among women from 1998 to 2008 by educational level between the countries (Fig. 9). The proportion of smoking women did not change among those with low education or among those with high education in any country.

Urban-rural differences in the prevalence of daily smoking were not observed among men. Among women, smoking was more common in metropolitan centre than in other areas in Latvia (25%, 95% CI: 22–27 and 18%, 95% CI: 17–19 respectively) and in Finland (22%, 95% CI: 20–24 and 19 %, 95% CI: 18–20 respectively).

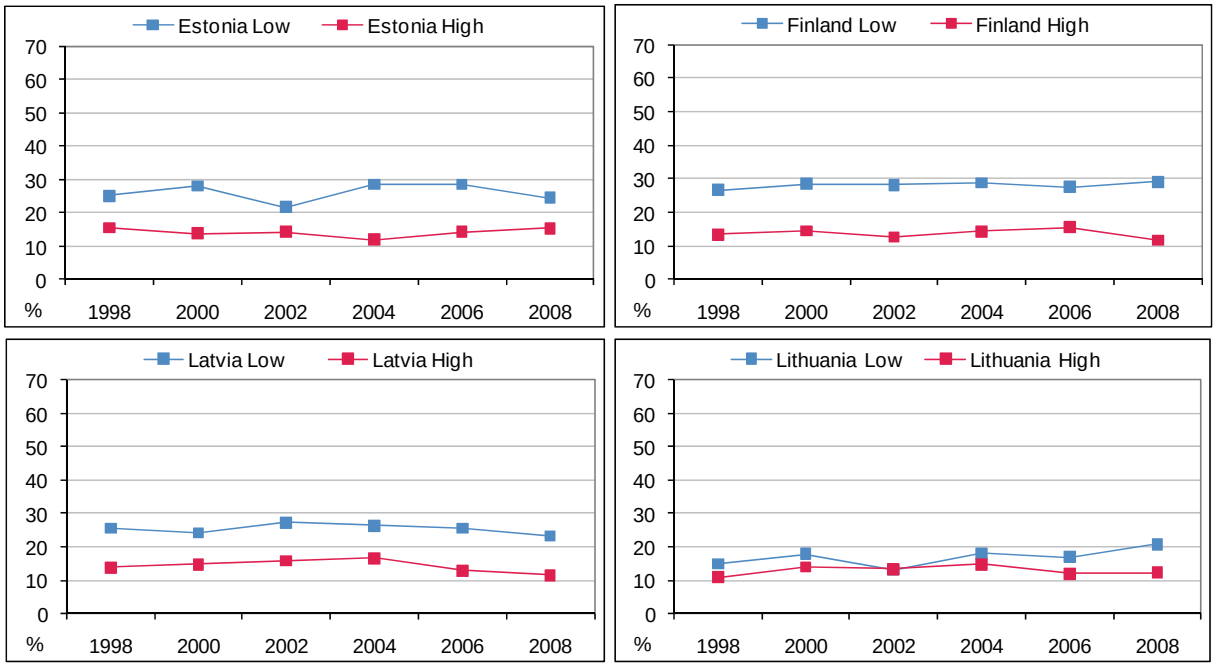

Figure 9. Trends of age-standardized prevalence of daily smoking among women from 1998 to 2008 by educational group, (%).

3.4 Passive smoking at home

Passive smoking at home was more common in the Baltic countries than in Finland (Fig. 10). In all countries women indicated exposure to tobacco smoke at home more often than men. Passive smoking at home was most prevalent among Latvian women (40%, 95% CI: 38–41) and men (23%, 95% CI: 21–25). The proportion of men reporting exposure to tobacco smoke at home was similar in Estonia and Lithuania while among women the exposure was significantly higher in Lithuania than in Estonia.

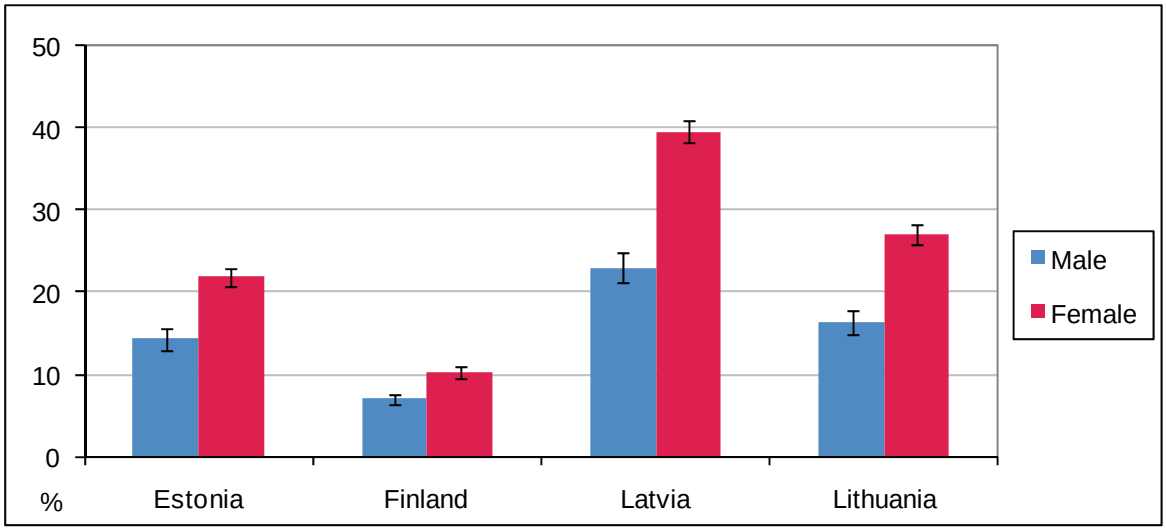

Figure 10. Age-standardized prevalence of being exposed to passive smoking at home among non-smoking men and women, all study years from 1998 to 2008 pooled together, (%).

Since 1998 the prevalence of passive smoking among men decreased significantly in Estonia and Lithuania, but did not change in Finland and Latvia (Fig. 11). It declined significantly among

Baltic women, remaining stable among Finnish women (Fig. 12). In 1998 the proportion of people living in an environment where somebody smoked was significantly larger in the Baltic countries than in Finland. Because of the great decline in Estonia and Lithuania and no changes in Finland, the difference between these countries disappeared in 2008. In Latvia the prevalence of passive smoking remained significantly higher compared to the other countries in both genders.

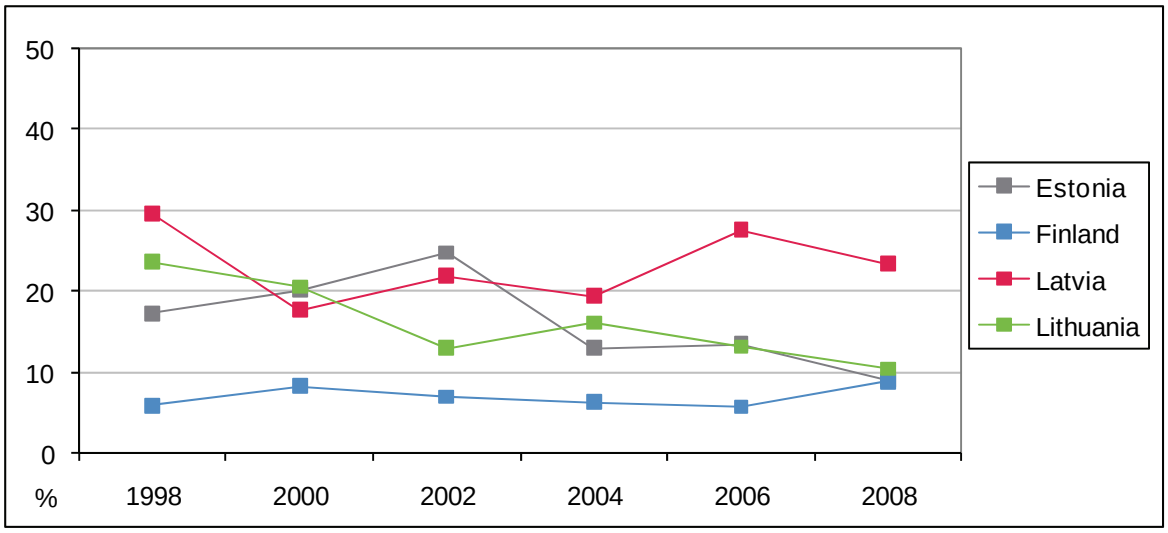

Figure 11. Trends of age-standardized prevalence of being exposed to passive smoking at home among non-smoking men from 1998 to 2008, (%).

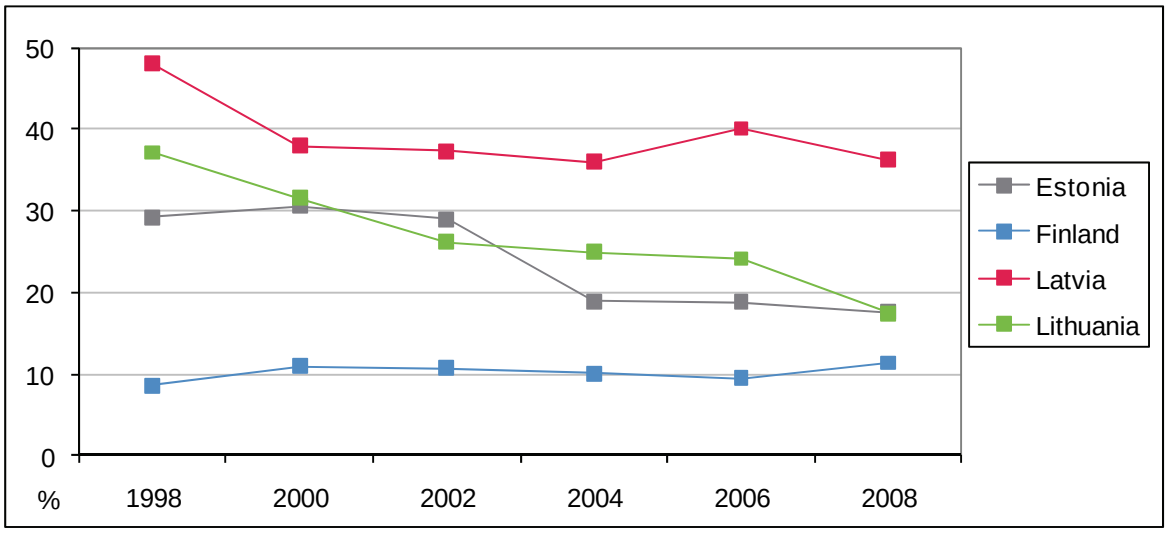

Figure 12. Trends of age-standardized prevalence of being exposed to passive smoking at home among non-smoking women from 1998 to 2008, (%).

There was no clear association between age and passive smoking in Finnish men and women or in Lithuanian women (Fig. 13–14). In the Baltic countries men of the youngest age group reported exposure to tobacco smoking at home significantly more often than the older age groups. The prevalence of passive smoking among Estonian and Latvian women in the youngest age group was significantly higher compared with older women.

Since 1998 the proportion of men exposed to tobacco smoke at home decreased in the youngest age group in Lithuania. In the other countries the proportion of men living in an

environment where somebody smoked did not change significantly in any age group. Over the ten years period the age differences in passive smoking among men disappeared in Lithuania and Latvia. In 2008 the prevalence of passive smoking among Finnish and Estonian men was significantly lower in the middle age group (5%, 95% CI: 3–8 and 6%, 95% CI: 3–9 respectively) compared to the youngest age group (13%, 95% CI: 9–18 and 14%, 95% CI: 9–19 respectively).

In 1998 passive smoking at home was more prevalent among the youngest women than among the oldest women in the Baltic countries. Over the ten years the proportion of women living at home where somebody smoked decreased in the age group of 20–34-year-olds in all Baltic countries. In Estonia it also declined among women aged 35–49 and in Lithuania among the two older age groups. No changes in passive smoking among women of any age group were found in Finland. Because of the great decrease in the proportion of women being exposed to passive smoking at home in the youngest age group and no changes of it among the oldest women, the age differences in passive smoking among women in the Baltic countries disappeared by 2008.

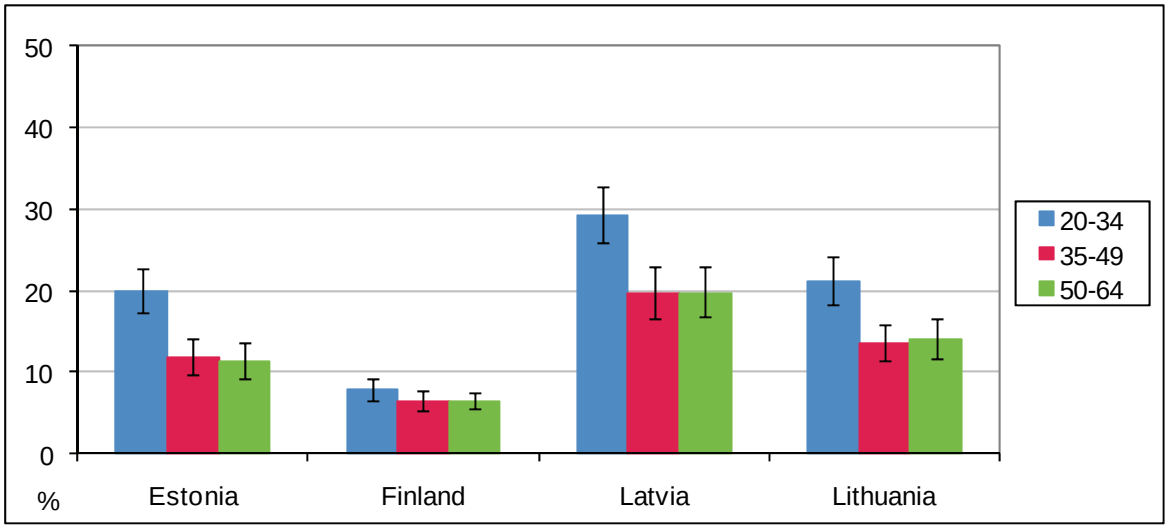

Figure 13. The proportion of respondents being exposed to passive smoking at home in non-smoking men by age groups, study years 1998–2008 pooled together (%).

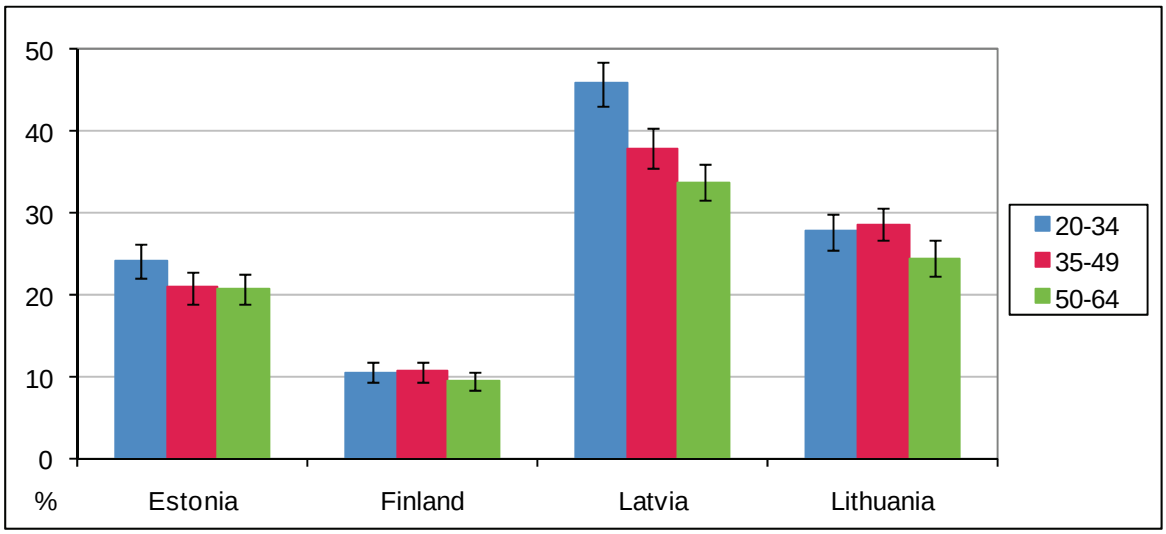

Figure 14. The proportion of respondents being exposed to passive smoking at home in non-smoking women by age groups, study years 1998–2008 pooled together, (%).

The educational pattern of passive smoking at home was similar in both genders in all four countries (Fig. 15–16). Highly educated men and women were exposed to passive smoking at home less often than people with low education. In both genders the educational gradient was espesially evident in the Baltic countries. Among men, passive smoking at home was least common among highly educated Finns (5%, 95% CI: 4–6) and was most prevalent among Latvians with low education (27%, 95% CI: 24–30). Among women, the greatest educational gradient in passive smoking was observed in Latvia and Lithuania. In Latvia 46% (95% CI: 44–48) of the less educated women and 32% (95% CI: 30–34) of highly educated women reported being exposed to passive smoking at home. In Lithuania the proportion was 35% (95% CI: 32–36) and 20% (95% CI: 18–22) respectively.

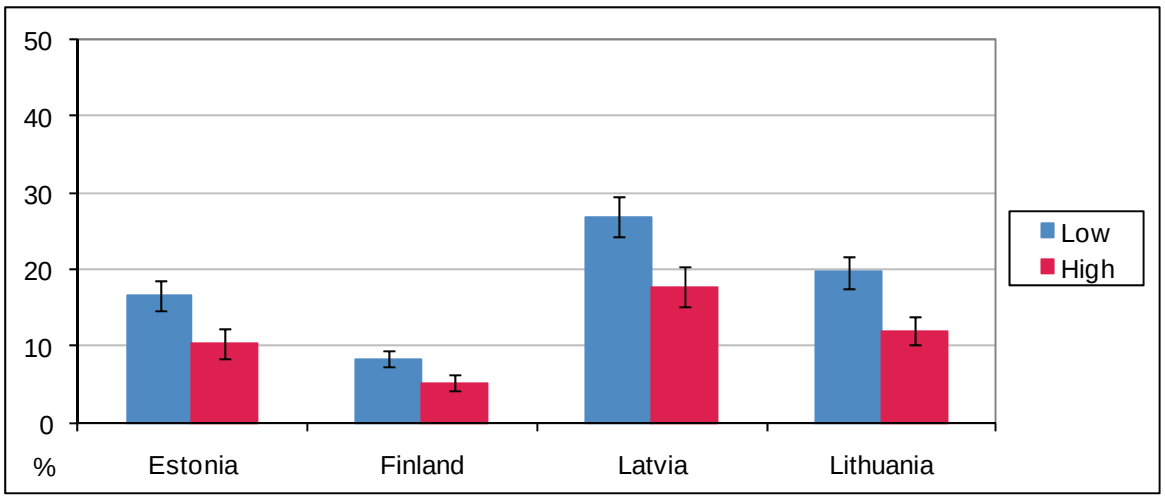

Figure 15. Age-standardized prevalence of being exposed to passive smoking at home in non-smoking men by educational group, all study years from 1998 to 2008 pooled together, (%).

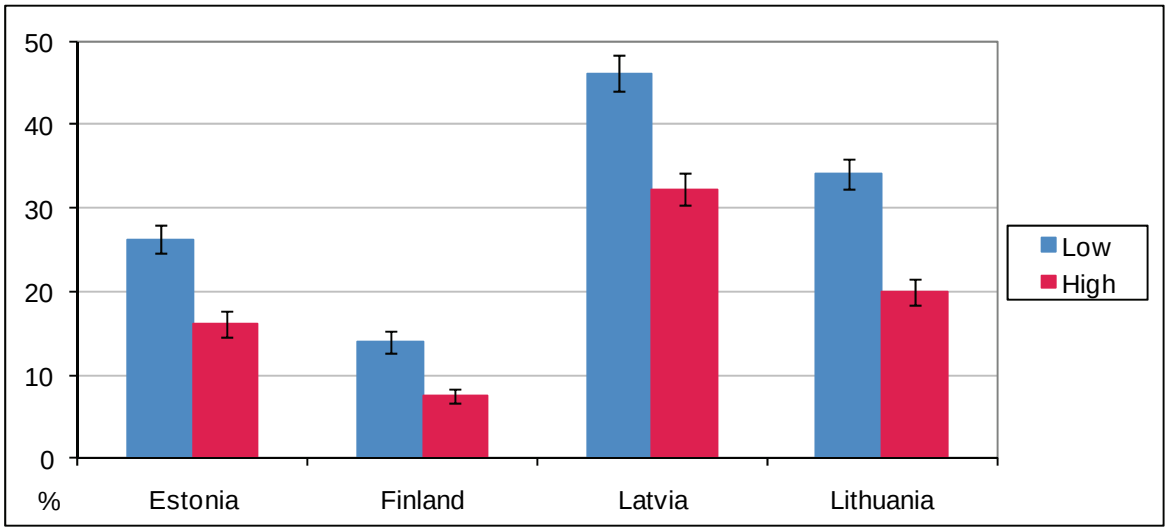

Figure 16. Age-standardized prevalence of being exposed to passive smoking at home in non-smoking women by educational group, all study years from 1998 to 2008 pooled together, (%).

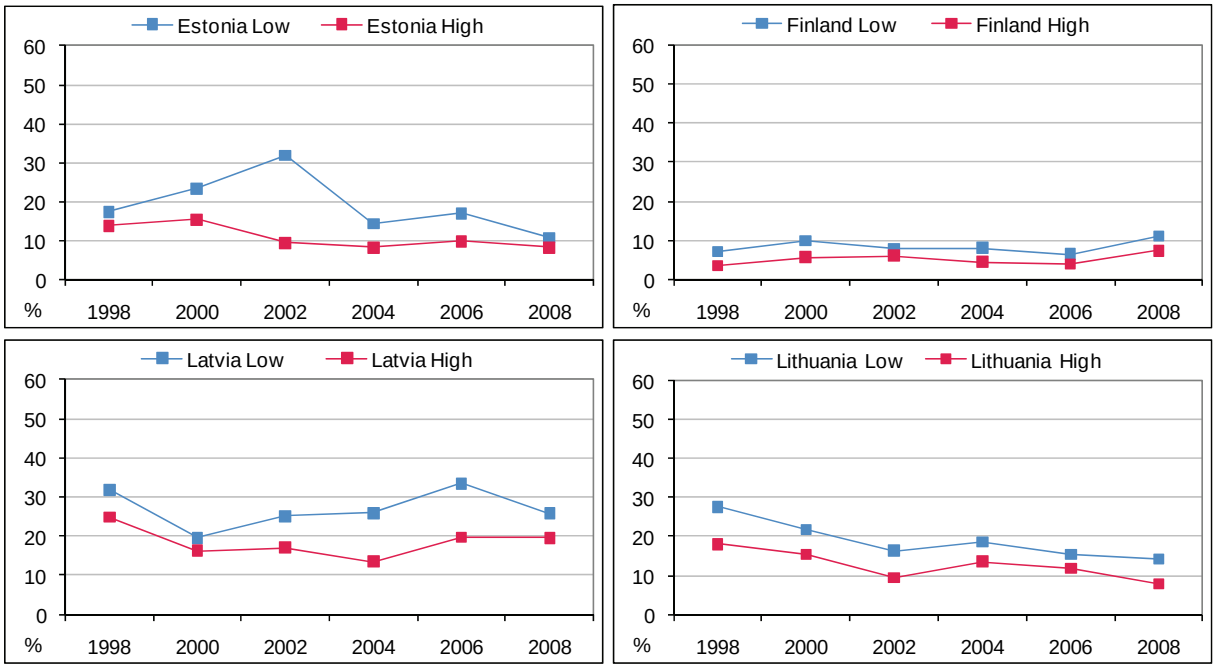

Figure 17. Trends of age-standardized prevalence of being exposed to passive smoking at home among non-smoking men from 1998 to 2008 by educational group, (%).

Since 1998 a decreasing tendency in passive smoking at home among Baltic men was observed reaching statistically significant level only among Lithuanian men with low education (Fig. 17). The decreasing trend in the prevalence of passive smoking among women with high as well as with low education was found in the Baltic countries (Fig. 18). The proportion of men and women living in an environment where somebody smoked did not change in either educational group in Finland. Educational differences in passive smoking at home have remained similar in all countries over the whole study period, being more pronounced among women than among men.

No differences in passive smoking between metropolitan and other areas were found among men and women in any country, except among Lithuanian women. Lithuanian women living in metropolitan centres were exposed to passive smoking at home less often compared to women living in other areas: 24% (95% CI: 23–26) and 30% (95% CI: 28–31) respectively.

Over the ten years study period the proportion of persons exposed to passive smoking declined among Estonian and Lithuanian men living in metropolitan centre as well as among Lithuanian men living in other areas. The prevalence of passive smoking among women decreased in all Baltic countries in rural areas. In Lithuania, the decreasing trend in passive smoking at home was also found among women living in metropolitan centre. In Finland the proportion of people reporting exposure to passive smoking at home did not change in either gender and was not dependent of place of residence. In 2008 no association was observed between passive smoking at home and the level of urbanization in any Finbalt country.

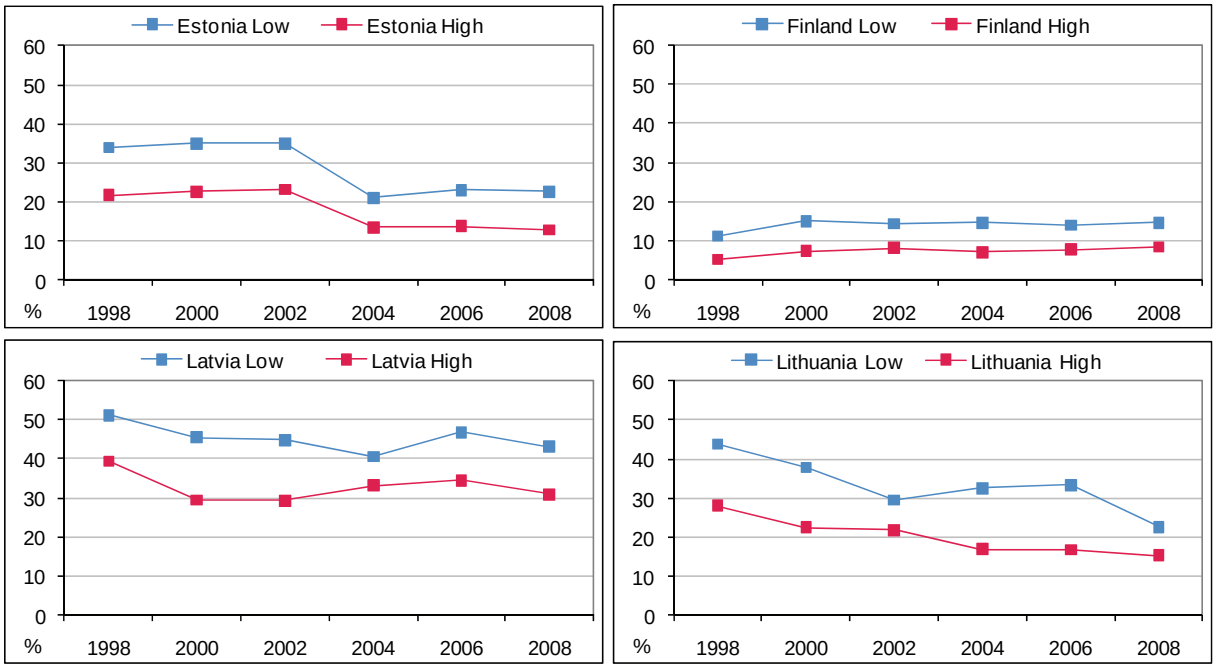

Figure 18. Trends of age-standardized prevalence of being exposed to passive smoking at home among non-smoking women from 1998 to 2008 by educational group, (%).

3.5 Discussion

Daily smoking

Daily smoking was more common among men as well as among younger and less educated people in the Baltic countries and Finland. No consistent differences were observed between smoking prevalence in urban and rural areas. The overall prevalence of smoking decreased over the ten years among men remaining stable among women in all four countries. The age and educational differences remained similar over the period of observation.

International patterns in smoking are usually explained using the smoking epidemic model (5). This model describes the spread of the smoking habits in different countries following four stages of evolving epidemic. The first stage is characterized by a low prevalence of smoking among men and women and smoking as a habit of higher socioeconomic groups. The second stage of the epidemic is characterized by rapid rise in smoking in men and early increases in smoking among women. In the third stage women reach their peak, while smoking prevalence among men starts to decline especially in higher socioeconomic groups. The fourth stage of epidemic is characterized by marked downturn in smoking prevalence in both men and women. The Baltic countries and Finland are in different stages of the smoking epidemic although none of them follow the model in every detail.

Since regaining of independence in the 1990s the Baltic countries have been facing pressure from transnational tobacco industry which found these countries as a promising market area. Tobacco industry started aggressive advertising and sophisticated marketing of tobacco products targeting mainly women and youth. Before 1990s there was no tobacco legislation, no formulated tobacco policy and no effective health education in the Baltic countries. At that time smoking prevalence was high among men, but very low among women, especially in Lithuania (6, 7, 8). The findings of an earlier Finbalt survey showed that during 1994–1998 smoking increased among Lithuanian women, and decreased among Estonian men (9). The analysis of further trends from 1998 to 2008 revealed the decline in smoking prevalence among men in Finland and Lithuania with no changes among women in all countries. The most significant decrease of smoking prevalence among Lithuanian men and stabilization among women could be explained

by the implementation of comprehensive tobacco control policies in Lithuania: the law on tobacco control adopted in 1995, the National Tobacco Control Programme launched in 1998, total ban on tobacco advertising introduced in 2000, and the law on prohibition of smoking in the bars and restaurants enacted in 2007.

During the last decade similar measures were also implemented in Estonia and Latvia to create legal basis for effective tobacco control. All three Baltic countries have ratified the WHO Framework Convention on Tobacco Control, which provides the foundation for countries to implement and manage tobacco control (10). However, despite the implementation of very positive tobacco control measures in the Baltic countries the actual situation is still far from good. The national tobacco control measures have been implemented in Finland remarkably earlier compared to the Baltic countries. During the past three decades the comprehensive Finnish tobacco control policy has included legislation, price policy, health promotion activities, and research. Finnish investigators have concluded that all these measures have been useful in controlling smoking initiation and cessation, but their impact was not equal across the population groups (11).

Our data on age and gender differences are in line with the findings of many other studies (6, 7, 12, 4). In our surveys the educational gradient was consistent, smoking being more common among the less educated men and women in all countries. The educational differences in the prevalence of smoking in three Baltic countries and Finland remained stable over time from 1998 to 2008. Therefore none of the countries can be classified as clearly “premordern” with regard to the smoking epidemic model (2). The data from nine Western European countries showed greater declines in smoking among tertiary educated men and women compared with their less educated counterparts between 1985 and 2000 (12). Studies have also shown that smoking epidemic is in a later stage in northern European countries, including Finland, than in southern European countries (13).

WHO Framework Convention on Tobacco Control recommends establishing programs for national, regional and global surveillance of the magnitude, patterns, determinants and consequences of tobacco consumption (10). Measuring smoking rates is important for understanding change as well as for evaluating and planning the interventions that aim to reduce tobacco use and socioeconomic inequalities in smoking. The monitoring of smoking indicators is also needed to assess the potential effect of socioeconomic inequalities in smoking on inequalities in health outcomes. The data of this study show that public health burden of smoking could decrease among men. Due to socioeconomic differences in the prevalence of smoking the inequalities in tobacco-related health outcomes can be expected in the future in all countries. Therefore comprehensive tobacco control measures targeting women, young, and lower educated groups should be implemented aiming to reduce smoking prevalence and inequalities in health.

Passive smoking at home

Passive smoking at home was more prevalent in the Baltic countries than in Finland. Men and highly educated people were less often exposed to tobacco smoking at home than women and low educated in all countries. Although during the study period the decline in prevalence of passive smoking at home was found only in the Baltic countries, the exposure to passive smoking still remained higher there than in Finland.

There is no safe level of exposure to second-hand tobacco smoke (14). Passive smoking accounts for one in 10 tobacco-related deaths (4). It kills 600 000 people each year. The major sources of exposure to tobacco smoke for adults are at the home and workplace, while the primary source of such exposure for children is home (14). Despite the measures adopted in many countries to eliminate indoor smoking, 700 million children globally are still exposed to environmental smoke (15). In the European Union, 14% of non-smokers are exposed to passive smoking at home, and a third of working adults are exposed to second-hand tobacco smoke at the workplace at least some of the time (16). Majority of studies rely on self-reports of passive

smoking, however, it can be assessed by objective measurement of cotinine levels (17, 18). In our study we analyzed passive smoking at home using self-reported information about exposure to tobacco smoke at home. There is evidence that nearly all non-smokers who live with someone who smokes inside their home are exposed to second-hand smoke. Our findings revealed that 14–40% of people in the Baltic countries and 7–10% of Finns were exposed to tobacco smoke at home. An earlier Finbalt survey also showed that indoor smoking was more common in the Baltic countries than in Finland (19).

Over the last years the exposure to passive smoking has declined in many countries most likely reflecting widespread implementation of smoke-free policies (4, 20). The studies of the effects of smoke-free policies show that these policies can lead to overall decreases in exposure to second-hand tobacco smoke of up to 40% (20). In 1995 Finland started to implement smoke free legislation by regulating smoking in the workplaces and later prohibiting it in bars and restaurants (11). All three Baltic countries enacted smoke free laws significantly later than Finland (21). The studies have shown that smoke-free policies not only protect non-smokers, but they increase cessation and have effects on smoking habits (22, 23). Legislation mandating smoke-free public places stimulates families to make their own home smoke-free (22). The International Tobacco Control (ITC) Four Country Survey demonstrated increased levels of smoke-free homes in Canada, the United Kingdom and Australia. There was no net increase in the USA (23). The decrease in passive smoking at home in some Baltic countries could be also influenced by the implementation of smoke-free legislation as well as other tobacco control measures.

Our findings showed that higher education was associated with less exposure to passive smoking at home. Similar educational gradient was found in the previous study in Finbalt countries (19). Such educational pattern in exposure to tobacco smoke at home could be explained by lower prevalence of regular smoking and higher smoking cessation among the highly-educated in the Baltic countries and Finland (9, 24). The findings of our study are consistent with other studies showing that low social class, unemployment and low education are important predictors of high second-hand exposure (20, 25).

Monitoring of the trends in exposure to passive smoking is essential for the evaluation of the implementation of smoke-free policies. Creating 100% smoke-free environments is the only way to protect people from the harmful effects of second-hand tobacco smoke (4).

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4 Alcohol consumption

Satu Helakorpi & Pia Mäkelä & Risto Sippola & the Finbalt group

4.1 Introduction

Alcohol consumption has increased in all Baltic countries and in Finland, which creates growing public health concern. In 2005 total adult alcohol consumption per capita was about 16 litres in Estonia, 13 litres in Lithuania, and 10 litres in Finland and Latvia (1).

On a national level, the level of harm that results from drinking depends not only on the level of alcohol consumption in that society but also on the drinking habits of the population. Drinking habits in Estonia, Finland, Latvia and Lithuania have been characterized by preference for vodka and beer, non-daily drinking, irregular heavy episodic drinking (e.g. at the weekends), and acceptance of public drunkenness (2).

Previously it has been shown that heavy episodic drinking is associated with an increased risk of death from all causes, ischemic heart disease, external causes, and alcohol related causes (e.g. 3, 4). It has been suggested that alcohol use – both the level and patterns of drinking – is a strong contributor to the health gap between Western Europe and Central on the one hand and Eastern Europe on the other. Alcohol also contributes significantly to the differences between men and women in mortality and life expectancy. (5.)

4.2 Methods

The volume of alcohol consumption in 1998–2008 was based on self-reported consumption of different beverage types in the preceding seven days, asked with the following question: “How many glasses (regular restaurant portions) or bottles of the following alcoholic beverages have you drunk during the last week (7 days)? ”: (1) medium strong or strong beer (bottles, 0.5 l in Estonia, Latvia, Lithuania and 0.33 l in Finland), (2) long drink/ free mixed highballs (0.33 l bottles), (3) strong alcohol (4 cl portions), (4) wine or equivalent (glasses, (10 cl in Baltic countries and 12 cl in Finland)), (5) cider or mild wine (alcohol content about 5%)(glasses, asked only in Finland).

There were differences in handling missing data between countries and across years, such that for many countries and years, part of the missing values clearly signified zero consumption of the given beverage. In order to improve comparability across time periods and countries, all missing values of portions drunk (beer, wine, strong alcohol, cider and free mixed highballs) during last week were coded as zeros.

A standard portion of alcohol was defined as 1.5 centilitres (=12 g) of 100% alcohol. The respondents’ 7-day volume of consumption of a given alcoholic beverage was determined by the following formula: cl*(%/100)/1.5, where cl is the capacity of the given alcoholic beverage in centilitres and % is its alcohol content in percentages. For example, one bottle of beer in Lithuania: 50cl*5%/100/1.5=1.7 standard portions.

The total volume of alcohol consumed in the previous seven days was calculated as a rounded sum of alcohol portions for beer, wine, strong alcohol and free mixed alcohol. An exception was Lithuania where free mixed highball and cider was left out of the sum variable to improve temporal comparability, as it was only asked since 2002. In the analyses, the 7-day volume measure has been dichotomized to separate light drinkers from moderate to heavy drinkers. The cut-off point was chosen as ten or more portions among men and four or more portions among women per 7 days. Further details on measurement of volume are given in the appendix.

Heavy episodic drinking was specified as the intake of six or more portions of any alcoholic beverage on a single occasion. Frequency was assessed by asking “How often do you drink six portions of alcohol or more on a single occasion (one portion equals one bottle of beer or a similar drink, one glass of wine or one restaurant serving of a strong alcoholic beverage)?”. The options

were: never, less than once a month, once a month, once a week, and daily or nearly daily. In the analyses, heavy episodic drinking was dichotomized, with the cut-off point set at drinking the six or more drinks at least once a week (men) or at least once a month (women).

4.3 Differences across gender and country

In the period from 1998 to 2008, the proportion of moderate to heavy alcohol consumers among men increased especially in Estonia, where the proportion was 26% in 1998 (95% CI: 22–30) and 39% in 2008 (95% CI: 36–41). Also in Latvia the estimated proportions were on the increase, even if the change was not statistically significant and even if also at the end of the period the estimated proportion of moderate to heavy alcohol users was at its lowest among Latvian men in comparison with other countries. In Finland alcohol consumption has remained at the high level that was reached in the mid-1990 (about 36%) (Figure 1).

Moderate to heavy alcohol consumption among women was at the highest level in Finland where the proportion in 2008 was 35%. In the other countries, i.e. in Estonia, Latvia and Lithuania, the level is lower, but women's alcohol consumption has increased during the study period. However, the increase was statistically significant only in Estonia, where the proportion was 18% in 1998 (95% CI: 15–21) and 24% in 2008 (95% CI: 21–26). (Figure 2.)

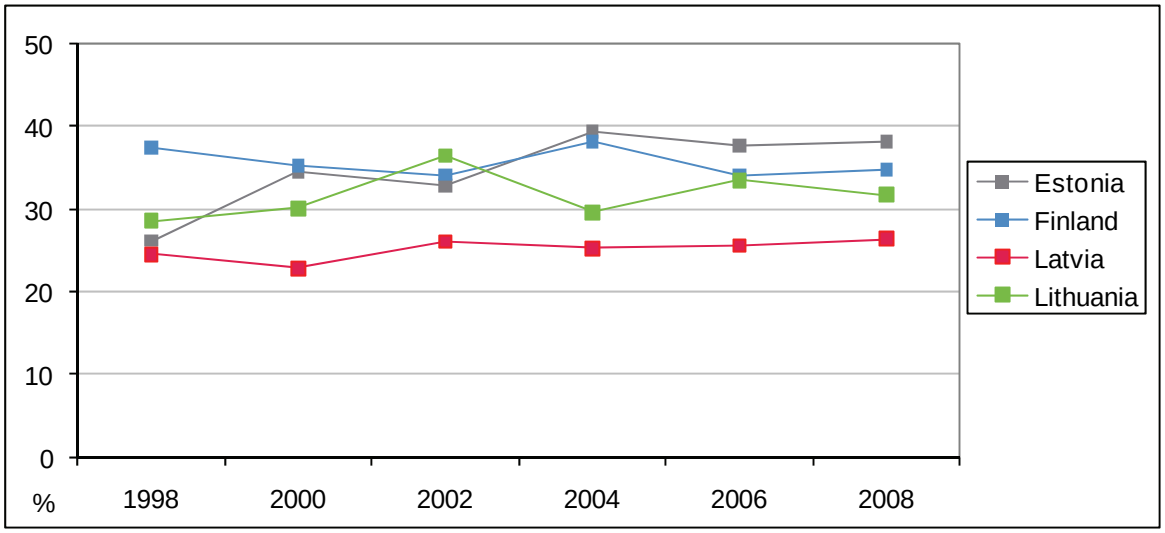

Figure 1. Age-standardised proportion (%) of moderate to heavy drinkers in Estonia, Finland, Latvia and Lithuania in 1998–2008 among men.

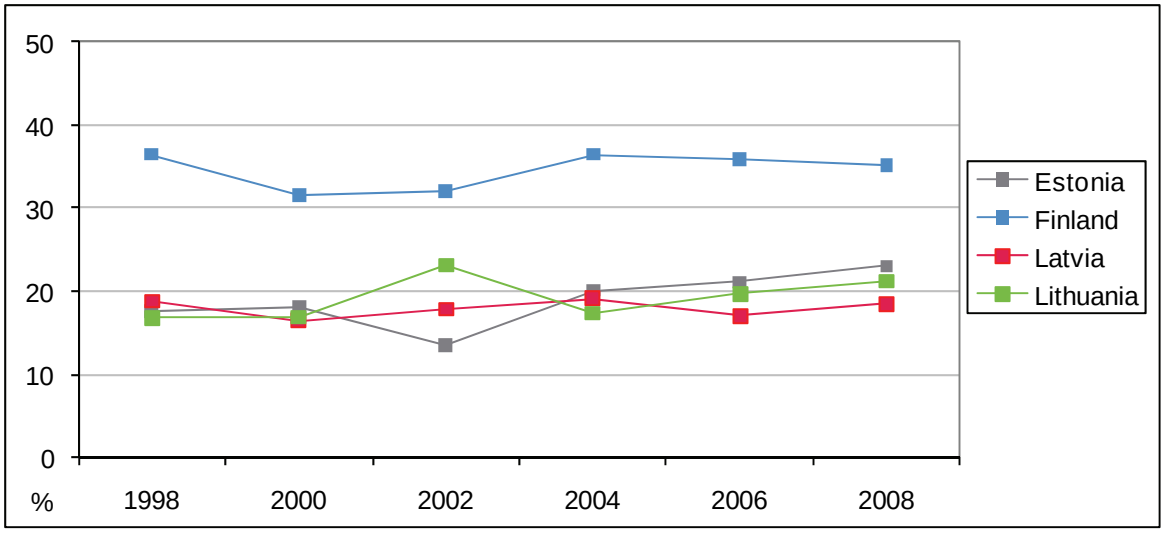

Figure 2. Age-standardised proportion (%) of moderate to heavy drinkers in Estonia, Finland, Latvia and Lithuania in 1998–2008 among women.

Among men, heavy episodic drinking was most common in Latvia and Finland, where the proportion of heavy episodic drinkers in 2008 was 30% and 27%, respectively. The corresponding proportions were 21% in Estonia, and 17% in Lithuania. Male binge drinking has remained about at the same level from 1998 to 2008 in all four countries. (Figure 3.)

Among women, heavy episodic drinking was most common in Finland, where the proportion of heavy drinkers was estimated to be 23% in 2008. The corresponding proportion was 12% in Estonia, 18 % in Latvia, and 14% in Lithuania. Heavy episodic drinking among women has increased in Estonia, Finland and Latvia. (Figure 4.)

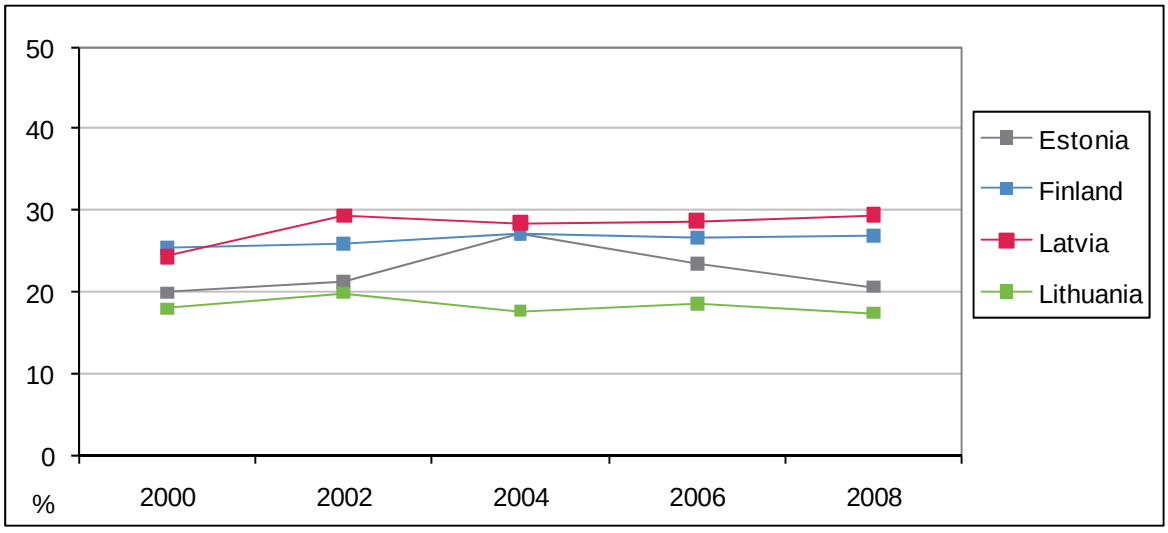

Figure 3. Age-standardised proportion (%) of those who reported heavy episodic drinking in Estonia, Finland, Latvia, and Lithuania in 2000–2008 among men.

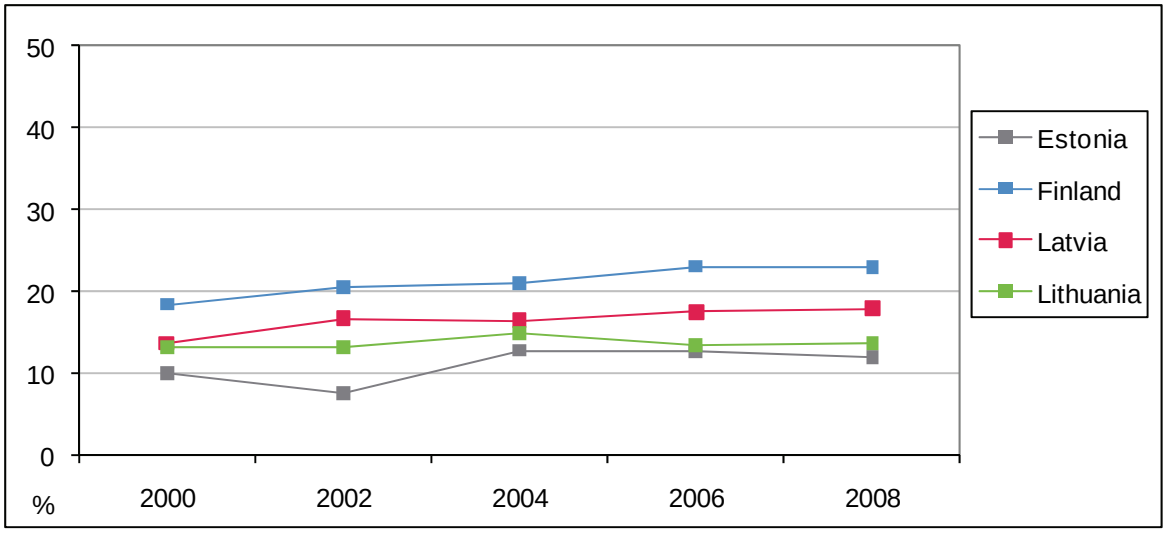

Figure 4. Age-standardised proportion (%) of those who reported heavy episodic drinking in Estonia, Finland, Latvia, and Lithuania in 2000–2008 among women.

4.4 Differences across educational groups

In the proportion of moderate to heavy 7-day alcohol users, among men there were hardly any systematic educational differences. The exception was Finland, where in the beginning of the study period it was more common in the higher educational group. However, towards the end of the study period the difference vanished and was even reversed (Figure 5). Among women, moderate to heavy drinking was generally more often reported among those with a higher education, but the increase was typically stronger in the lower educational group so that differences across educational groups disappeared (in Estonia, Finland and Lithuania; Figure 6).

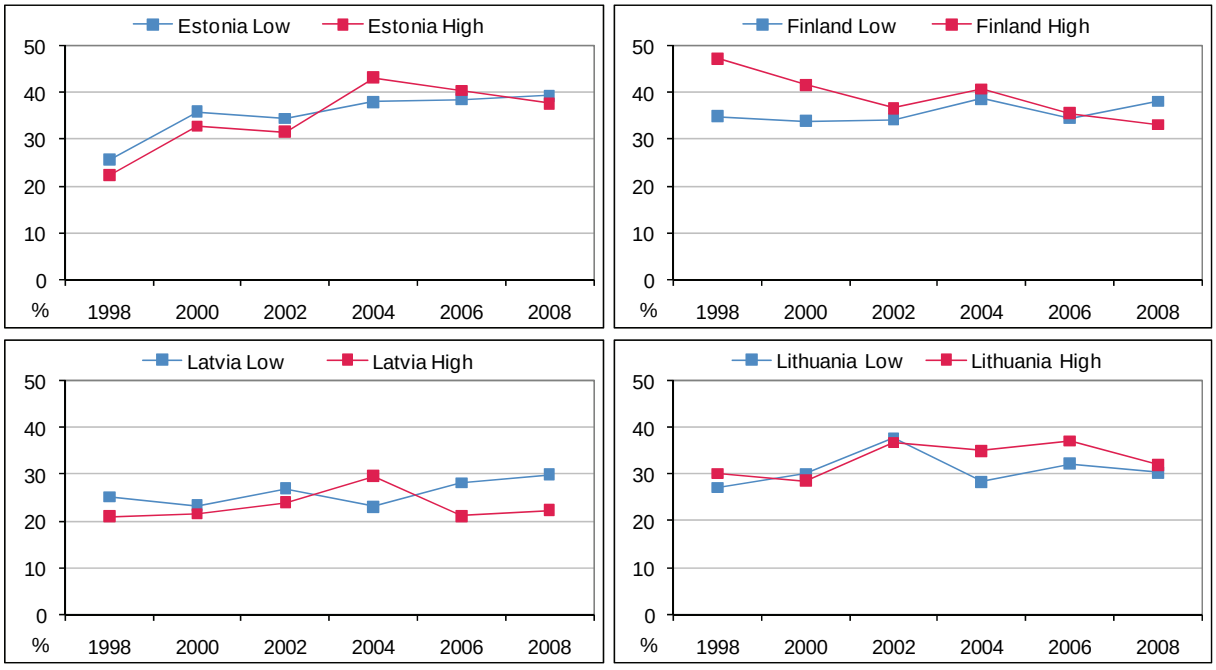

Figure 5. Age-standardised proportion (%) of moderate to heavy drinkers (10 or more portions in previous 7 days) among men in Estonia, Finland, Latvia and Lithuania in 1998–2008 by educational group.

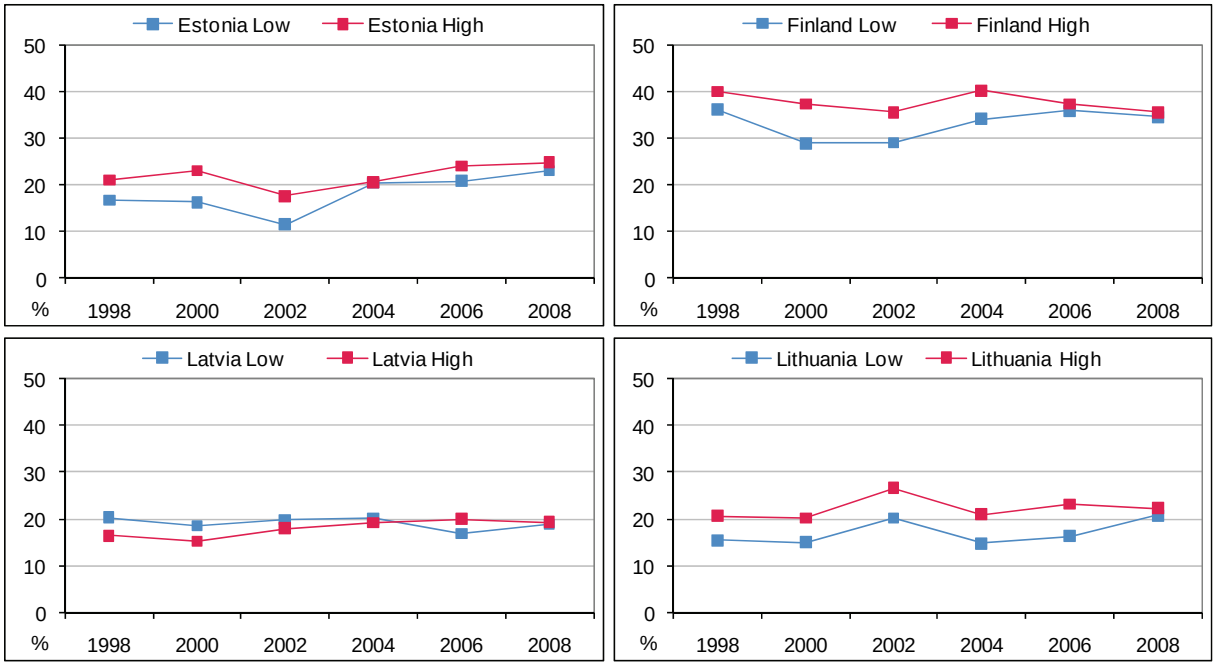

Figure 6. Age-standardised proportion (%) of moderate to heavy drinkers (4 or more portions in previous 7 days) among women in Estonia, Finland, Latvia and Lithuania in 1998–2008 by educational group.

The educational differences for heavy episodic drinking were different from those for moderate to heavy 7-day use: episodic heavy drinking was generally more common among those with a lower level of education, both among men and women. With regard to temporal trends in heavy episodic drinking, it is hard to claim any systematic difference between the educational groups (Figures 7−8).

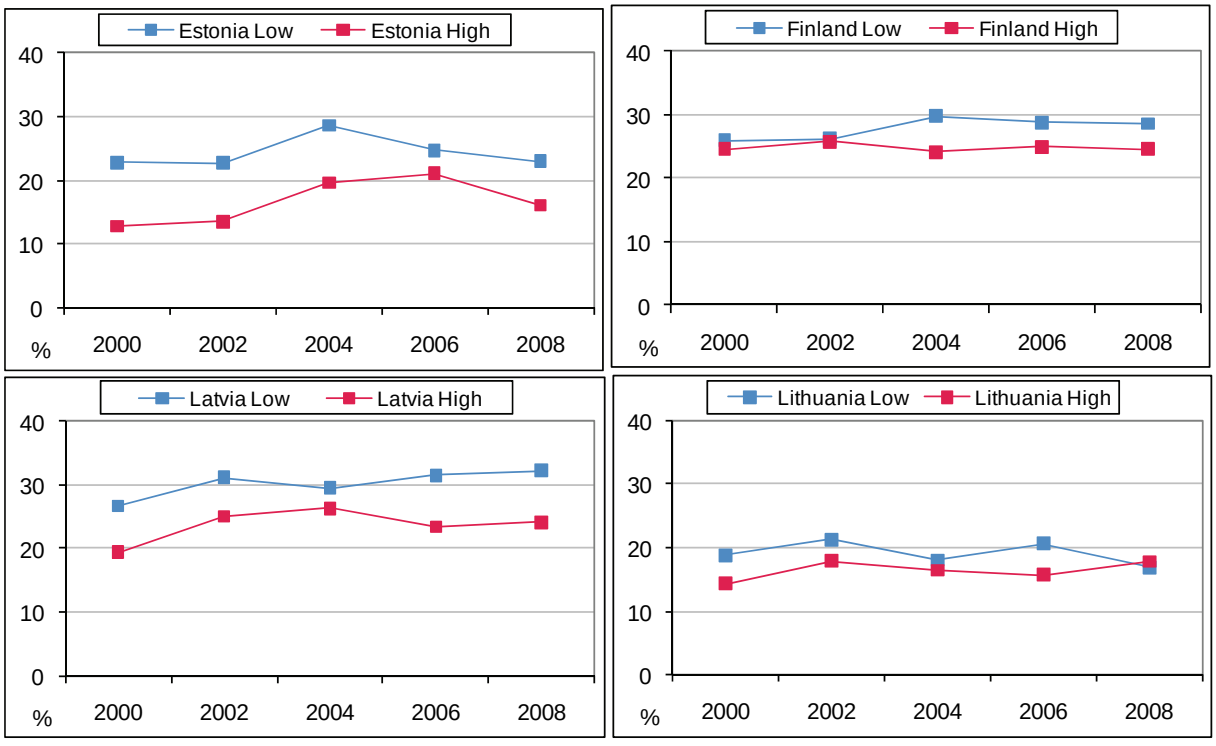

Figure 7. Age-standardised proportion (%) of those who reported heavy episodic drinking among men in Estonia, Finland, Latvia, and Lithuania in 2000–2008, by educational group.

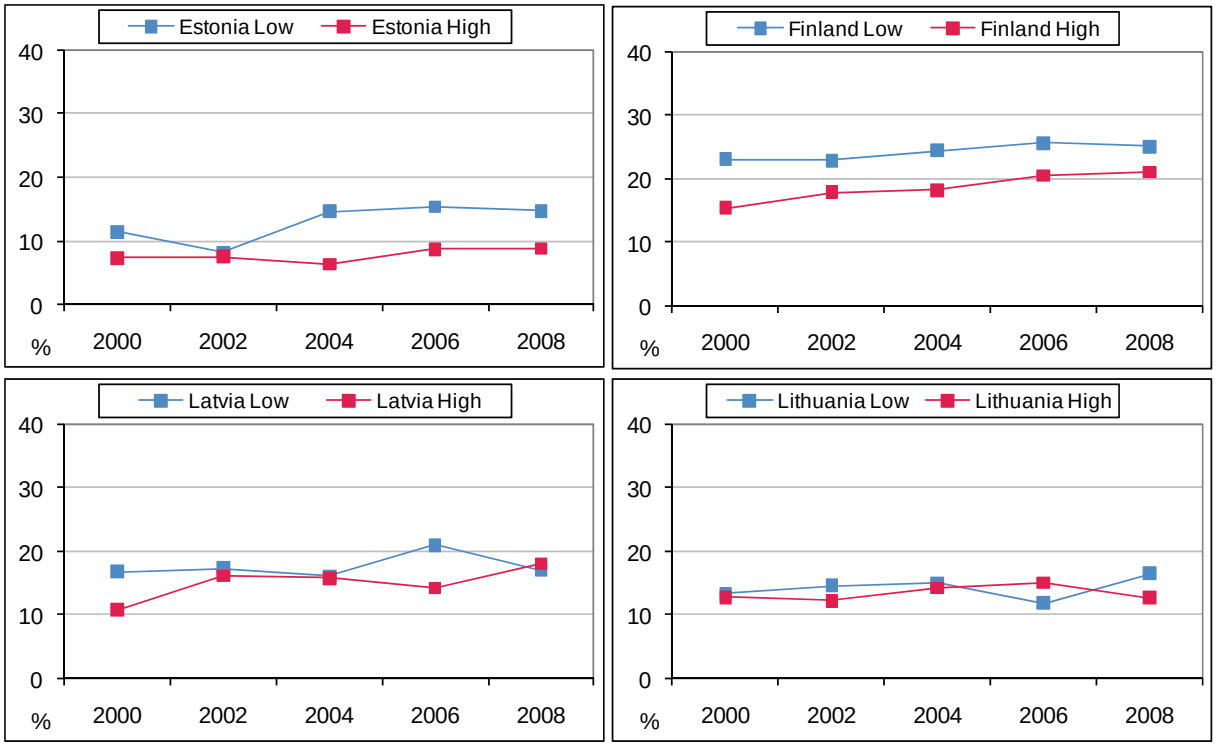

Figure 8. Age-standardised proportion (%) of those who reported heavy episodic drinking among women in Estonia, Finland, Latvia, and Lithuania in 2000–2008, by educational group.

4.5 Discussion

In all four countries, alcohol consumption is much more common among men than among women. This gender difference applies to both volume of alcohol drunk per week and to frequency of drinking large amounts of alcohol at a time. The gender gap is the smallest in Finland, where women clearly drink the most across the four countries, both in terms of weekly amounts and in terms of heavy episodic drinking. In contrast, the gender gap is large for both alcohol consumption measures in Estonia, where women's consumption is low and men's consumption level is relatively high.The lower level of alcohol consumption among women compared to consumption among men can be attributed to cultural factors such as social undesirability of female drinking (6).

When men's drinking is compared across countries, one observation rises above others. Compared to the other countries, men in Latvia only relatively rarely report moderate to high amounts of weekly drinking. However, when it comes to heavy episodic drinking, Latvian men have the highest prevalence.

With respect to temporal change in alcohol use, the situation according to the estimates used here has worsened particularly in Estonia and Latvia. Among women, it is particularly the lower educational group whose weekly alcohol use has been on the increase.

Appendix

More information on the calculation of alcohol portion

In Estonia capacity of beer was considered to be 50 cl during the whole study period. In years 1998–2002 consumption of only one type of beer was asked and its alcohol content was considered to be 5 %. In years 2004–2008 consumption of different types of beer was asked. Because of analytic conformability an assumption of equal alcohol content of 5 % in all types of beer has been made. Therefore consumption of beer drunk last week was calculated as a sum of light and strong beer in 2004 and as a sum of light, medium strong and strong beer in 2006 and 2008. In Latvia consumption of beer was asked in 50 cl bottles. The alcohol content depends on the additional question of quality of beer drunk usually. If there was no answer or the answer was "does not drink beer" and amount of beer drunk last week was greater than zero, then beer quality was changed to mode, which is medium strong beer (3.5 %). Also it is assumed that in years 1998–2004 there has been a mistake in the questionnaire and alcohol content of strong beer has been changed from 4.2 % to 7 %, which it is in 2006 and 2008 questionnaires. In Finland and Lithuania the capacity or alcohol content of beer have not changed during the study period. The capacities are 50 cl in Lithuania and 33 cl in Finland and alcohol contents are 4.6 % in Finland and 5 % in Lithuania.

In Estonia consumption of free mixed highballs was asked in 33 cl cans of beverage with alcohol content of 5 %. In Finland consumption of 33 cl bottles of long drink was asked instead of free mixed highballs. Long drink is a Finnish highball containing 5.5 % of alcohol. In Latvia free mixed highball question changed from glasses to bottles in year 2008. Because of that we assume that in years 1998–2006 it concerned 4 cl of strong alcohol (40 %) mixed to a non alcoholic beverage and in year 2008 33 cl bottles of highball with alcohol content of 5 %.

In Estonia, Latvia and Lithuania portions of wine were considered to be 10 cl with alcohol content of 12.5 %. In Finland one portion of wine was 12 cl with alcohol content of 12 %. In addition, the consumption of cider and light wines was asked separately only in Finland. A glass of cider or light wine was considered to be 12 cl with alcohol content of 4.7 %. The capacity of one portion of strong alcohol was asked as 4 cl in all four countries of the study. The alcohol content differs from 35 % in Finland to 40 % in the Baltic countries.

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5 Food habits

Janina Petkeviciene & the Finbalt group

5.1 Introduction

In the past decades, a huge amount of epidemiological evidence has been collected about the important role of nutrition in the prevention and control of chronic noncommunicable diseases. It became clear that public health actions to prevent the adverse affect of inappropriate diet were urgently needed. Several crucial public health initiatives were launched in Europe in the beginning of the 21st century.

The First Action Plan for Food and Nutrition Policy for the WHO European Region 2000−2005 stimulated the governments to develop National Food and Nutrition Policies (1). In 2003, WHO report on Diet, nutrition and prevention of chronic diseases was published (2). This report provided population nutrient intake recommendations for the prevention of major public health problems, that included a reduction in total dietary fat intake, in particular saturated fatty acids intake, a reduction in trans-fatty acids intake, an increase in intake of polyunsaturated fatty acids, a reduction in sugar and salt intake, and an increase in fruit and vegetables consumption. The Global Strategy on Diet, Physical Activity and Health (2004) encouraged the development and implementation of global, regional and community policies and action plans to improve diets of populations (3). In 2005, the European Commission created the EU Platform for Actions – Diet, Physical Activity and Health. Several international commitments aiming to change diets of populations in order to reduce prevalence of chronic diseases were made in 2006: the European Strategy for Prevention and Control of Noncommunicable Diseases (4) and European Charter on Counteracting Obesity (5). The second WHO European Action Plan for Food and Nutrition Policy 2007−2012 was adopted in the WHO Regional Committee in 2008 (6).

International initiatives have influenced national food and nutrition policies. In Finland the recommendations for improving the diet of the nation were published by the National Nutrition Council in 1987. The recommendations included measures for improving the production and marketing of food as well as suggestions concerning legislation, monitoring, pricing, catering, nutritional education, and research. The Finnish nutritional recommendations were renewed in 2005 (7). Their goal is to improve the diet of the Finnish people and public health by achieving a balance between energy intake and energy expenditure, balanced nutrient intake; decreasing the intake of hard fat, refined sugars and salt, and increasing the intake of carbohydrates with high fibre content and the proportion of soft fats.

In 2000, WHO Regional Office for Europe launched an initiative to assist the three Baltic countries in developing National Food and Nutrition Action Plans and stimulated the collaboration of Baltic and Nordic countries in promotion of healthy diet. In Estonia, several strategies which include targets for improving nutrition of population have been launched during recent years: National Strategy for Prevention of Cardiovascular Diseases 2005−2020 (8); Population Health Development Plan for years 2009−2020 (9). Estonian Nutrition and Food recommendations were issued in 2006 (10). In Latvia, Framework Statement on Healthy Nutrition (2003−2013) was elaborated by Ministry of Health and adopted by the regulation of Cabinet of Ministers of Republic of Latvia. Latvian Food Pyramid is used for promotion of healthy nutrition.

In Lithuania, the State Food and Nutrition Strategy and Action Plan for 2003–2010 were approved by the Government of the Republic of Lithuania in 2003 (11). Their main goal is to protect the health of the people and to reduce the prevalence of diseases related to unhealthy nutrition. The latest nutritional recommendations for Lithuanian population were endorsed by the Ministry of Health in 2010 (12). The nutritional recommendations in all Baltic countries include

limitation of consumption of fat, especially animal fat, meat products and promotion of vegetable consumption.

Monitoring of changes in nutrition habits of populations is very important for evaluating the implementation of the Food and Nutrition Strategies. Food habits were monitored in the Finbalt Health Monitor survey. In this chapter trends and social differences in daily vegetable consumption, the use of vegetable fat in cooking, the use of butter on bread and the frequency of consumption of meat and meat products are analysed.

5.2 Consumption of fresh vegetables

In the Finbalt Health Monitor surveys consumption of 18 common foods was measured with the question: "How often during the last week have you consumed the following foods and drinks?" The response alternatives were 'not at all', 'once or twice', 'on 3–5 days', 'on 6–7 days'. Proportion of daily users of fresh vegetables (on 6−7 days during the previous week) is analyzed in this chapter.

In all four countries women consumed fresh vegetables more often than men (Fig. 1). Proportion of women consuming fresh vegetables daily ranged from 1.6 times (in Estonia and Finland) to 1.4 times (in Latvia and Lithuania) higher compared to men. Daily consumption of fresh vegetables was more common in Finland than in the Baltic countries. In 2008, more than one third (35%, 95% CI: 32−38) of men and almost a half (46%, 95% CI: 44−49) of women consumed fresh vegetables daily in Finland. The lowest proportion of daily consumers of fresh vegetables among both men and women was in Estonia where only 15% (95% CI: 13−17) of men and 26% (95% CI: 24−28) of women reported daily consumption in 2008.

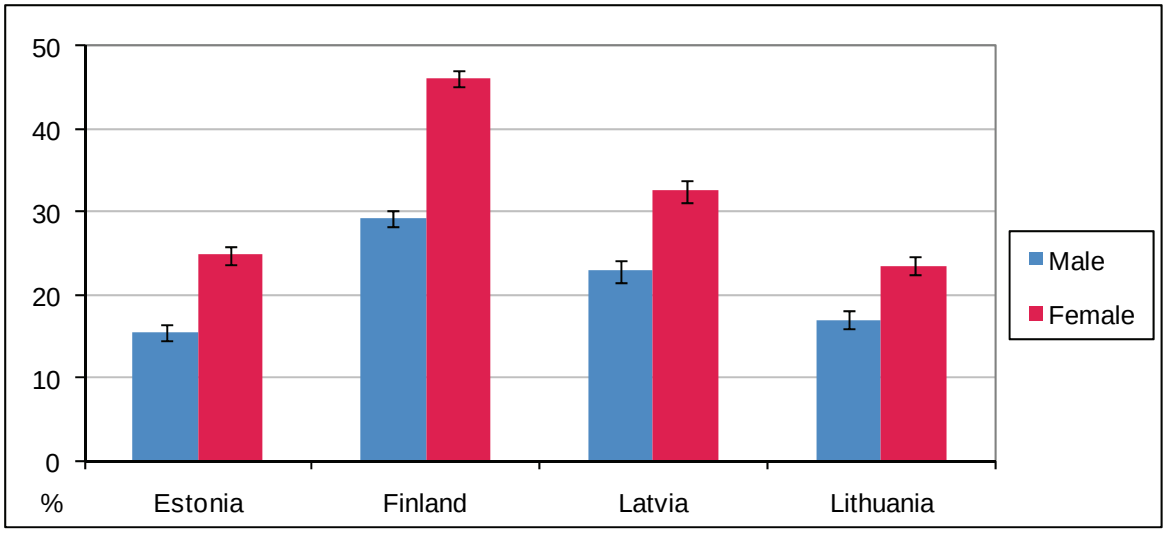

Figure 1. Age-standardized prevalence (%) of daily consumption of fresh vegetables by gender in 1998–2008 (all study years combined).

Analysis of ten-year trends in consumption of fresh vegetables showed that proportion of men consuming fresh vegetables daily increased statistically significantly in Finland and Lithuania (Fig. 2). The largest increase between 1998 and 2008 was found in Lithuanian men (from 12%, 95% CI: 9–14 to 24%, 95% CI: 21−27 respectively). Daily consumption of fresh vegetables among Lithuanian women increased from 21% (95% CI: 18−23) in 1998 to 31% (95% CI: 28−33) in 2008 (Fig. 3). During the study period the consumption of fresh vegetables did not change among women in Finland. A tendency of increase in proportion of men and women consuming fresh vegetables daily was observed in Estonia. In Latvia, the time trends were inconsistent. There was a decrease in the proportion of daily consumers among both men and women from 1998 to

2000, after which the proportion started to increase. Over ten years gender differences in daily consumption of fresh vegetables decreased in Finland and Lithuania, increased in Latvia and did not change in Estonia.

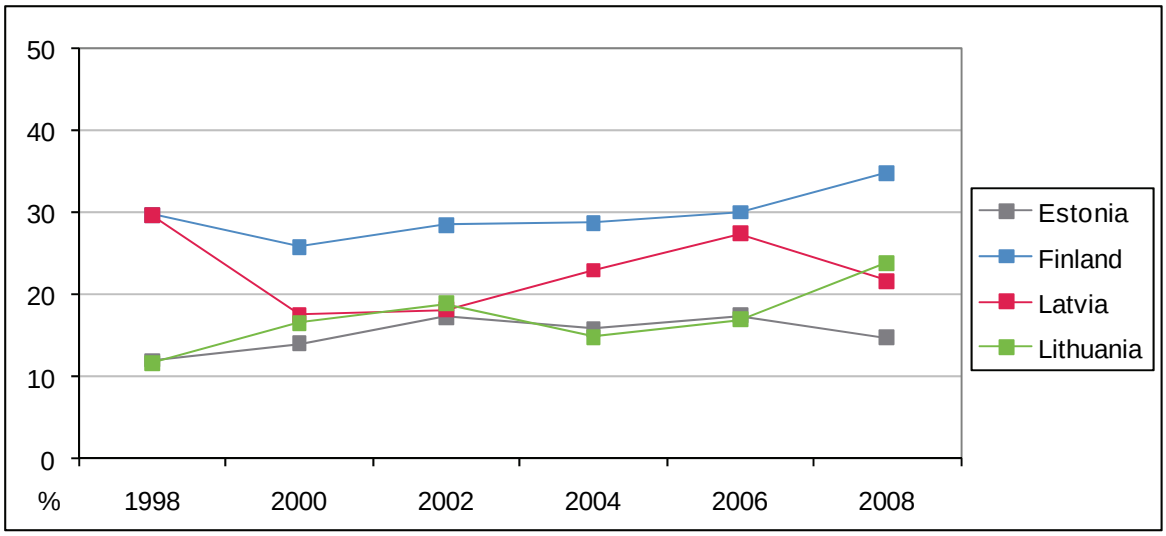

Figure 2. Ten-year trends in age-standardized prevalence (%) of daily consumption of fresh vegetables in men.

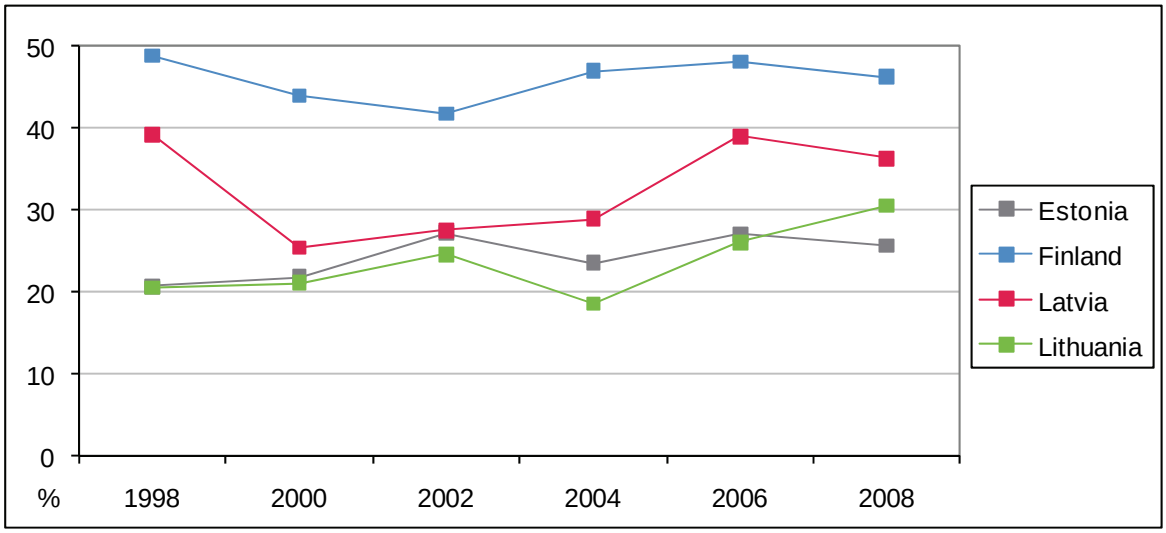

Figure 3. Ten-year trends in age-standardized prevalence (%) of daily consumption of fresh vegetables in women.

In the Baltic countries consumption of fresh vegetables was not associated with age (Fig. 4 and 5) except in Lithuania, where women aged 35−49 reported daily consumption more often when compared to younger and older age groups. In Finland, proportion of men consuming fresh vegetables daily increased with age gradually (from 22%, 95% CI: 20−24 in the youngest age group to 37%, 95% CI: 36−39 in the oldest age group). Prevalence of daily consumption of fresh vegetables among Finnish women of youngest age group (20−34 years) was lower when compared with older women (Fig. 5). In Estonia and Latvia the time trends were similar in all age groups. In Finland, the largest increase in daily consumption of fresh vegetables was found in the

youngest age group of men (from 19%, 95% CI: 16−23 in 1998 to 29%, 95% CI: 24−35 in 2008), therefore the age difference in daily consumption among Finnish men decreased between 1998 and 2008. In Lithuania, the proportion of women consuming fresh vegetables daily increased the most in the middle aged group (35−49 years), thus the differences between age groups among Lithuanian women became more pronounced.

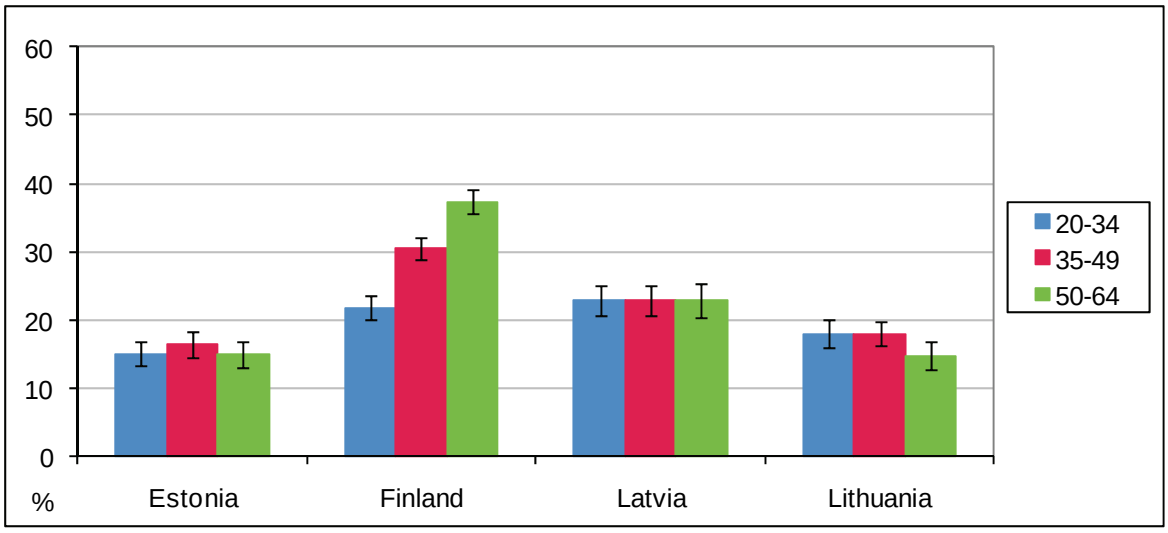

Figure 4. Prevalence (%) of daily consumption of fresh vegetables in men by age in 1998–2008 (all study years combined).

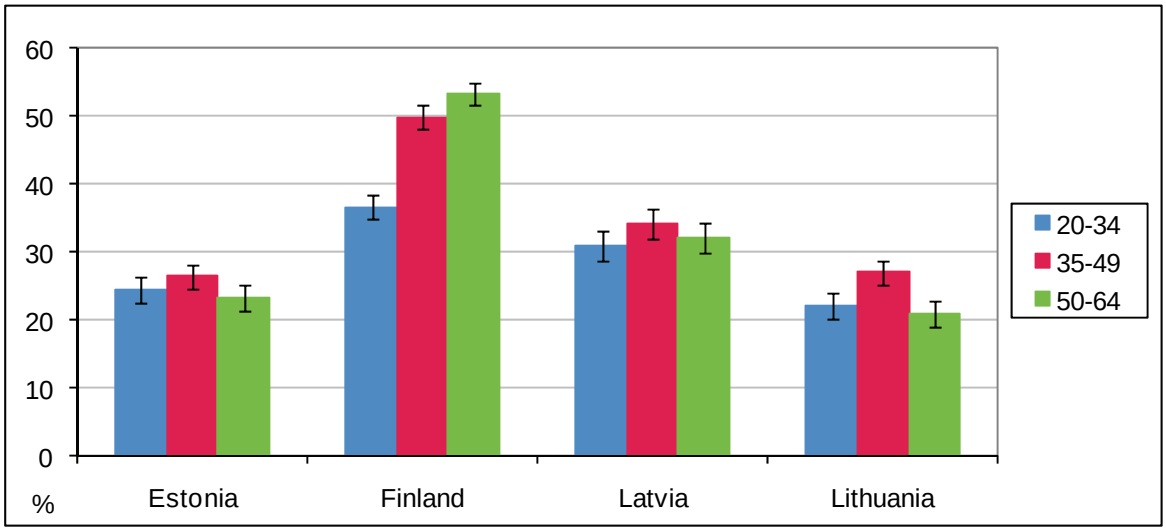

Figure 5. Prevalence (%) of daily consumption of fresh vegetables in women by age in 1998–2008 (all study years combined).

The educational pattern of daily consumption of fresh vegetables was similar in all countries (Fig. 6 and 7). Men and women with high education consumed fresh vegetables more often than people with low education. The highest educational difference was observed in Finland, where 24% (95% CI: 22−25) of low educated men and 40% (95% CI: 38−41) of low educated women reported daily use of fresh vegetables, while the proportion among highly educated men and women was 39% (95% CI: 37−41) and 53% (95% CI: 51−54), respectively. The time trends in the proportion of daily vegetables consumers were similar in all education groups in all countries.

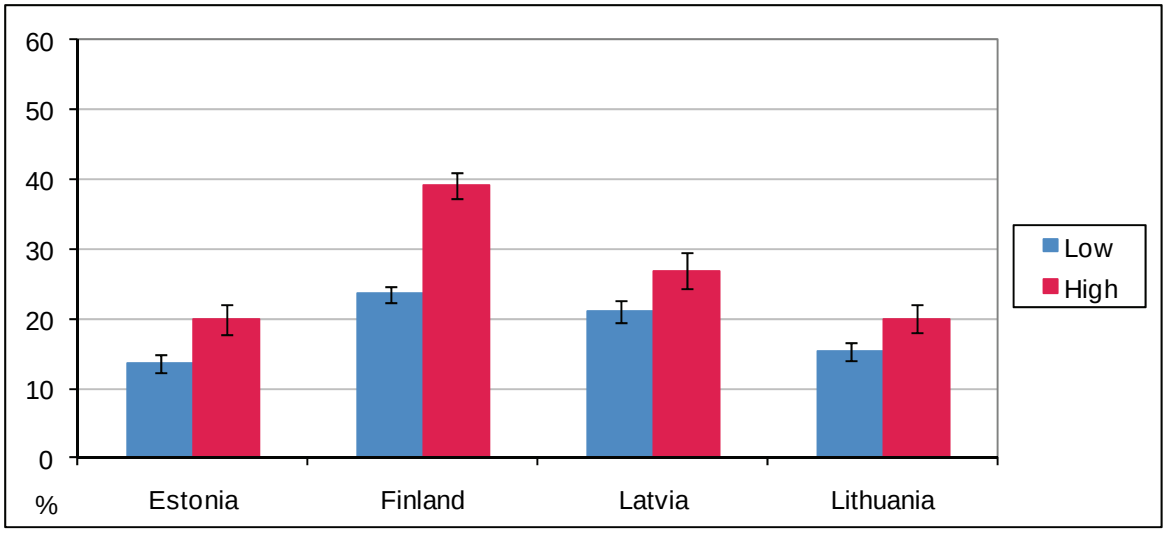

Figure 6. Age-standardized prevalence (%) of daily consumption of fresh vegetables in men by education in 1998–2008 (all study years combined).

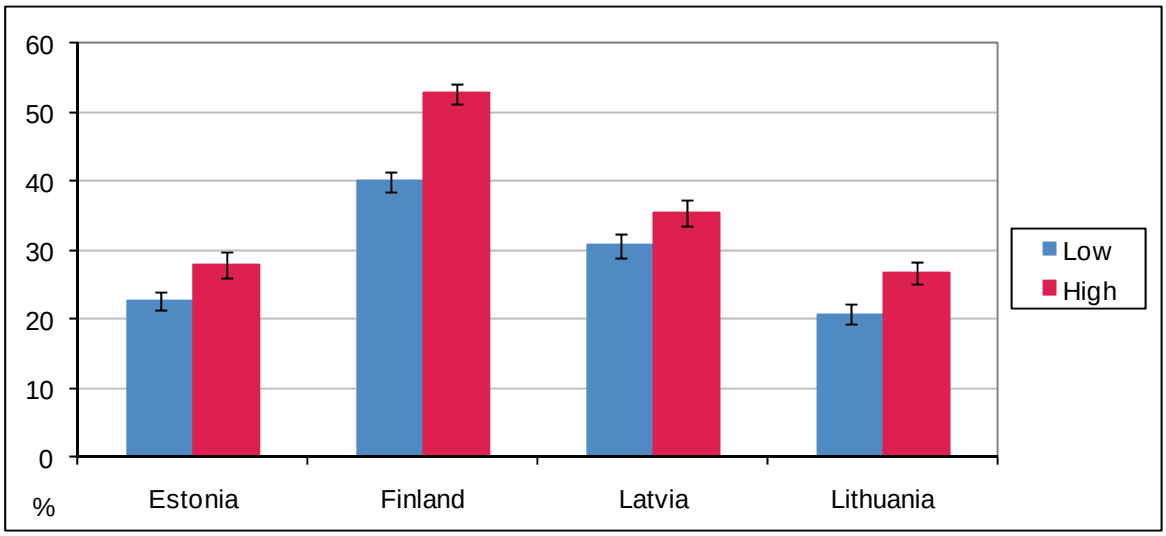

Figure 7. Age-standardized prevalence (%) of daily consumption of fresh vegetables in women by education in 1998–2008 (all study years combined).

Respondents living in metropolitan centres consumed fresh vegetables more often than those living in other areas (Fig. 8 and 9). In Estonia, the difference by place of residence decreased between 1998 and 2008, as the proportion of daily consumers of fresh vegetables among Estonian men and women living in other areas increased (from 7%, 95% CI: 4−10 to 13%, 95% CI: 11−15 and from 16%, 95% CI: 12−20 to 23%, 95% CI: 21−26 respectively). In other countries, the difference by place of residence slightly increased because of different trends in consumption in metropolitan centres and in the other parts of the country.

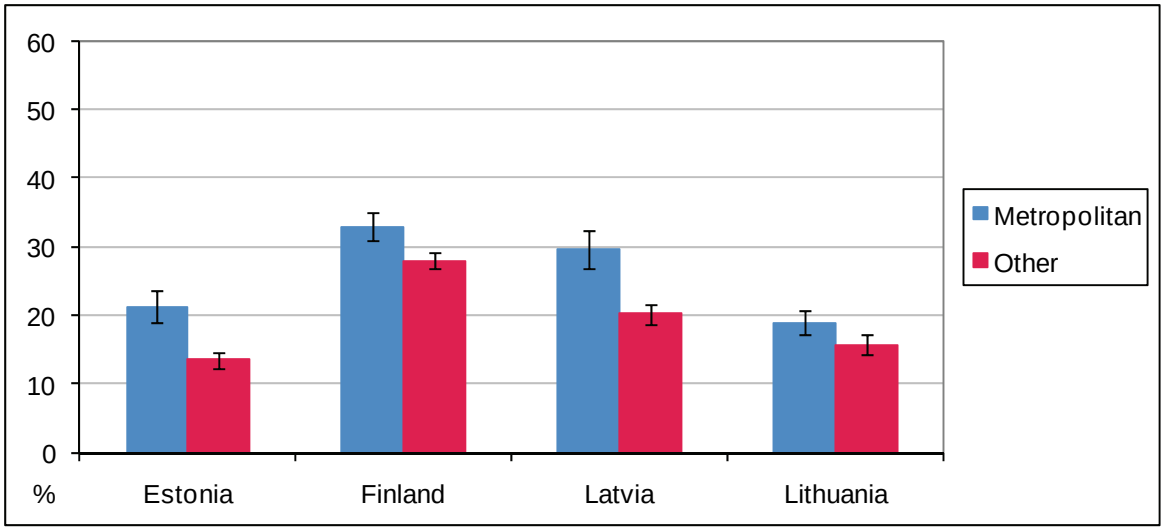

Figure 8. Age-standardized prevalence (%) of daily consumption of fresh vegetables in men by place of residence in 1998–2008 (all study years combined).

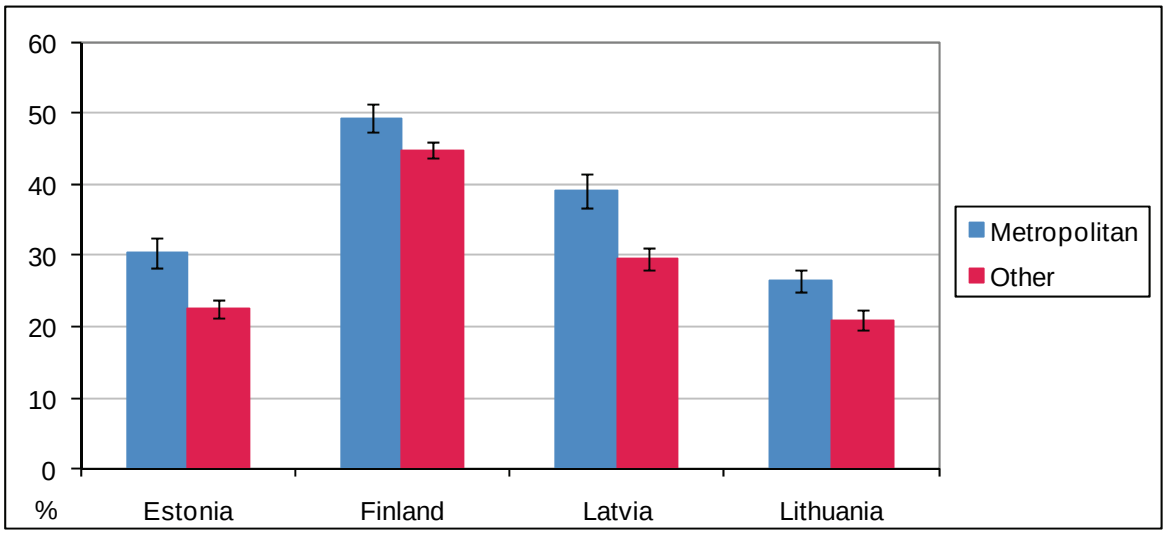

Figure 9. Age-standardized prevalence (%) of daily consumption of fresh vegetables in women by place of residence in 1998–2008 (all study years combined).

5.3 Fat used on bread

The respondents were asked what type of fat they mostly used on bread. Age standardized proportion of persons spreading butter or mixture of butter and oil on bread are analyzed in this chapter (called in the text the use of butter on bread).

In Estonia men reported use of butter on bread more often than women: 44% (95% CI: 42−45) and 40% (95% CI: 39−42) respectively (Fig. 10). No statistically significant gender differences in using butter on bread were found in other countries.

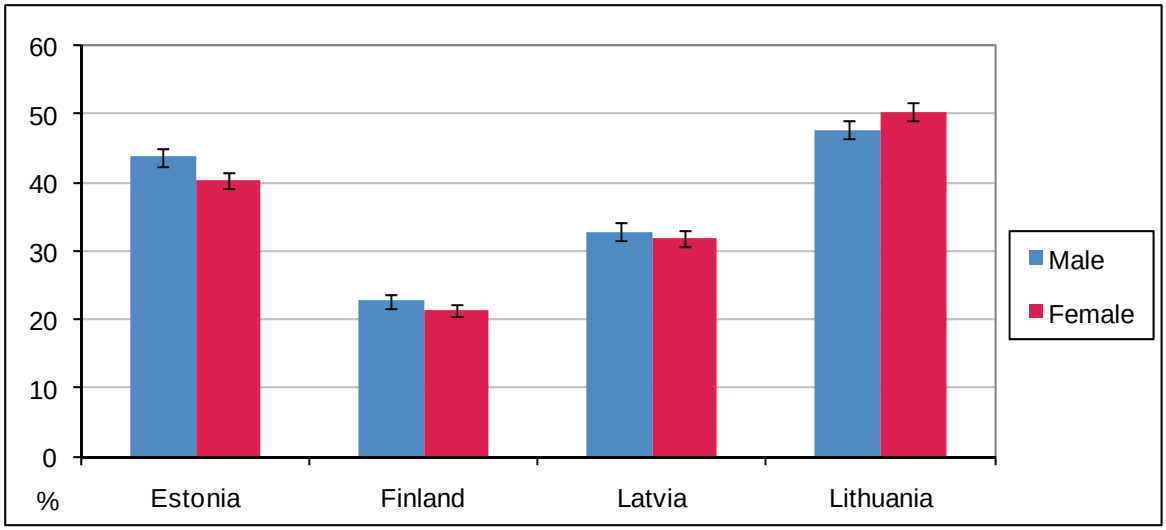

Figure 10. Age-standardized proportion (%) of persons spreading mostly butter and mixture of butter and oil on bread by gender in 1998–2008 (all study years combined).

Between 1998 and 2008 the proportion of Estonian men and women spreading butter on bread decreased from 61% (95% CI: 56−65) and 53% (95% CI: 49−57) in 1998 to 33% (95% CI: 30−35) and 34% (95% CI: 32−37) in 2008, respectively (Fig. 11 and 12). In Latvia and Lithuania opposite trends were observed. In 1998, 39% (95% CI: 35−42) of men and 41% (95% CI: 38−44) of women reported the use of butter on bread in Lithuania, while in the 2008 the proportion was 60% (95% CI: 56−64) and 66% (95% CI: 63−69), respectively. No changes were found in Finland where the proportion of butter users was significantly lower than in the Baltic countries. In 2008, 23% (95% CI: 21−26) of Finnish men and 22% (95% CI: 20−24) of women reported the use of butter on bread.

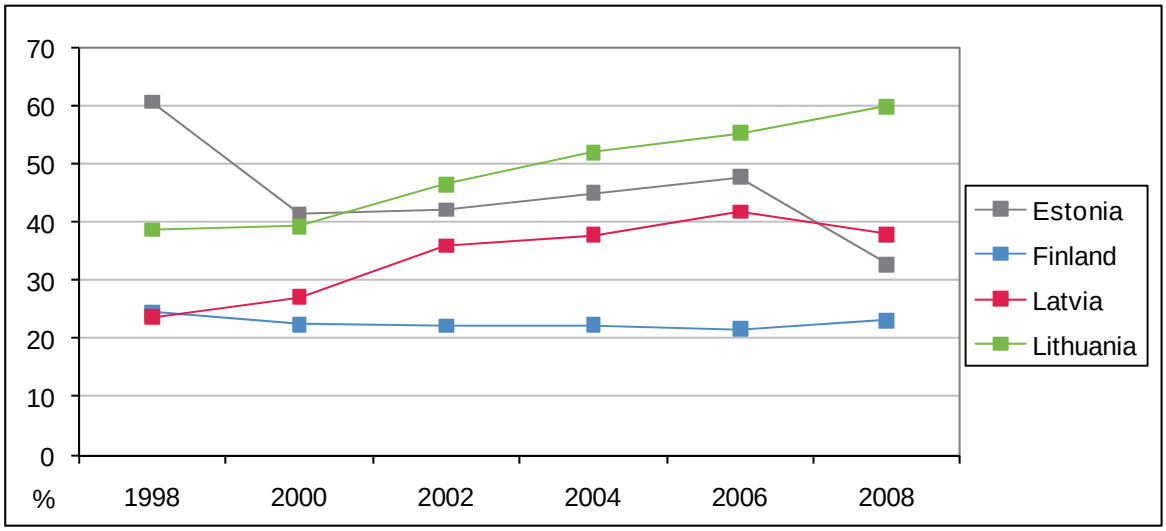

Figure 11. Ten-year trends in age-standardized proportion (%) of men spreading mostly butter and mixture of butter and oil on bread.

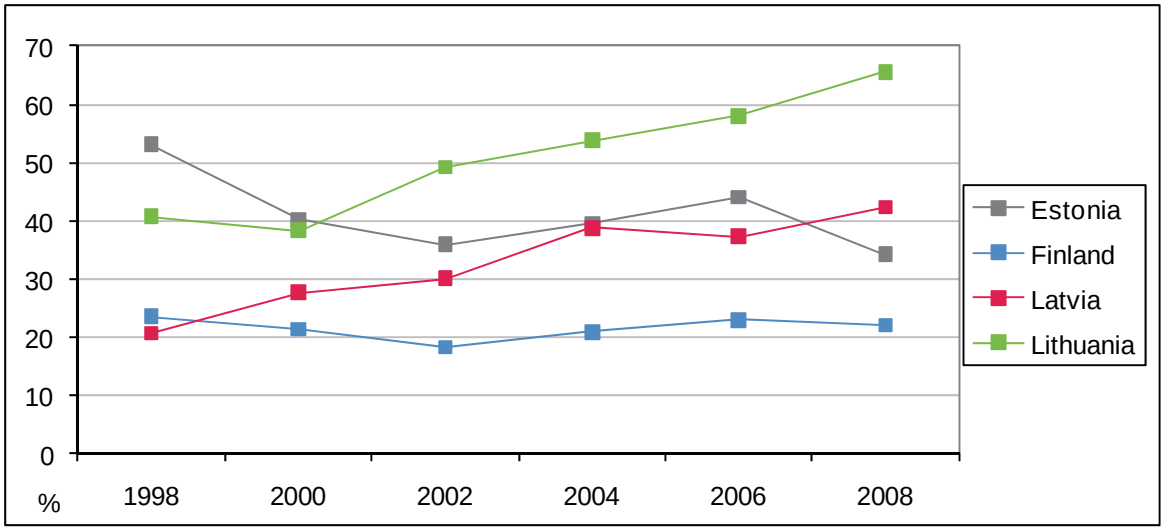

Figure 12. Ten-year trends in age-standardized proportion (%) of women spreading mostly butter and mixture of butter and oil on bread.

In the Baltic countries the frequency of butter use on bread increased with age (Fig. 13 and 14). The highest proportion of users was found among men and women in the oldest age group (50−64 years). The age differences were most pronounced in Latvia. The analysis of time trends showed that the use of butter on bread decreased in all age groups in Estonia. Significant increasing time trends in the proportion of butter users were observed in all age groups in Latvia and Lithuania. Among men the largest increase occurred among the 35−49-year-olds in Latvia (from 18%, 95% CI: 14−23 in 1998 to 41%, 95% CI: 33−48 in 2008) and in the oldest age group in Lithuania (from 41%, 95% CI: 35−48 to 66%, 95% CI: 59−72, respectively).

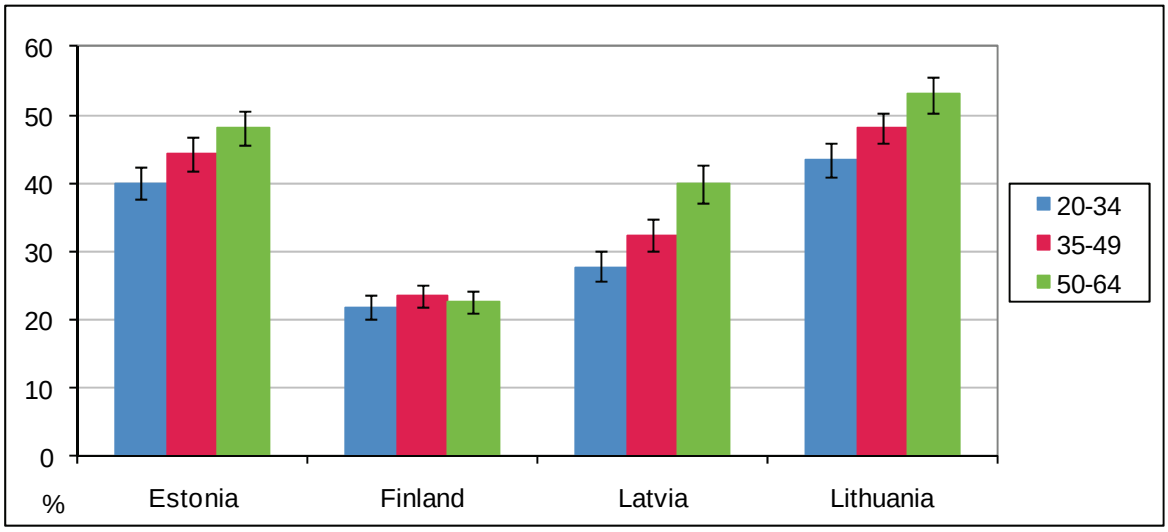

Figure 13. The proportion (%) of men spreading mostly butter and mixture of butter and oil on bread by age in 1998–2008 (all study years combined).

Among women butter use increased the most in the youngest and middle age group in Latvia. Different time trends were observed in Finland. During ten years the proportion of butter users decreased in the oldest age group (from 29%, 95% CI: 25−33 to 18%, 95% CI: 15−22 in men and from 30%, 95% CI: 26−34 to 17%, 95% CI: 14−20 in women). Increasing but statistically insignificant trends were observed in the youngest age group of Finns. In 2008, the youngest

women used butter on bread more often than the oldest women (25%, 95% CI: 21−29 and 17%, 95% CI: 14−20, respectively). The same tendency was observed among Finnish men.

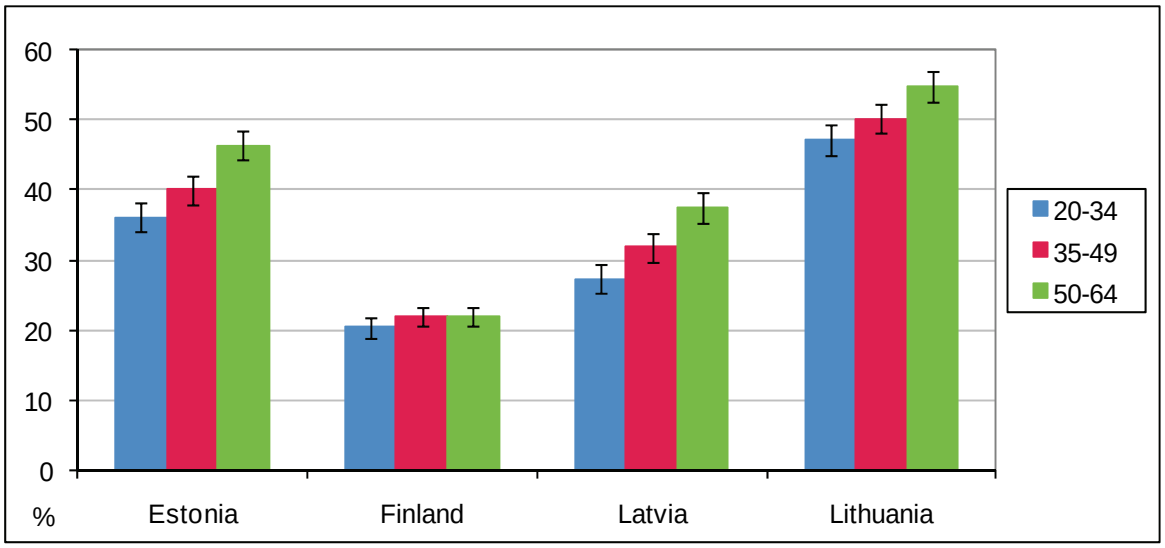

Figure 14. The proportion (%) of women spreading mostly butter and mixture of butter and oil on bread by age in 1998–2008 (all study years combined).

Educational gradient associated with spreading butter on bread varied by country (Fig. 15 and 16). In Estonia butter use was not related to the level of education. In Finland less-educated men used butter on bread more often than better-educated men (24%, 95% CI: 23−25 and 20%, 95% CI: 18−21, respectively). No educational gradient was found among Finnish women. In Latvia and Lithuania using butter on bread was more common among highly educated men and women. Almost a half (56%, 95% CI: 53−58) of Lithuanian highly educated men and 57% (95% CI: 55−59) of women reported using butter on bread. The proportion among less-educated Lithuanian men and women was 44 % (95% CI: 42−46) and 45% (95% CI: 43−47). Ten-year trends in the frequency of butter use varied by education. In Estonia the use of butter decreased more among the less-educated than among the highly educated men and women. In Latvia greater increase in the proportion of butter users was observed among the highly educated men and women, while in Lithuania the increase was greater among the less-educated. In Estonia and Lithuania educational differences decreased, whereas in Latvia they increased.

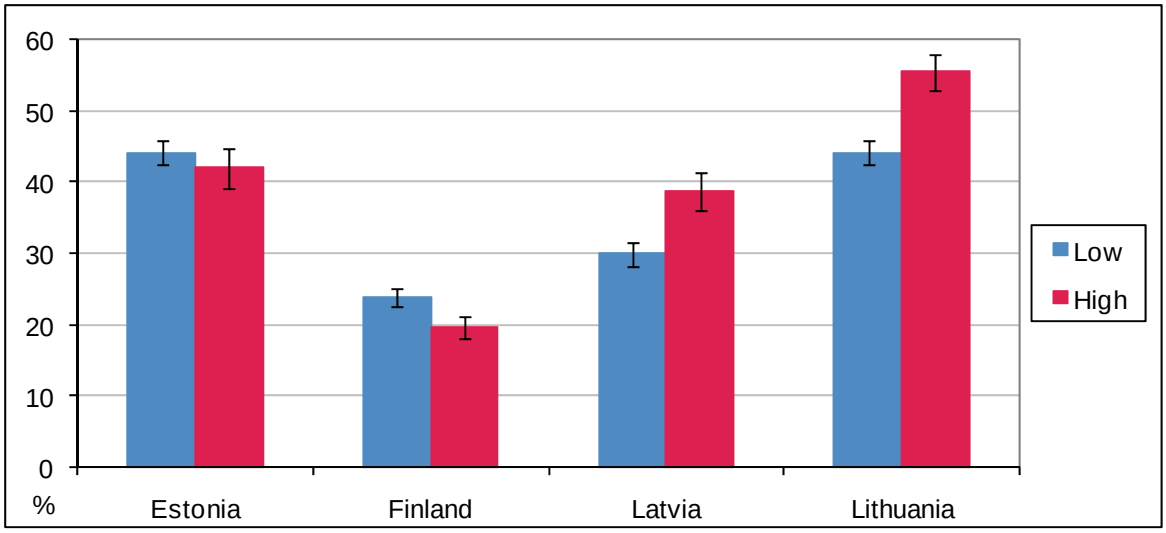

Figure 15. Age-standardized proportion (%) of men spreading mostly butter and mixture of butter and oil on bread by education in 1998–2008 (all study years combined).

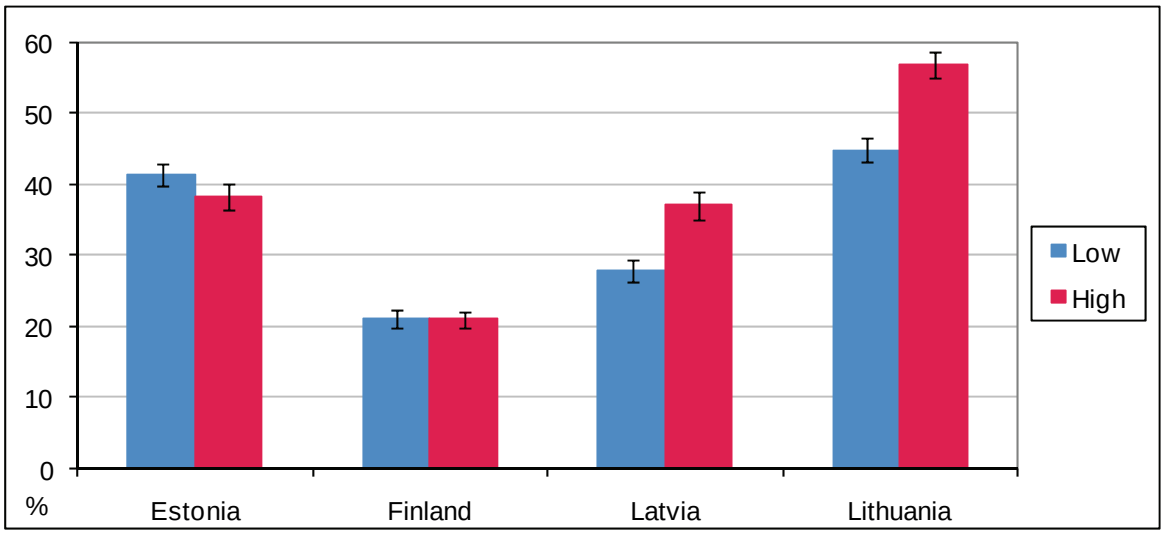

Figure 16. Age-standardized proportion (%) of women spreading mostly butter and mixture of butter and oil on bread by education in 1998–2008 (all study years combined).

The associations between the use of butter on bread and place of residence varied by countries (Fig. 17 and 18). No differences were found in Estonia. In Finland butter use was less common in the metropolitan centre than in other parts of Finland. Latvians and Lithuanians living in metropolitan centres reported using butter more often than persons living in other parts of countries. In Estonia the decrease in the proportion of butter users was higher in other areas than in metropolitan centre. In 2008, men and women in metropolitan centre spread butter on bread more often than in other areas. In Latvia the use of butter on bread increased more in the metropolitan centre. In 1998, no regional differences were found, while in 2008 the proportion of Latvians using butter was higher in the metropolitan centre than in other places.

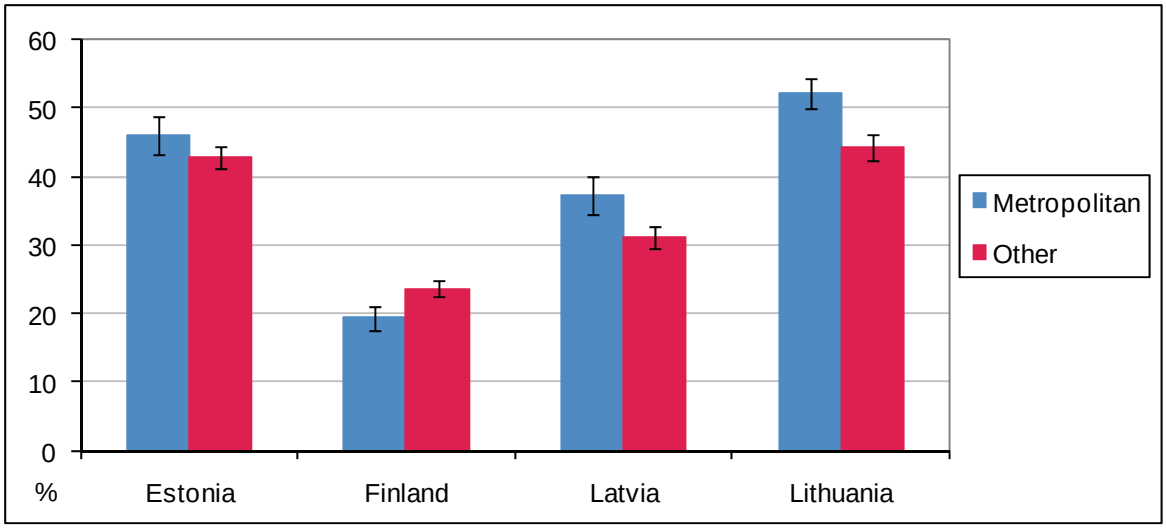

Figure 17. Age-standardized proportion (%) of men spreading mostly butter and mixture of butter and oil on bread by place of residence in 1998–2008 (all study years combined).

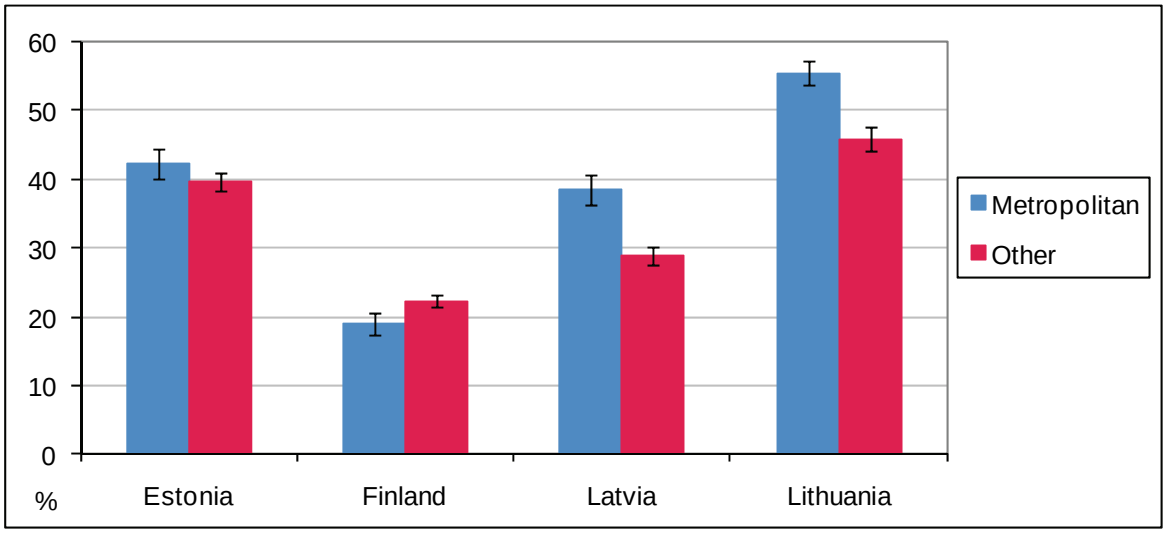

Figure 18. Age-standardized proportion (%) of women spreading mostly butter and mixture of butter and oil on bread by place of residence in 1998–2008 (all study years combined).

5.4 Fat used in cooking

Information on the type of fat used in cooking was obtained with the following question: 'What kind of fat is usually used in your home in food preparation?' Age-standardized proportion of vegetable oil and margarine users is analyzed in this chapter.

In the Baltic countries women reported using vegetable oil and margarine in cooking more often than men (Fig. 19). The greatest gender differences were found in Latvia where 83% (95% CI: 82−84) of men compared with 92% (95% CI: 92−93) of women used vegetable oil and margarine in cooking. In Finland, the use of vegetable oil and margarine in cooking was less prevalent than in the Baltic countries: 79% (95% CI: 76−81) of Finnish men and 81% (95% CI: 79−83) of women reported the use of vegetable oil and margarine in cooking in 2008.

During the study period the proportion of men using vegetable oil and margarine in cooking increased statistically significantly in the Baltic countries, but did not change in Finland. The largest increase was found in Lithuanian men (from 79%, 95% CI: 76−82 in 1998 to 89%, 95% CI: 87−92 in 2008). The use of vegetable oil and margarine only slightly increased among women in all countries, except in Latvia.

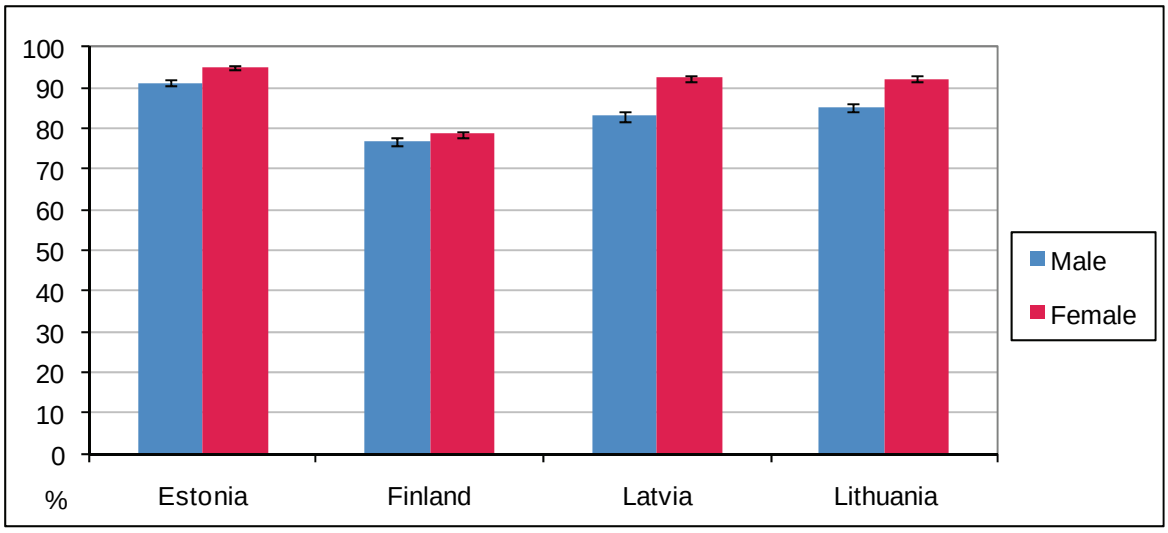

Figure 19. Age-standardized proportion (%) of persons using mostly vegetable oil and margarine for cooking by gender in 1998–2008 (all study years combined).

In the Baltic countries the frequency of using vegetable oil and margarine in cooking was associated with age in men (Fig. 20). The lowest proportion of users of vegetable oil and margarine was found among men in the oldest age group (50−64 years), in spite of the highest increase in the proportion of users during ten years among them (for example, in Lithuania from 68% 95% CI: 62−75 in 1998 to 90% 95% CI: 85−93 in 2008). In Finland the prevalence of using vegetable oil and margarine in cooking was similar in all age groups of men and age differences among women were small (Fig. 21). In Finland and Latvia the oldest women reported using vegetable oil and margarine more often when compared to the other age groups. In Estonia the use was more prevalent in the middle age group (35−49 years) of women than among the oldest women. No age differences were found in Lithuanian women. In the Baltic countries the increase in the use of vegetable oil and margarine in cooking was highest in the oldest age group of women (in Lithuania from 84%, 95% CI: 80−88 in 1998 to 95%, 95% CI: 92−97 in 2008). During the study period the age differences decreased in Estonia, Latvia and Lithuania.

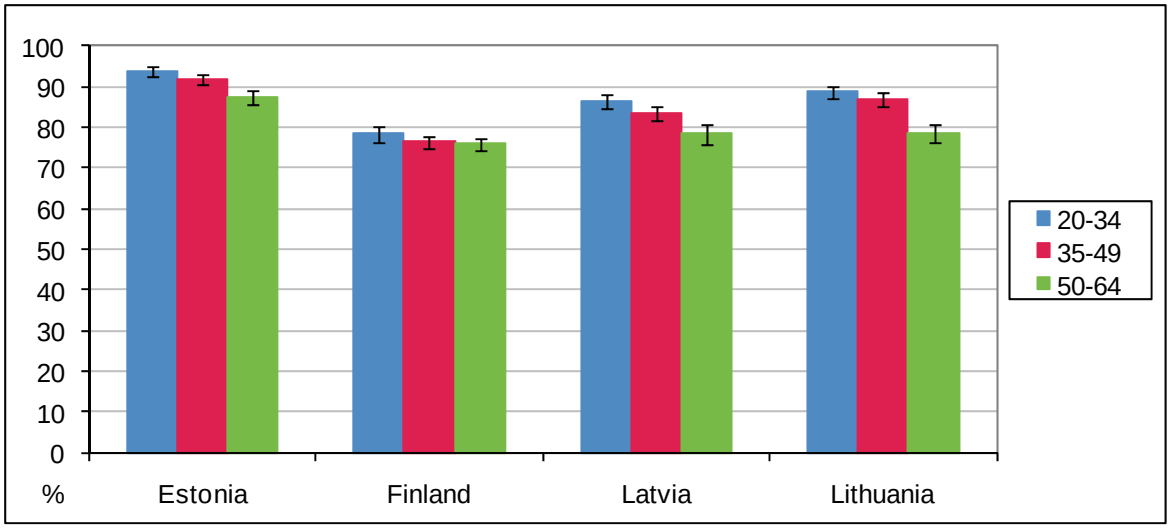

Figure 20. The proportion (%) of men using mostly vegetable oil and margarine for cooking by age in 1998–2008 (all study years combined).

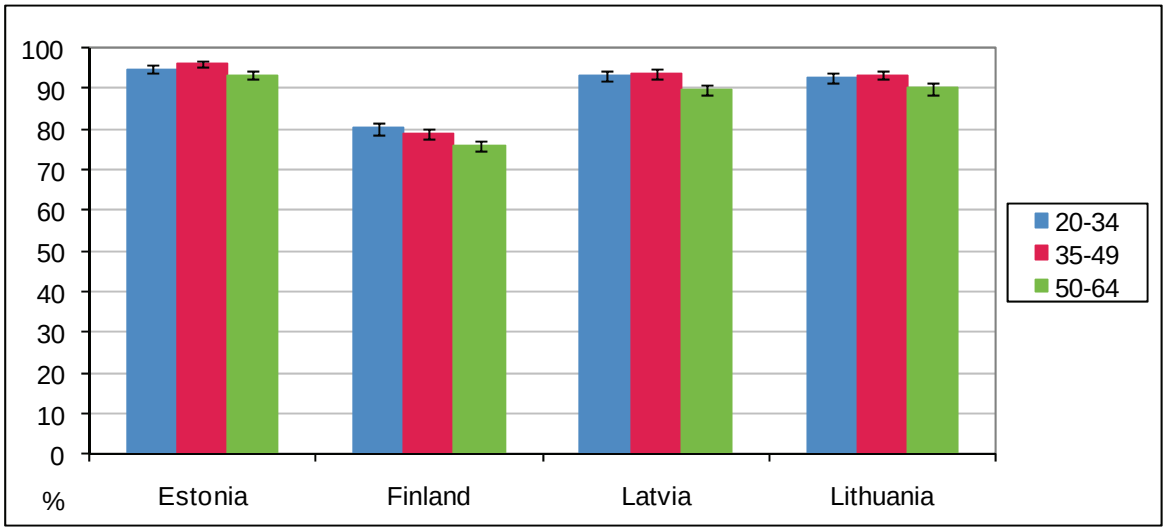

Figure 21. The proportion (%) of women using mostly vegetable oil and margarine for cooking by age in 1998–2008 (all study years combined).

The highest educational gradient in the type of fat used in cooking was observed in Finland (Fig. 22 and 23). Better-educated men and women reported using vegetable oil and margarine more often than those with a low level of education (74%, 95% CI: 73−73 versus 82%, 95% CI: 80−83 among men having low versus high education and 75%, 95% CI: 74−76 versus 82%, 95% CI: 81−83 among women, respectively). The use of vegetable oil and margarine was more prevalent among highly educated men in Latvia and Lithuania and among highly educated women in Lithuania when compared to the less-educated. In Estonia no educational gradient was observed. The increase in the proportion of the users of vegetable oil and margarine during the study period was greater among men with low education in the Baltic countries. The use of vegetable oil and margarine increased the most among less-educated women in Estonia and Lithuania and among highly educated women in Latvia.

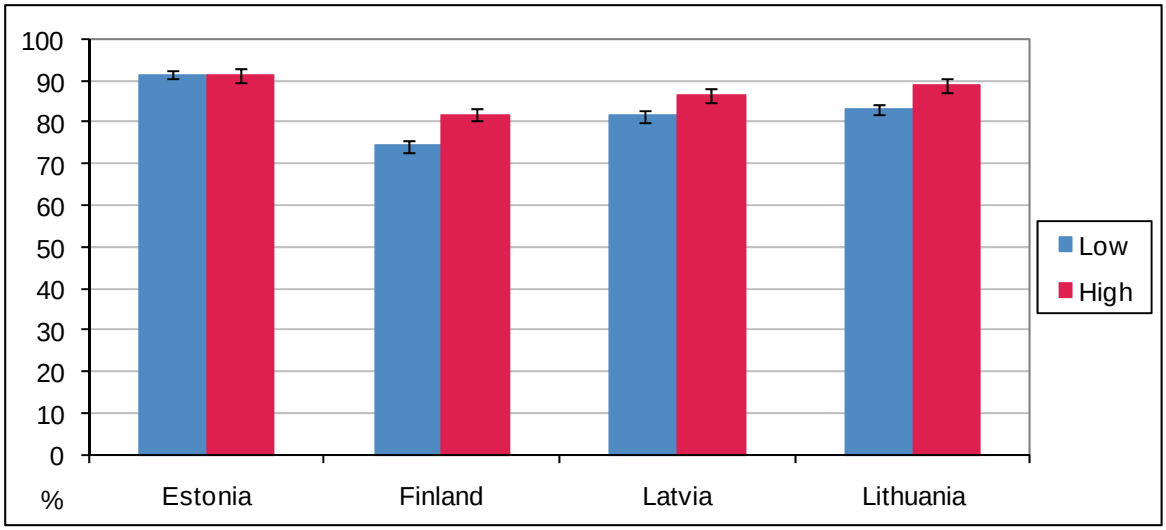

Figure 22. Age-standardized proportion (%) of men using mostly vegetable oil and margarine for cooking by education in 1998–2008 (all study years combined).

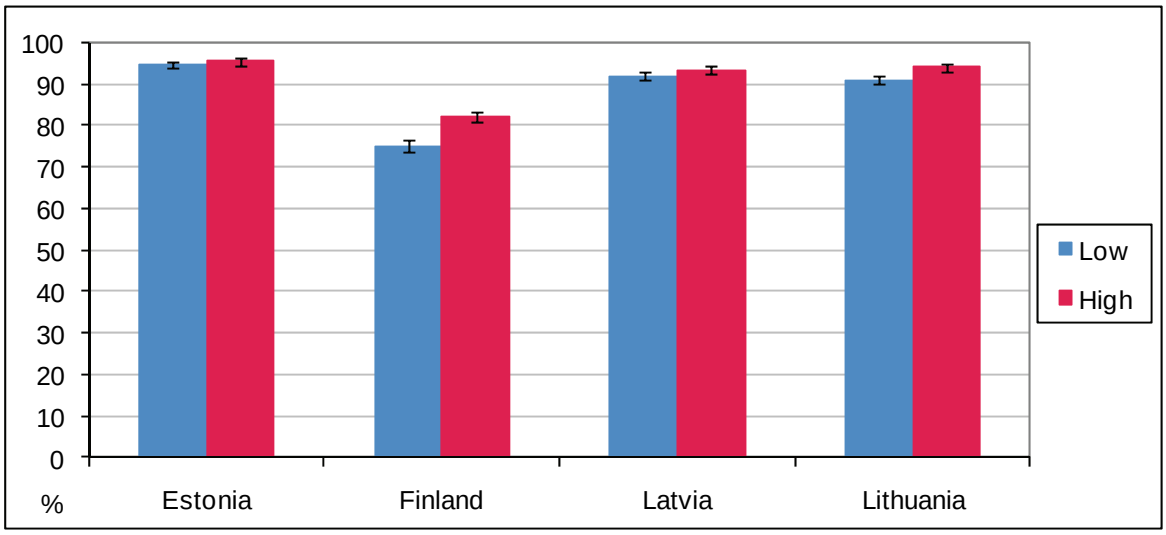

Figure 23. Age-standardized proportion (%) of women using mostly vegetable oil and margarine for cooking by education in 1998–2008 (all study years combined).

Men and women living in metropolitan centres in Finland, Latvia and Lithuania used vegetable oil and margarine in cooking more often than those living in other areas (Fig. 24 and 25). In Estonia, no differences according to place of residence were found. In the Baltic countries proportion of men using vegetable oil and margarine in other areas than metropolitan centres increased significantly (in Lithuania from 74%, 95% CI: 70−78 in 1998 to 90%, 95% CI: 86−93 in 2008). An increase in the proportion of women using vegetable oil and margarine in cooking was observed in other areas of Finland, Latvia and Lithuania. Differences by place of residence decreased during the study period, because of greater increase in the use of vegetable oil and margarine in other areas than in the metropolitan area.

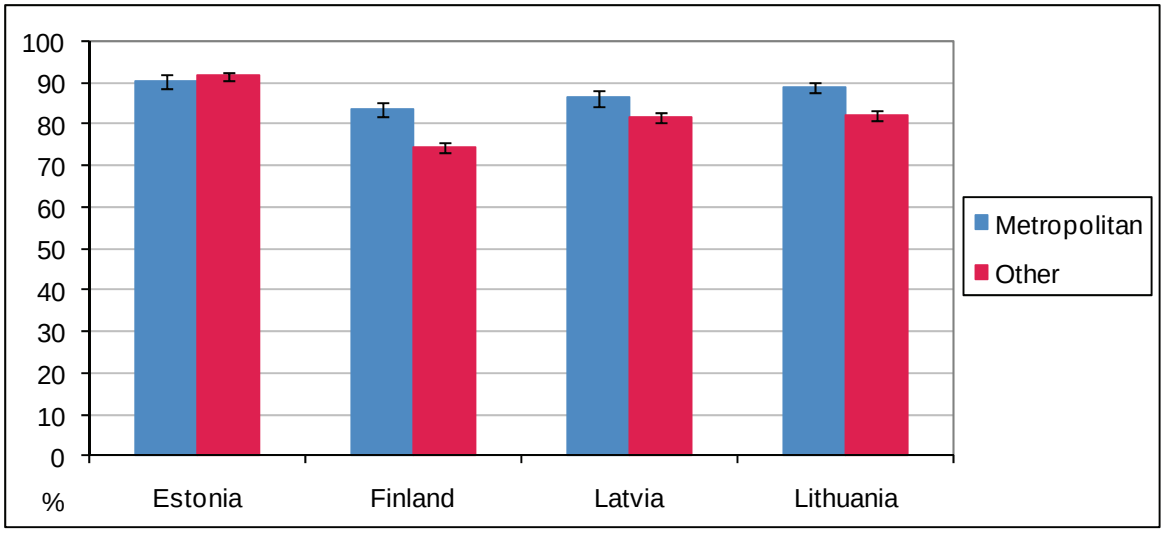

Figure 24. Age-standardized proportion (%) of men using mostly vegetable oil and margarine for cooking by place of residence in 1998–2008 (all study years combined).

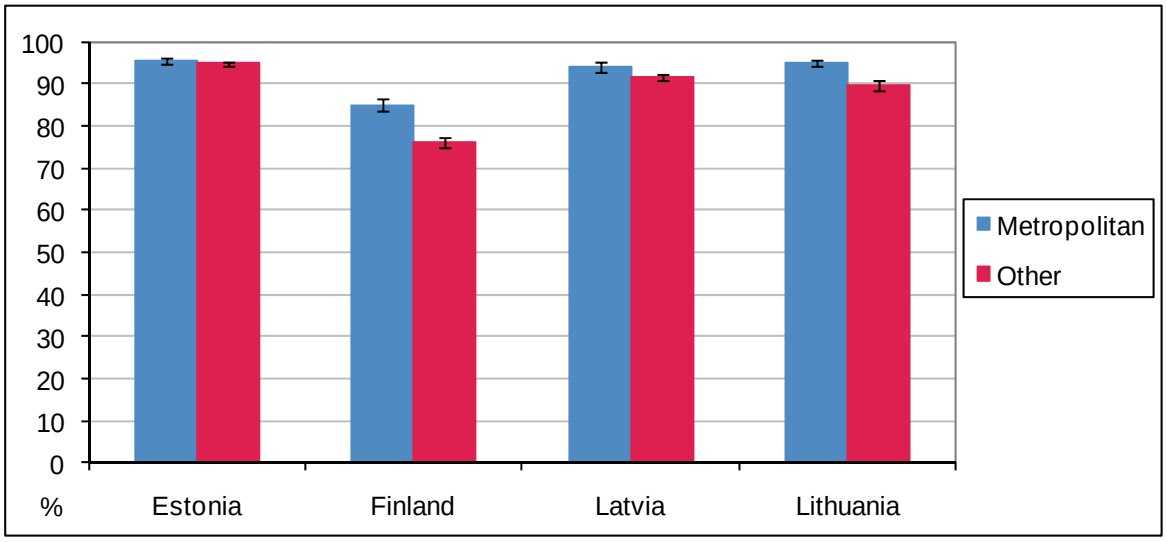

Figure 25. Age-standardized proportion (%) of women using mostly vegetable oil and margarine for cooking by place of residence in 1998–2008 (all study years combined).

5.5 Consumption of meat and meat products

Consumption of meat

Consumption of meat and meat products was assessed with the following question: 'How often during the last week have you consumed the following foods and drinks?'' Meat and meat products (for example, sausages) were among food items included in the questionnaire. The response alternatives were 'not at all', 'once or twice', 'on 3–5 days', 'on 6–7 days'. Consuming meat and meat products at least on 3 days during the previous week was defined as frequent meat consumption. Age-standardized proportion of people using meat and meat products is analyzed in this chapter.

In all countries men consumed meat more often than women (Fig. 26). Between 1998 and 2008 the proportion of people consuming meat at least on three days a week increased in Estonia from 46% (95% CI: 41−50) in 1998 to 56% (95% CI: 53−59) in 2008 among men and from 31% (95% CI: 27−34) to 39% (95% CI: 37−42) among women. Trends towards increasing frequent meat consumption were observed among men in Latvia and Lithuania. Proportion of women consuming meat at least on three days a week increased in Latvia (from 33%, 95% CI: 30−36 in 1998 to 44%, 95% CI: 40−48 in 2008). Frequent consumption was most common in Lithuania: in 2008, 62% (95% CI: 58−66) of Lithuanian men and 46% (95% CI: 43−49) of women reported frequent consumption of meat.

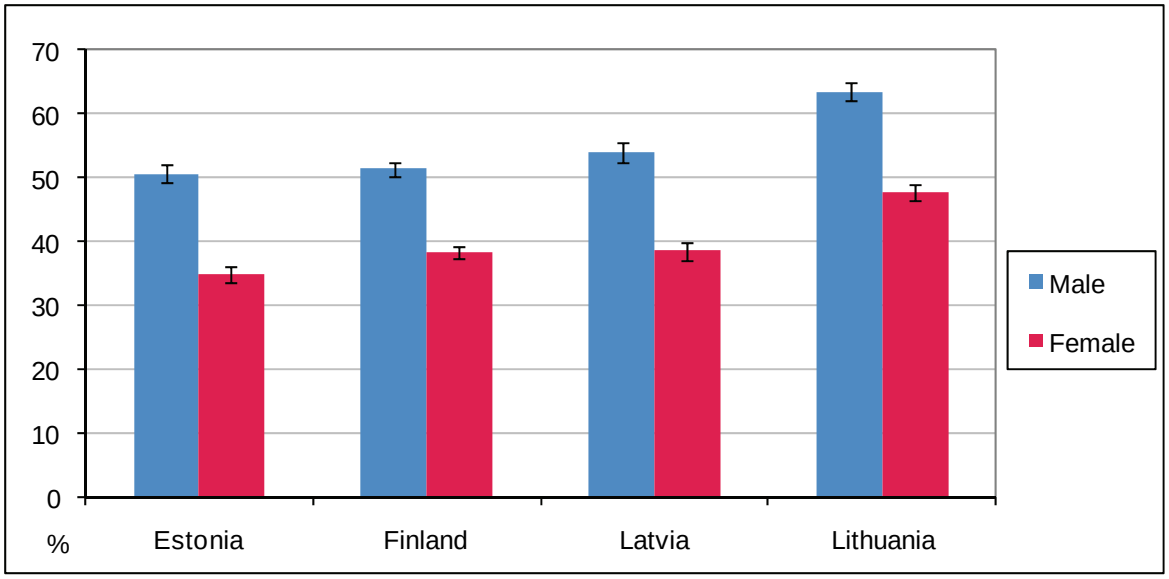

Figure 26. Age-standardized proportion (%) of persons consuming meat at least on three days a week by gender in 1998–2008 (all study years combined).

Proportion of people consuming meat at least on three days a week decreased with age in all countries, except in Estonia, where no association between meat consumption and age was found (Fig. 27 and 28). In Finland the youngest men and women consumed meat more often than older people. Statistically significant differences in frequent meat use were observed between the youngest and oldest men in Latvia and Lithuania. The highest proportion of frequent meat consumers among Latvian and Lithuanian women was found in the middle-aged group. During the study period prevalence of frequent meat use increased among men aged 35−49 in Estonia and among women aged 20−34 in Latvia.

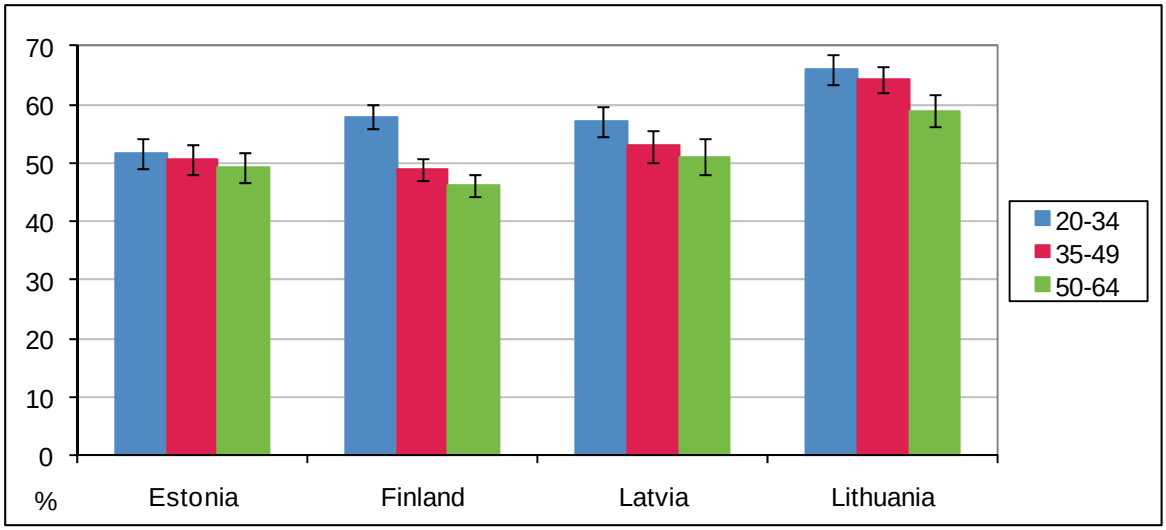

Figure 27. The proportion (%) of men consuming meat at least on three days a week by age in 1998–2008 (all study years combined).

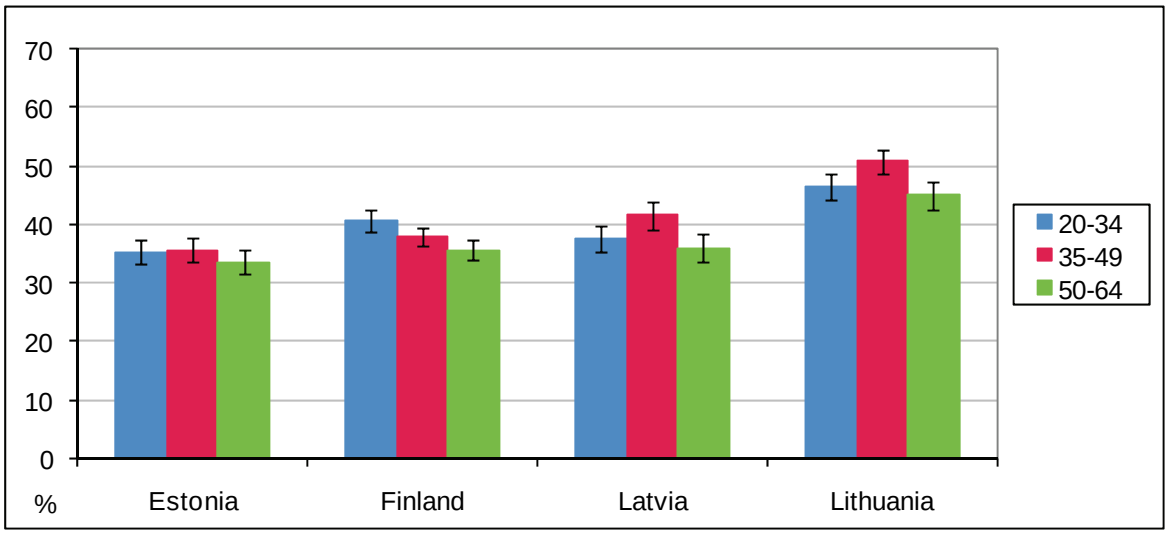

Figure 28. The proportion (%) of women consuming meat at least on three days a week by age in 1998–2008 (all study years combined).

Associations between education and meat consumption varied by country (Fig. 29 and 30). In Estonia the proportion of highly educated men consuming meat at least on three days a week was higher than that of the low educated: 54% (95% CI: 51−57) and 50% (95% CI: 48−51). The same tendency was observed in Latvia and Lithuania. No relationship between education and meat consumption was found among men in Finland. Better-educated women consumed meat less often than their less educated counterparts in Finland and Lithuania. Proportion of highly educated Lithuanian women consuming meat at least on three days a week was 46% (95% CI: 44−47) and that among less-educated women 49% (95% CI: 48−51). The opposite tendency was seen among women in Estonia. In Latvia meat consumption was not related to level of education. During the study period frequent meat consumption increased among low educated people in Estonia: from 45%, (95% CI: 39−50) in 1998 to 58%, (95% CI: 54−62) in 2008 among men and from 29% (95% CI: 24−33) to 37% (95% CI: 34−41) among women, respectively.

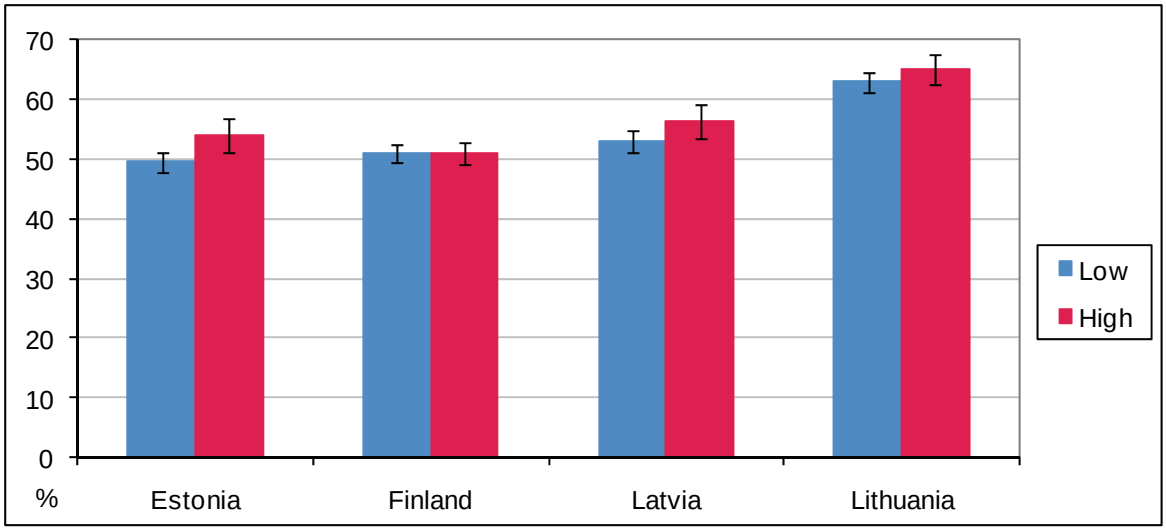

Figure 29. Age-standardized proportion (%) of men consuming meat at least on three days a week by education in 1998–2008 (all study years combined).

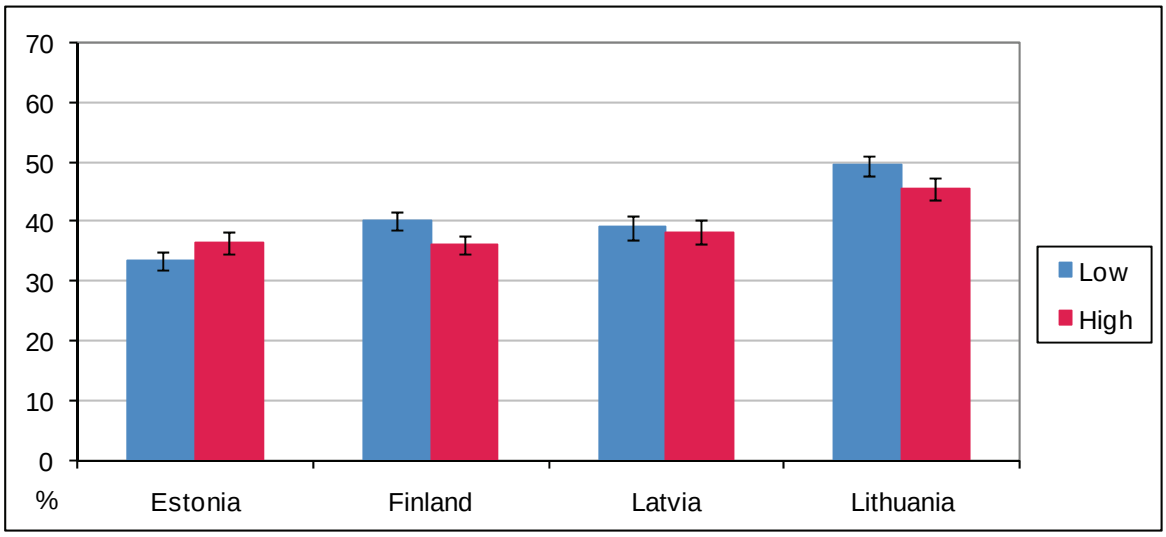

Figure 30. Age-standardized proportion (%) of women consuming meat at least on three days a week by education in 1998–2008 (all study years combined).

In all countries men and women living in other places than metropolitan centres consumed statistically significantly more often meat except Estonian men and Latvian women (Fig. 31 and 32). The greatest regional differences were found in Finland. Proportion of Finnish men consuming meat at least on three days a week was 47% (95% CI: 45−49) in the metropolitan centre and 53% (95% CI: 52−54) in other areas. The proportion among Finnish women in the metropolitan centre was 32% (95% CI: 30−34) and 41% (95% CI: 39−42) in other areas. Since 1998 the prevalence of frequent meat consumption increased among men and women living outside the metropolitan centre in Estonia. In Latvia and Lithuania decreasing trends in frequent meat consumption were observed in the metropolitan centres.

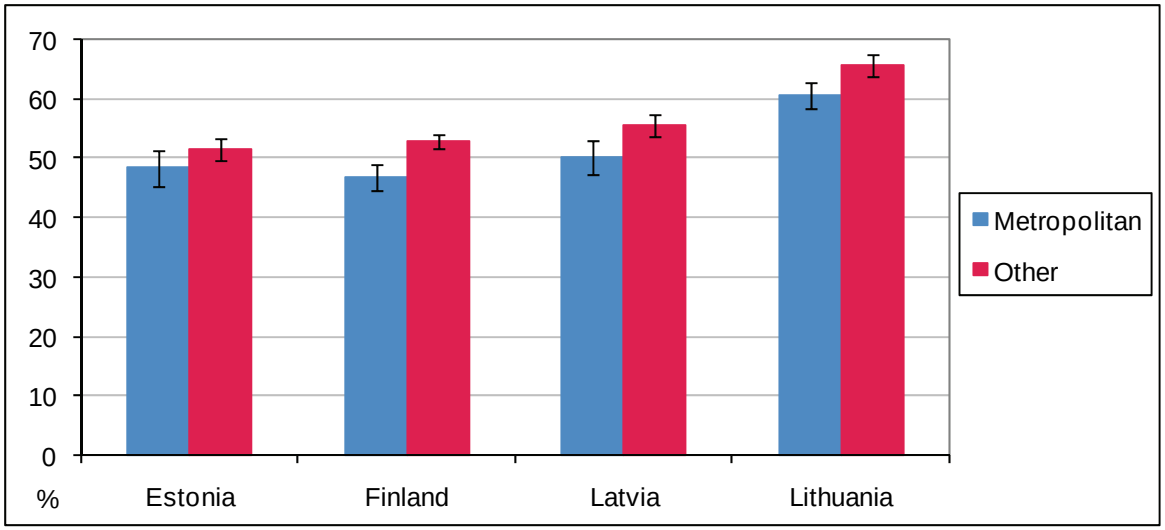

Figure 31. Age-standardized proportion (%) of men consuming meat at least on three days a week by place of residence in 1998–2008 (all study years combined).

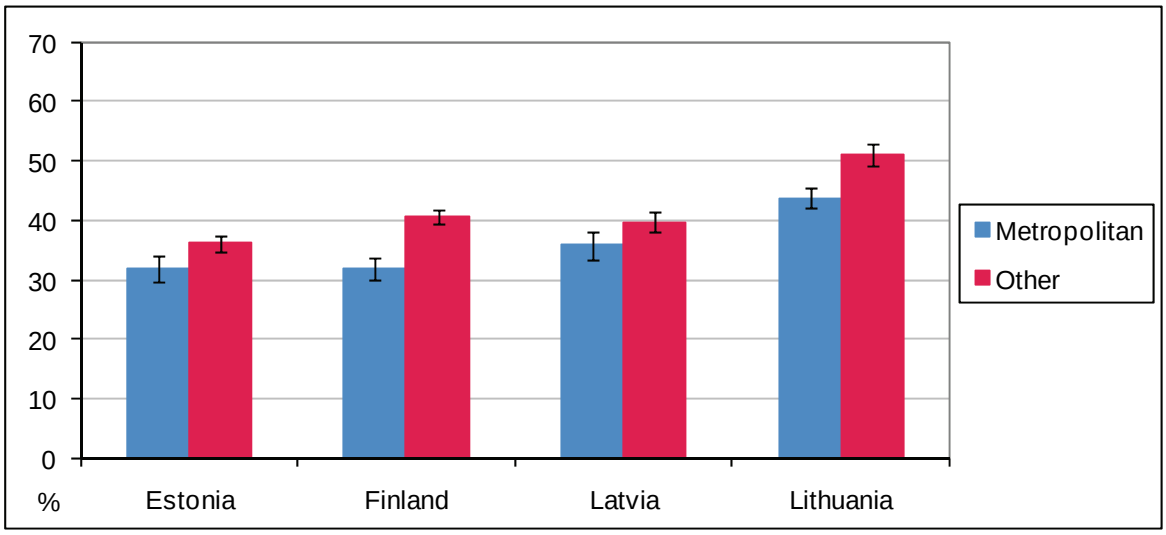

Figure 32. Age-standardized proportion (%) of women consuming meat at least on three days a week by place of residence in 1998–2008 (all study years combined).

Consumption of meat products

Analysis of gender differences showed that the proportion of frequent meat product users was higher among men than among women (Fig. 33). The highest proportion of people consuming meat products at least on three days a week was in Estonia: 63% (95% CI: 60−66) of men and 46% (95% CI: 44−49) of women in 2008. The lowest prevalence was found in Finland where 42% (95% CI: 39−45) of men and 26% (95% CI: 24−28) of women reported using meat products at least on three days a week. Since 1998 the prevalence of frequent consumption of meat products increased among men in Estonia and among both genders in Lithuania (Fig. 34 and 35). In Finland proportion of men using meat products decreased from 48% (95% CI: 45−50) in 1998 to 42% (95% CI: 39−45) in 2008. The proportion Finnish women eating frequently meat products decreased from 34% (95% CI: 31−36) to 26% (95% CI: 24−28).

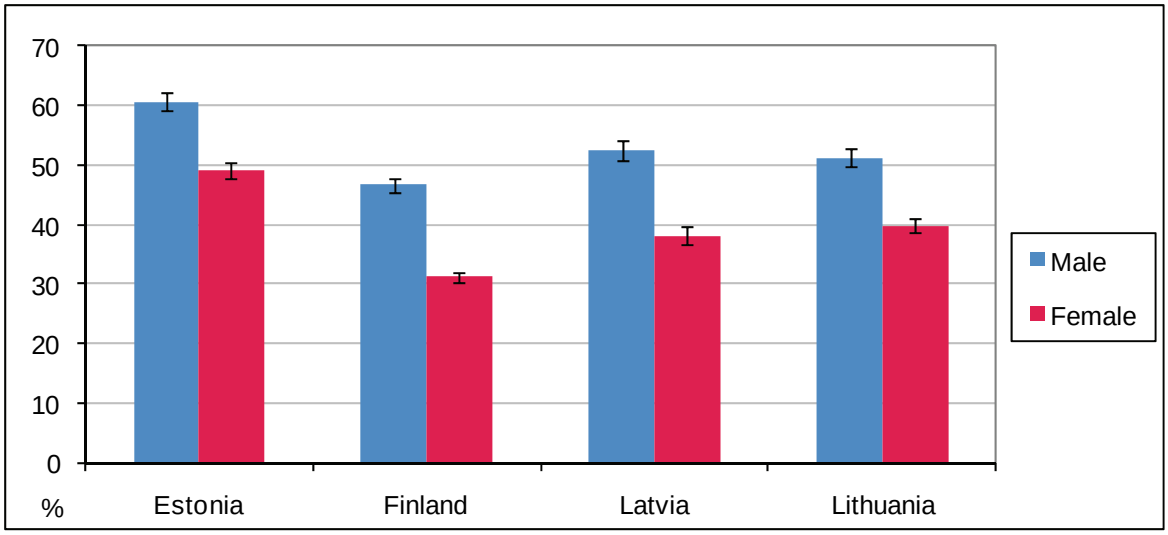

Figure 33. Age-standardized proportion (%) of persons consuming meat products at least on three days a week by gender in 1998–2008 (all study years combined).

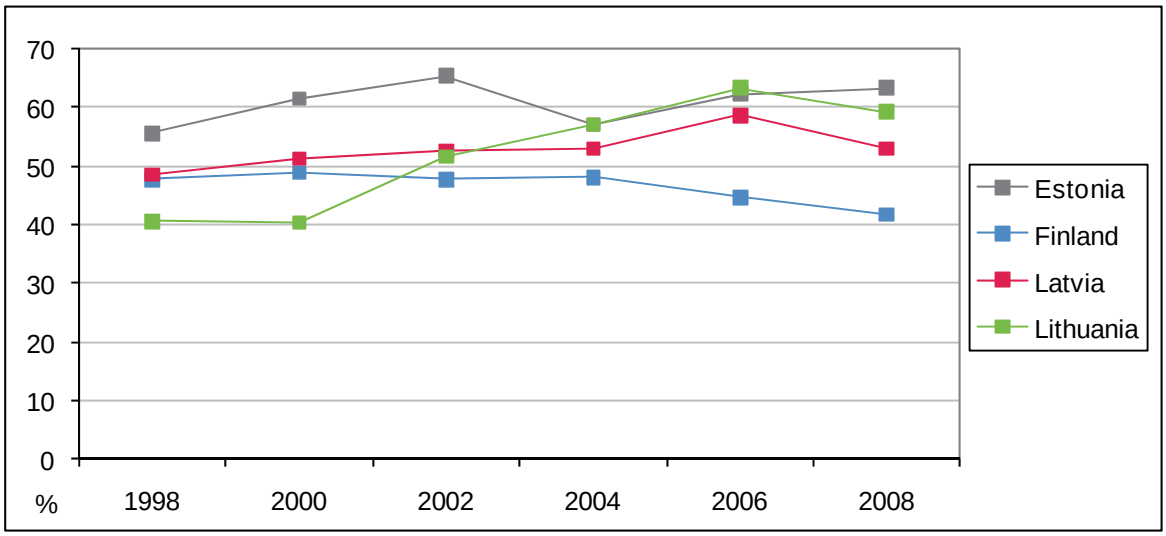

Figure 34. Ten years trends in age-standardized proportion (%) of men consuming meat products at least on three days a week.

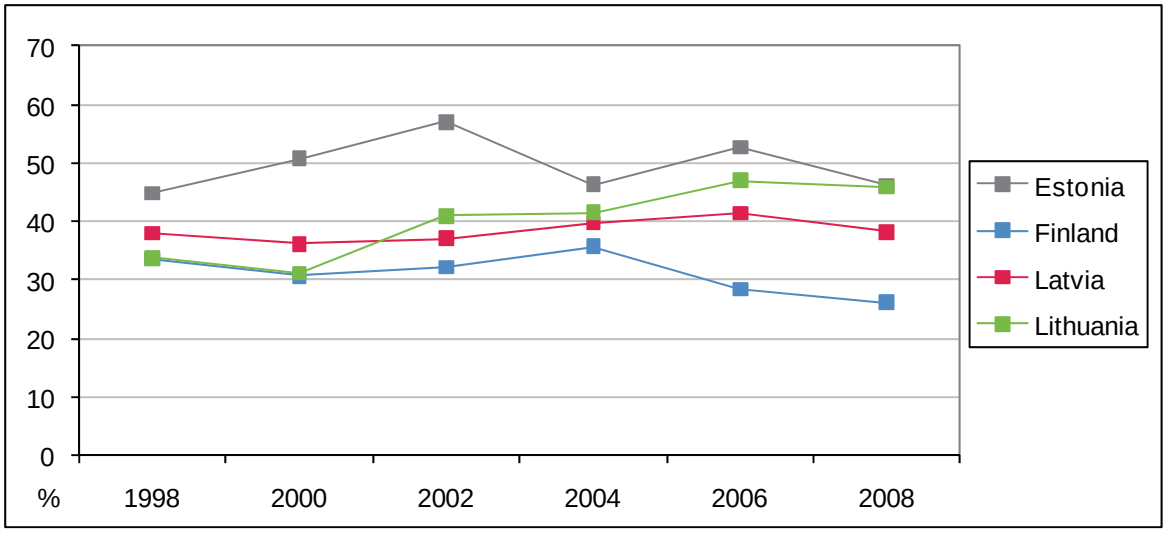

Figure 35. Ten years trends in age-standardized proportion (%) of women consuming meat products at least on three days a week.

In Estonia and Lithuania the oldest age group ate meat products less often, while in Finland young people consumed meat products less often (Fig. 36 and 37). During the ten years study period the proportion of the youngest Finnish women consuming frequently meat products decreased from 32% (95% CI: 28−36) in 1998 to 20% (95% CI: 16−24) in 2008.

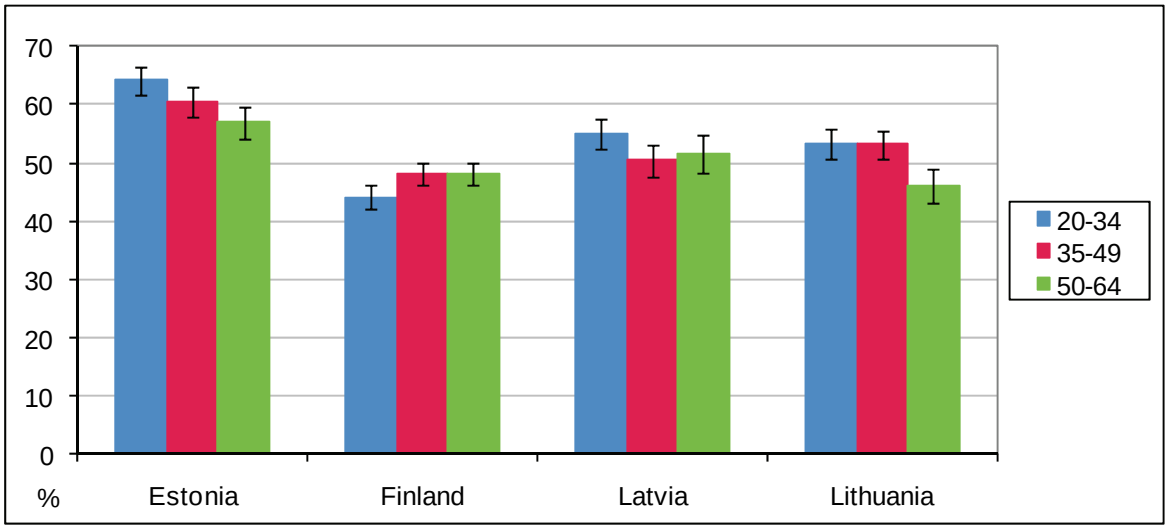

Figure 36. The proportion (%) of men consuming meat products at least on three days a week by age in 1998–2008 (all study years combined).

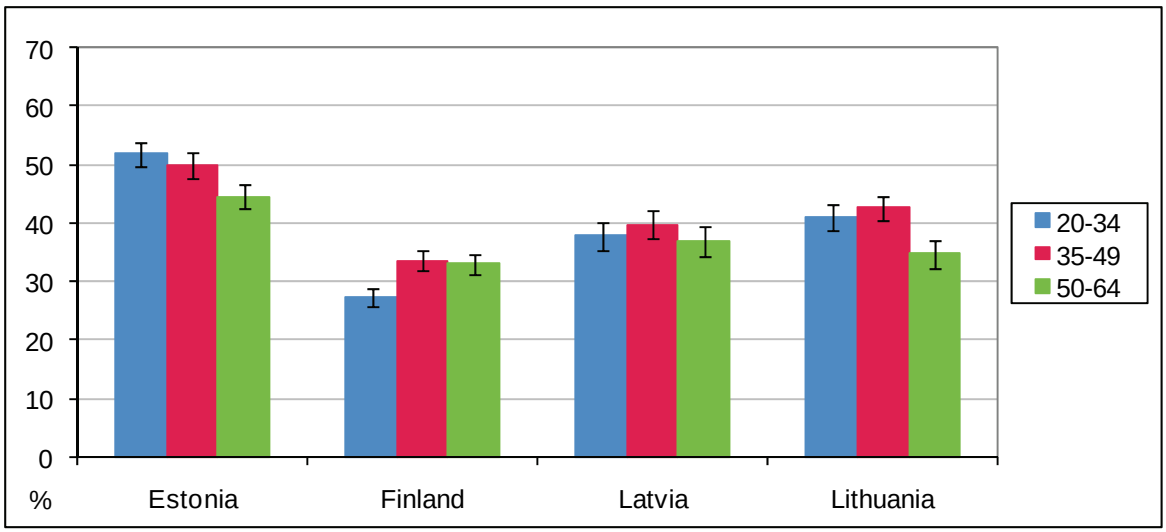

Figure 37. The proportion (%) of women consuming meat products at least on three days a week by age in 1998–2008 (all study years combined).

Analysis of educational differences showed that high education was associated with lower meat product consumption among Estonian and Finnish men, and higher consumption among Latvian and Lithuanian men (Fig. 38 and 39). However, statistically significant differences were found only in Finland where 41% (95% CI: 39−43) of better-educated and 50% (95% CI: 49−52) of less-educated men reported consuming meat products at least on three days a week. In all countries frequent consumption was less common among highly educated women. However, the differences were not statistically significant in Lithuania. Between 1998 and 2008 the proportion of less-educated men consuming meat products frequently increased in Estonia and Lithuania.

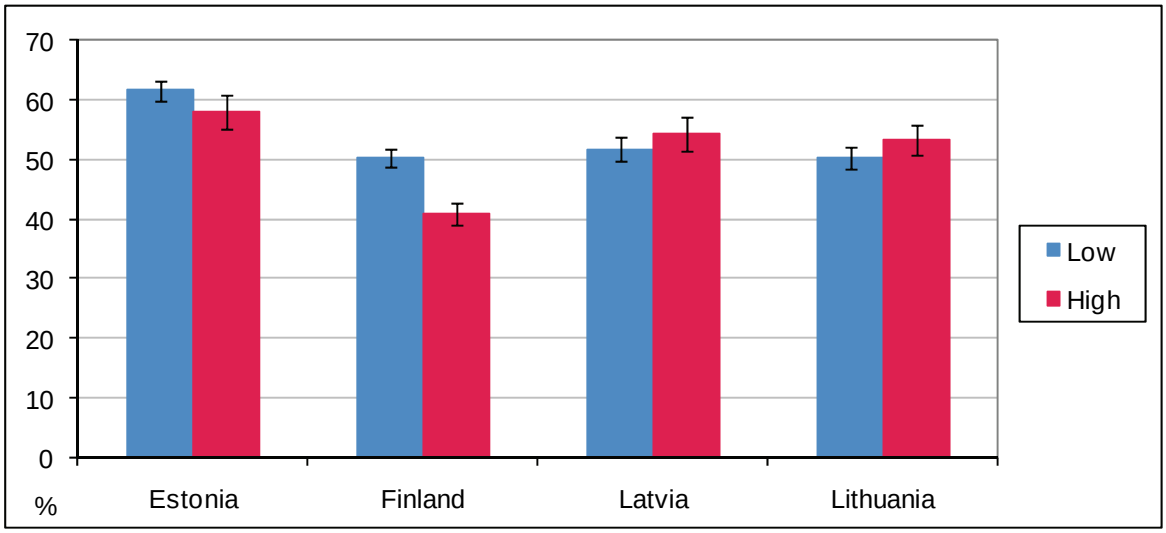

Figure 38. Age-standardized proportion (%) of men consuming meat products at least on three days a week by education in 1998–2008 (all study years combined).

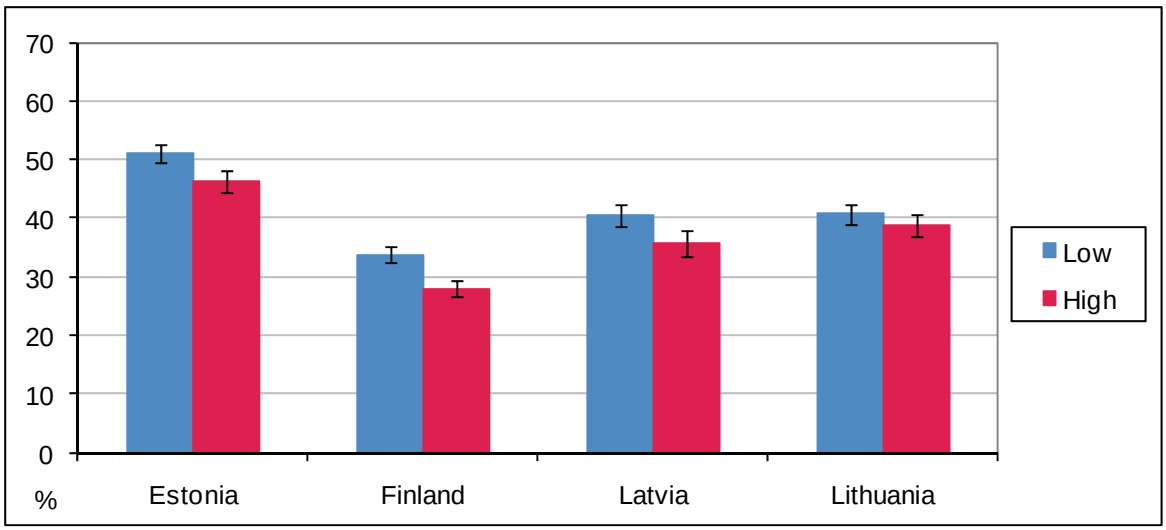

Figure 39. Age-standardized proportion (%) of women consuming meat products at least on three days a week by education in 1998–2008 (all study years combined).

Men and women living in metropolitan centres of Estonia and Finland consumed meat products less often than those living in other areas (Fig. 40 and 41). In Lithuania frequent consumption was more prevalent among men living in metropolitan centres. From 1998 to 2008, the proportion of men consuming meat products frequently increased in other areas of Estonia and Lithuania. Frequent consumption of meat products among women living in other places of Lithuania increased from 29% (95% CI: 25−33) in 1998 to 50% (95% CI: 45−55) in 2008 resulting in changes of associations between the consumption and place of residence. In 1998 frequent consumption of meat products was more prevalent in metropolitan centres of Lithuania while in 2008 in other areas.

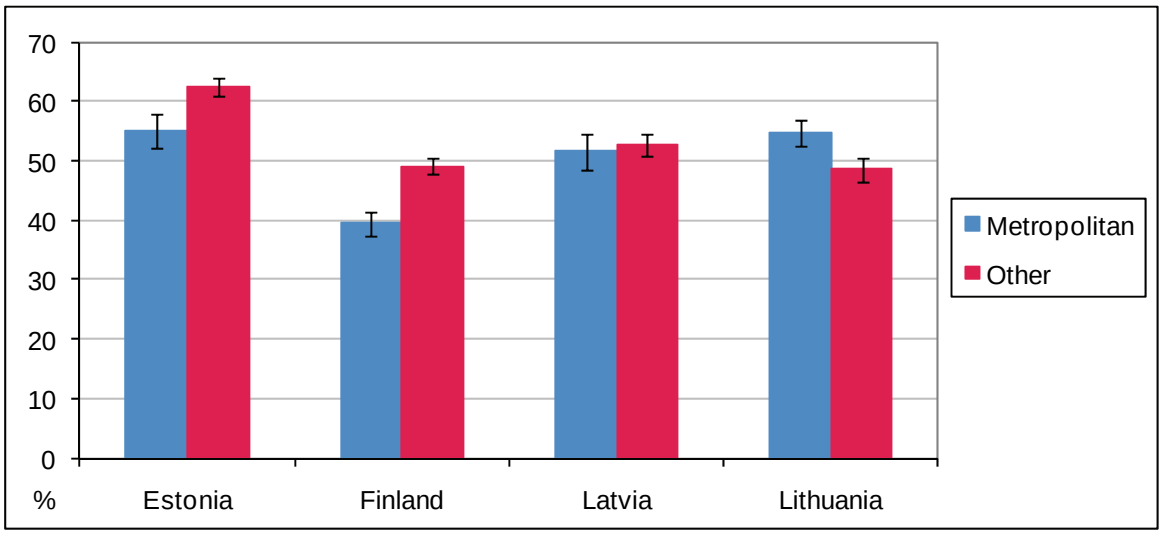

Figure 40. Age-standardized proportion (%) of men consuming meat products at least on three days a week by place of residence in 1998–2008 (all study years combined).

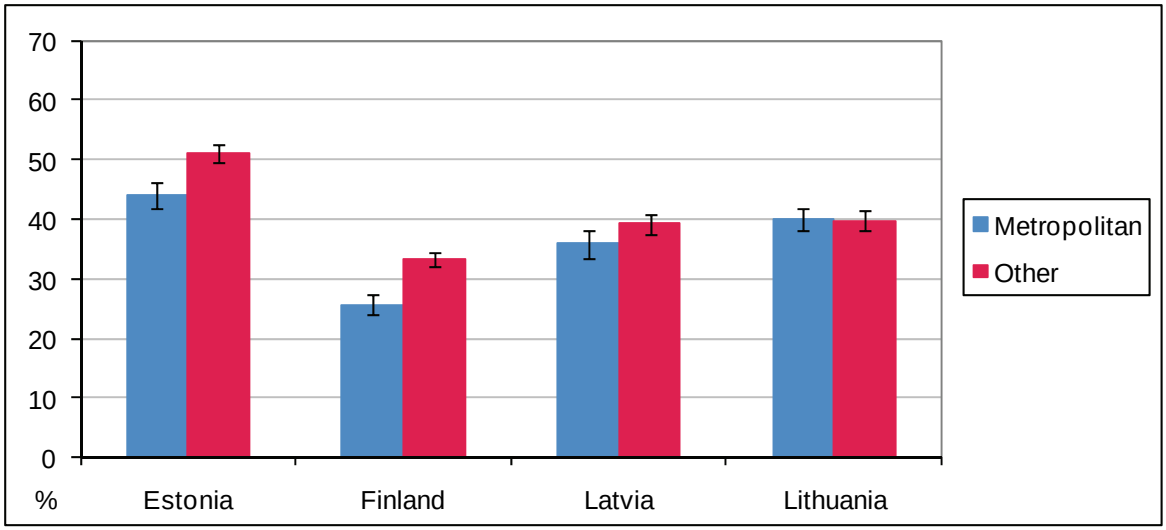

Figure 41. Age-standardized proportion (%) of women consuming meat products at least on three days a week by place of residence in 1998–2008 (all study years combined).

5.6 Discussion

This chapter examined trends and social differences in food habits among adult populations in Finland and the Baltic countries. Daily consumption of fresh vegetables and use of vegetable oil in cooking were chosen as examples of healthy dietary habits. Evidence suggests that eating plenty of vegetables and fruits lowers the risk of coronary heart disease and stroke, can help to prevent some cancers, control blood pressure and avoid obesity, and has other beneficial effects on health (13). Vegetable oil is rich in polyunsaturated fatty acids which are protective against cardiovascular diseases (14). Using butter or mixture of butter and oil on bread and frequent consumption of meat and meats products were considered as unhealthy food habits related to increased risk of cardiovascular disease and cancer (15, 16).

Our study showed that food habits in Finland are healthier than in the three Baltic countries. Finnish people consumed fresh vegetables more often and used butter on bread and meat products less frequently than people in Estonia, Latvia and Lithuania. The use of vegetable oil was, however, more common in the Baltic countries.

During the study period food habits remained relatively stable in Finland. Only a small increase in using vegetable oil in cooking as well as decrease in the frequent consumption of meat products in both genders was observed. The positive changes in nutrition habits of Finnish population started in the 1970's due to health promotion activities (17, 18). The use of butter decreased considerably and the use of soft margarine and vegetable oil as well as consumption of fruits and vegetables increased. Dietary changes over few decades have contributed to the improvement of cardiovascular health of Finnish population (18).

In the Baltic countries the trends in food habits varied. Frequency of consumption of vegetables showed tendency of increase. However, the increase was statistically significant only in Lithuania. The use of vegetable oil in cooking slightly increased in all countries. Proportion of Estonians spreading butter on bread decreased, while the proportion in Latvia and Lithuania increased. While frequent consumption of meat and meat products increased in all Baltic countries, the greatest increase was observed in Estonia.

Substantial changes in food habits of populations of the Baltic countries have occurred since early 1990s. Since regaining of independence, the Baltic countries have been undergoing extensive political, economic and social changes. Food globalisation, introduction of new products, advertising and changes in prices of food products have had an impact on the diet of Baltic populations. Increased availability of vegetable oil and affordable prices have augmented

the use of vegetable oil in cooking instead of lard which was traditionally used in food preparation in the Baltic countries (19). Changes in the type of fat used on bread have also been substantial. When soft margarines, that were considerably cheaper than butter, became available in the market, the use of butter on bread decreased due to a shift to margarine. However, later on the assortment of butter-based fat mixture, which was less expensive than butter, expanded in the markets of the Baltic countries and increased the use of such fat on bread in Lithuania and Latvia. The increase in butter consumption could also be partly explained by an impact of the media that advertised butter as an ecological food product and margarine as an unhealthy food product with a lot of additives and trans-fatty acids. In Estonia, which has closer relationship with Finland, where promotion of healthy nutrition has long traditions, the use of butter on bread shows decreasing trends. The increase in the frequent use of meat and meat products in the Baltic countries could be related to a traditional belief that meat as an important source of protein has to be an essential component of an everyday diet (20).

Unhealthy nutrition is an important public health concern especially in the Baltic countries where mortality from diet related chronic diseases (cardiovascular diseases, cancers) is very high (21). Public health goals – decrease in fat intake, replacement of saturated fats by polyunsaturated fats, increase in consumption of vegetables – have not been met in a substantial part of the populations. Daily consumption of fresh vegetables was particularly low in the Baltic countries. Results from the Baltic Nutrition Survey and the Norbagreen study indicated higher proportion of daily vegetable consumers in Estonia, Latvia and Lithuania compared to our study (22, 23). This discrepancy could be explained by seasonal variation in fresh vegetables consumption in the Baltic countries. The results from a study carried out in Lithuanian rural regions showed that prevalence of daily consumption of vegetables was 3.5–4 times lower in winter than in summer (24). Our survey was conducted in the springtime in all countries, while Baltic Nutrition Survey was carried out in summer when consumption of vegetables is much higher. Norbagreen study examined usual consumption of vegetables intake during the last year. Frequent consumption of meat and meat products as well as butter use on bread are responsible for the higher content of fat and saturated fatty acids in the diet of Baltic populations when compared with Finland (25).

The associations between food habits and social factors remained quite stable over the ten-year study period in all countries. Women's food habits were healthier than men's. Women consumed fresh vegetables and used oil in cooking more often, and they consumed meat less frequently than men. The results of our study are in line with findings by other authors (23, 26, 27). Women are more concerned about healthy diet. Some gender differences could be related to cultural beliefs labelling meat as a masculine food and vegetables as feminine food (28).

Educational differences in food habits were found in all countries. Highly educated people consumed fresh vegetables daily and used vegetable oil in cooking more often than the less-educated. Some educational differences in food habits varied by country. In Finland highly educated people were less prone to use butter on bread, however, the opposite occurred in the Baltic countries. Less-educated men in Finland used meat products more often than high-educated, while an opposite tendency was observed in Latvia and Lithuania. A number of studies have demonstrated that people with low and high level of education have different dietary habits. According to a comparison of surveys from ten European countries, the consumption of butter is lower in the Nordic countries among those with a university education (29). However, the reversed association has been found in Great Britain, Belgium and Poland. In North and West Europe people from higher socioeconomic classes consumed more vegetables than those from lower classes, while in Southern Europe the social pattern of vegetable consumption was the opposite (30, 31). These educational differences in food habits might have several explanations. People with a higher level of education are more concerned about their health, have more knowledge about healthy nutrition and choose healthier foods more easily compared to people with a lower level of education (32). Highly educated people tend to choose modern foods, while those with a lower level of education consume more traditional foods (33). Shortage of money,

which is more common among people with a lower level of education, can restrict consumption of healthy food (34).

The differences in food habits by place of residence were very similar to the educational differences. People living in metropolitan centres had a healthier diet than those living in other areas. In general, socio-economic differences in food habits were more consistent in Finland than in the Baltic countries.

In conclusion, the results suggest that despite some positive changes in food habits a substantial part of the population in Finland and especially in the Baltic countries does not meet the recommendations on healthy nutrition. Socio-economic differences in food habits still persist in the countries and therefore health promotion strategies should be tailored for different socio-economic groups.

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6 Leisure-time physical activity and commuting physical activity

Tomi Mäkinen & Katja Borodulin & the Finbalt group

6.1 Introduction

Physical inactivity is currently one of the leading causes of death worldwide (1). According to the latest recommendations for health-enhancing physical activity for adults (2), one should do moderate-intensity physical activity at least 30 minutes on five days per week or vigorous-intensity physical activity at least 20 minutes on three days per week. Combinations of these moderate and vigorous physical activities can also be performed. Moreover, this is the minimum recommendation as more than the recommended amount of physical activity will bring additional health benefits. In addition, every adult should perform activities that promote and maintain their muscular strength and endurance at least twice a week (2).

Worldwide, it is estimated that every second person does not meet the recommendations for health-enhancing physical activity (3). In Europe, similar physical activity patterns have been found than in the US. Northern countries, however, report higher levels of physical activity compared to southern ones (4). Moreover, socioeconomic differences in physical activity have been found worldwide: people with low socioeconomic position are more likely to be physically inactive during leisure time than those with high socioeconomic position (5, 6, 7). Similar socioeconomic pattern in leisure-time physical activity has recently been reported across Europe among working population, suggesting also that education might be the most important socioeconomic determinant of leisure-time physical activity (8). Very limited research, however, exist on temporal trends and socioeconomic differences in leisure-time physical activity and commuting physical activity from the Baltic countries.

This chapter examines the gender, educational and urbanization differences in leisure-time physical activity (LTPA) and commuting physical activity (CPA) in Finland, Estonia, Latvia and Lithuania from 1998 to 2008.

6.2 Methods

In the surveys, LTPA was measured with a question: "In your leisure time, how often do you do physical exercise for at least 30 minutes which makes you at least mildly short of breath or perspire?". The response alternatives were 1) daily, 2) 4–6 times a week, 3) 2–3 times a week, 4) once a week, 5) 2–3 times a month, 6) a few times a year or less, 7) I cannot exercise because of illness, and 8) I cannot exercise because of disability. Those who participated in LTPA two times or more a week (response alternatives 1 to 3) were categorized as active and those who participated less as inactive (response alternatives 4 to 8).

CPA was measured with a question: "How many minutes a day do you spend walking or riding a bicycle to and from work? (Combine time spent both ways) ". The response alternatives were 1) I do not work at all or I work at home, 2) I go to work by car, 3) less than 15 minutes a day, 4) 15–30 minutes a day,5) 30–60 minutes a day, and 6) more than one hour a day. Those who participated in CPA daily (response alternatives 3 to 6) were categorized as active and those who did not as inactive (response alternatives 1 and 2). These physical activity measurements can distinguish the physically inactive respondents from the active ones, but the cut-off points cannot be defined according to the latest recommendations for physical activity. Commuting physical activity includes also those who do not work, but they are categorized as inactive. The results presented below in this section are all age-adjusted.

6.3 Gender differences in physical activity

Figure 1 shows that LTPA was more common in Finland than in the Baltic countries. Two thirds of Finns (men 60%, 95% CI: 59–61; women 66%, 95% CI: 65–67) exercised twice a week or more during leisure-time whereas only one third of Estonians (men 29%, 95% CI: 27–30; women 30%, 95% CI: 28–31), Latvians (men 36%, 95% CI: 35–38; women 28%, 95% CI: 26–29) and Lithuanians (men 45%, 95% CI: 43–46; women 41%, 95% CI: 41–43) exercised during leisure-time. Finnish women were more active in leisure-time compared to Finnish men. In Latvia and Lithuania, LTPA was, however, more common among men than among women.

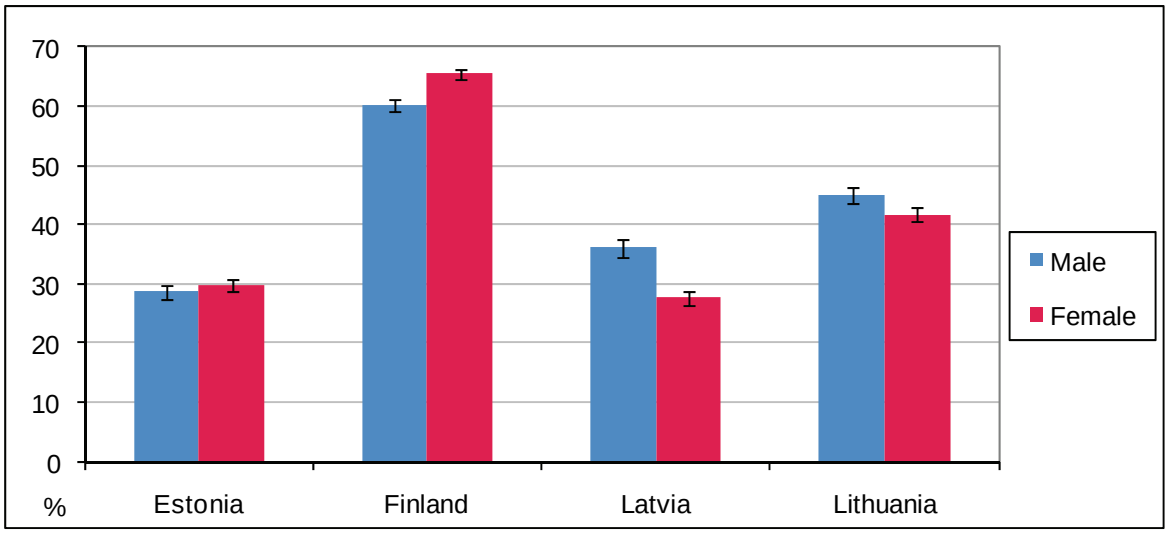

Figure 1. Age-standardized prevalences of those who exercised twice a week or more in leisure time among men and women, all study years from 1998 to 2008 pooled together, (%).

Figure 2 presents that people living in the Baltic countries (Estonia, Latvia and Lithuania) reported daily CPA more commonly compared to Finns. Approximately two thirds of Estonian women (66%, 95% CI: 65–67) and men (56%, 95% CI: 55–58) were physically active while commuting whereas 44% of Finnish women (95% CI: 43–45) and one third of men (31%, 95% CI: 30–32) were physically active while commuting. In Latvia 56% (95% CI: 55–58) of men and 62% (95% CI: 60–63) of women and in Lithuania 41% of men (95% CI: 39–42) and 51% of women (95% CI: 49–52) participated in CPA. In all countries, CPA was more common among women than among men.

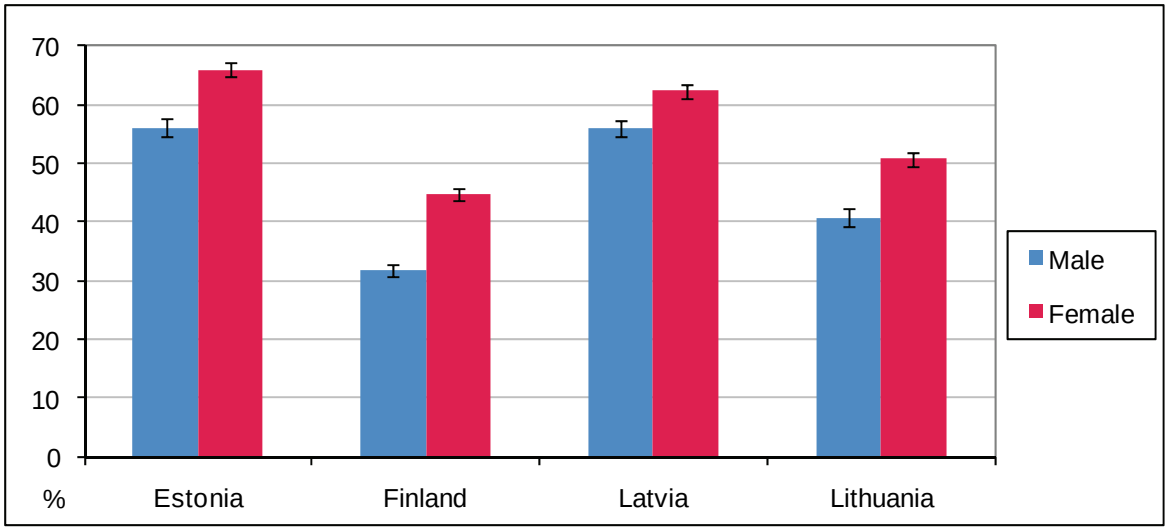

Figure 2. Age-standardized prevalences of those who reported daily commuting physical activity among men and women, all study years from 1998 to 2008 pooled together, (%).

Trends of LTPA among men from 1998 to 2008 in Finland and the Baltic countries are described in Figure 3. These results show that LTPA has slightly increased in Finland whereas in Estonia and Latvia the level of LTPA has remained the same from 1998 to 2008. In Lithuania, the level of LTPA has fluctuated over time. The trends of CPA among men from 1998 to 2008 in the Finbalt countries are described in Figure 4. CPA has decreased in Latvia and Lithuania whereas slightly increased in Estonia. In Finland, the level of CPA has remained the same from 1998 to 2008. The results were mainly similar among women (results not shown).

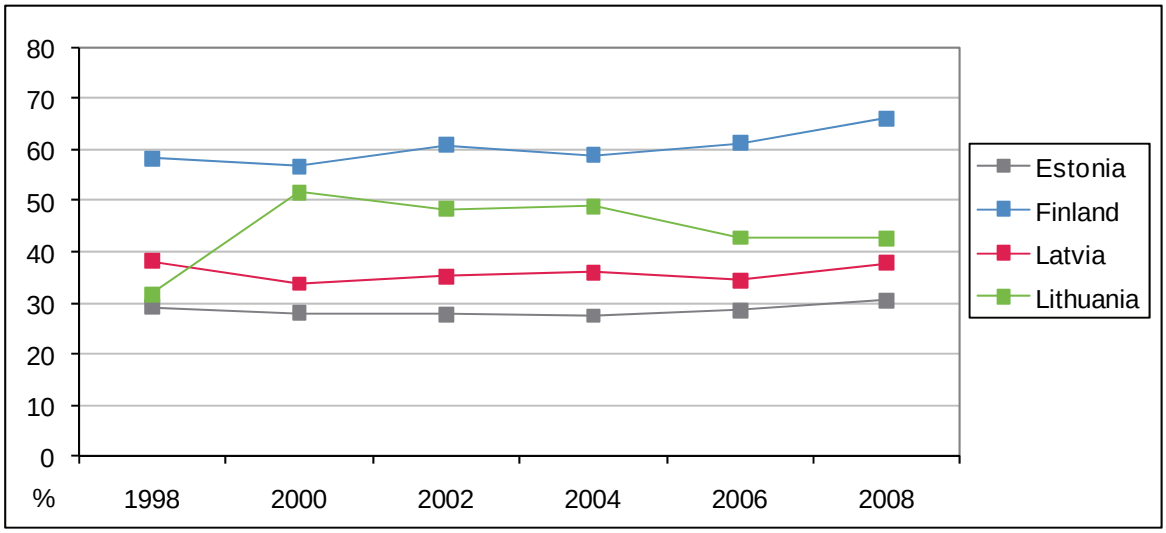

Figure 3. Trends of age-standardized prevalences of those who exercised twice a week or more in leisure time among men from 1998 to 2008, (%).

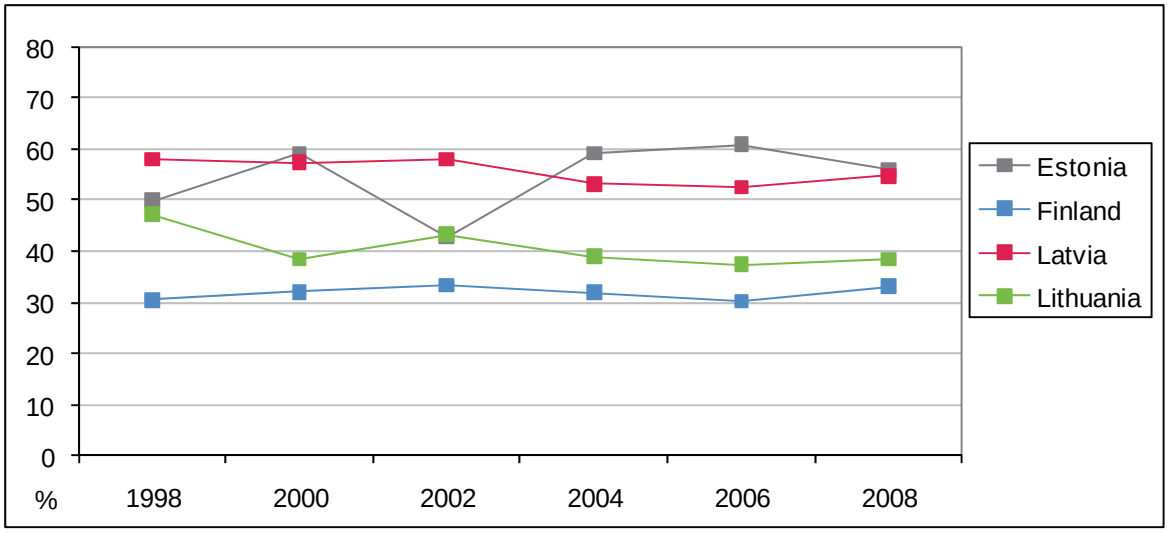

Figure 4. Trends of age-standardized prevalences of those who reported daily commuting physical activity among men from 1998 to 2008, (%).

6.4 Educational trends in physical activity

Educational trends of LTPA in Finland and the Baltic countries from 1998 to 2008 in men are presented in Figure 5. Finnish, Estonian and Lithuanian men with low education reported less LTPA compared to their highly educated counterparts, but in Latvian men educational differences were not found. Among Finnish men, educational differences in LTPA have slightly increased from 1998 to 2008. The results of the educational trend of LTPA were mainly similar among women than among men. However, the prevalence of LTPA among Latvian and Estonian women was almost the same from 1998 to 2008.

Educational trends of CPA in the Finbalt countries from 1998 to 2008 in women are presented in Figure 6. Finnish, Latvian and Lithuanian women with low education were less physically active while commuting compared to their highly educated counterparts over the 10 years period. Among Estonian and Finnish women, educational differences in CPA fluctuated during 1998–2008. The results of educational differences in CPA were mainly similar between women and men, but were more consistent among men.

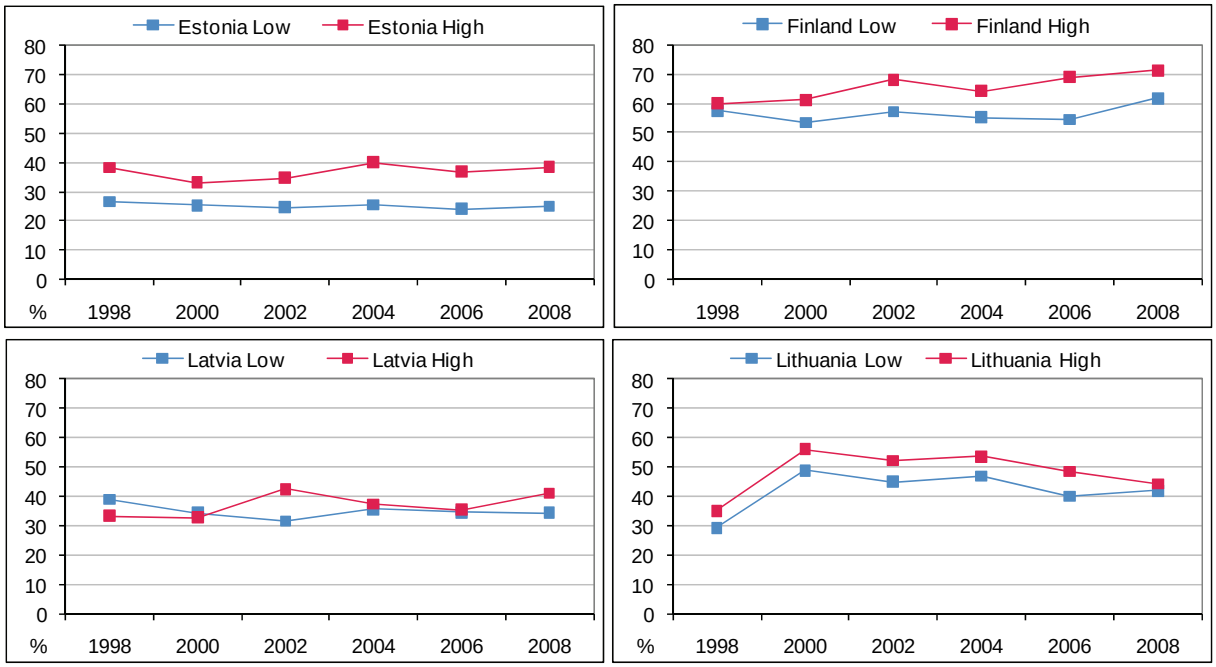

Figure 5. Trends of age-adjusted prevalences of those who exercised twice a week or more in leisure time among men from 1998 to 2008 by educational group, (%).

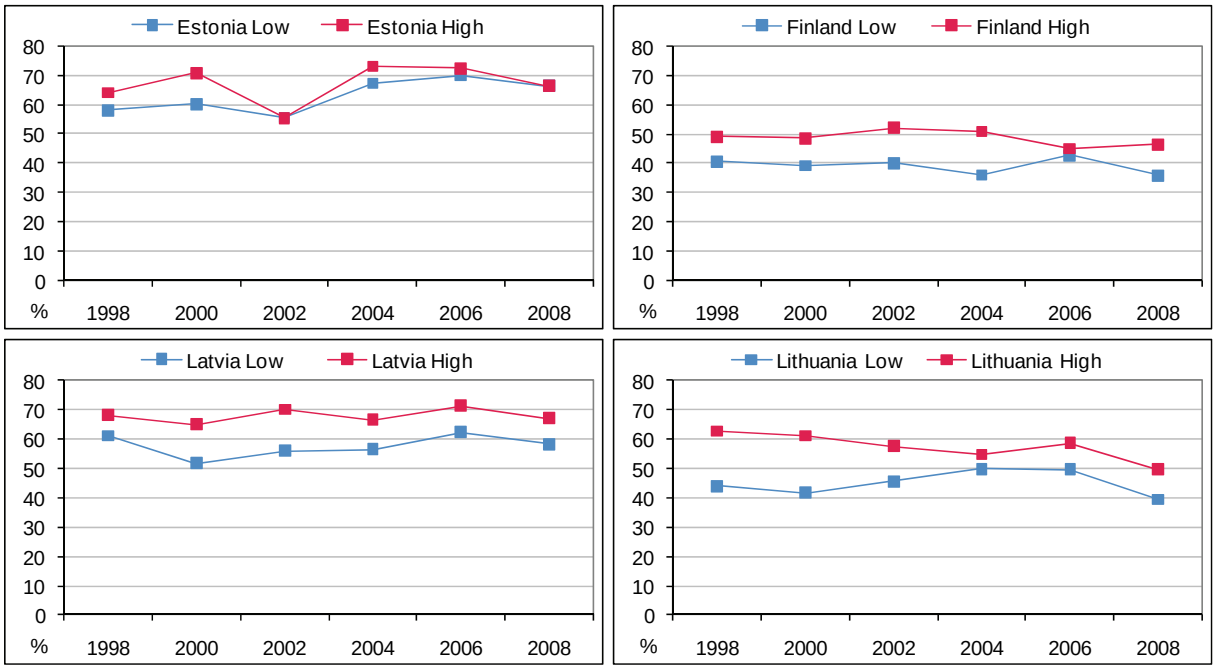

Figure 6. Trends of age-adjusted prevalences of those who reported daily commuting physical activity among women from 1998 to 2008 by educational group, (%).

6.5 The associations between place of residence and physical activity

Prevalences of LTPA in Finland and the Baltic countries by place of residence are shown in Figure 7. Among Finnish women, LTPA was more common among those living in other place (66%, 95% CI: 65–68) than in the metropolitan centre (63%, 95% CI: 61–65). Lithuanian women who lived outside the metropolitan centres were physically more active (47%, 95% CI: 45–48) during leisure-time compared to their counterparts who lived in the metropolitan centres (36%, 95% CI: 35–38). Among Estonian women, no statistically significant differences in LTPA were found by the place of residence. The results between LTPA and the place of residence among men were similar to the findings among women (results not shown).

Prevalences of CPA in the Finbalt countries by place of residence are shown in Figure 8. Generally those who lived in the metropolitan centres were physically more active while commuting compared to those living in other areas. However, Lithuanian women who lived outside the metropolitan centres were more physically active while commuting (52%, 95% CI: 51–54) compared to their counterparts who lived in the metropolitan centre (49%, 95% CI: 47–51). Among Estonian women, no statistically significant differences in CPA were found by place of residence. The associations of CPA and place of residence were similar among men (results not shown).

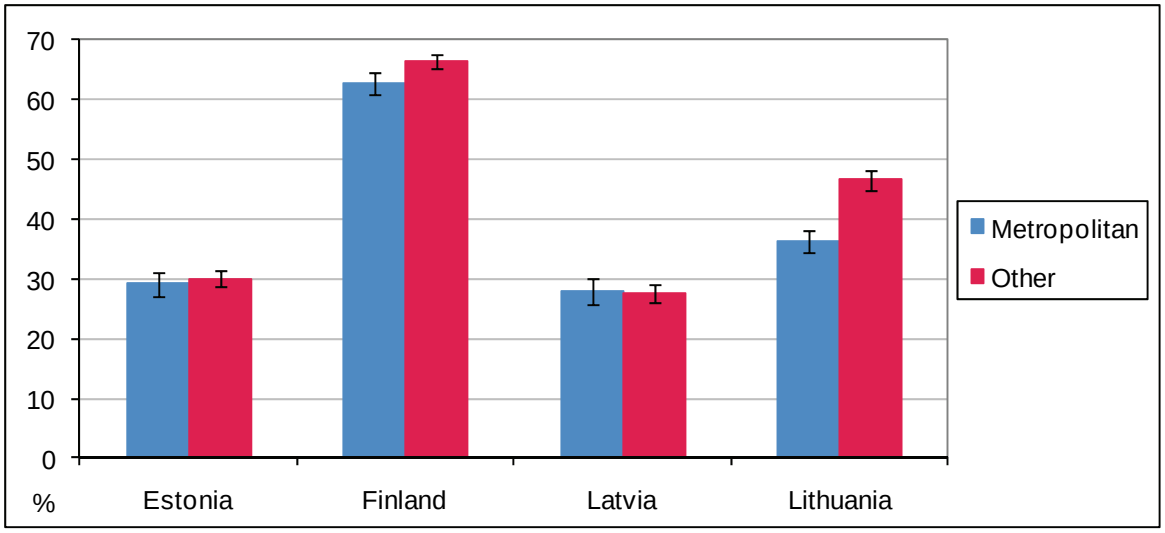

Figure 7. Age-standardized prevalences of those who exercised twice a week or more in leisure time among women by place of residence, all study years from 1998 to 2008 pooled together, (%).

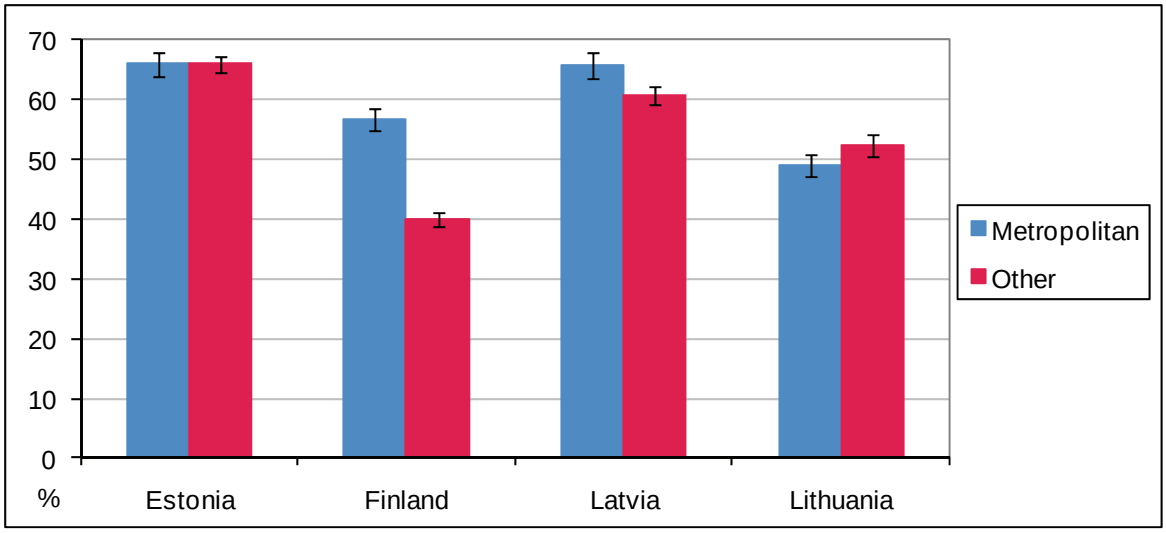

Figure 8. Age-standardized prevalences of those who reported daily commuting physical activity among women by place of residence, all study years from 1998 to 2008 pooled together, (%).

6.6 Discussion

The general patterns and trends in leisure-time and commuting physical activity were similar in the Baltic countries. Leisure-time physical activity and commuting physical activity have remained nearly at the same level for 10 years in all of the Baltic countries. Finland was the only country where some increase in the level of leisure-time physical activity was found from 1998 to 2008. Moreover, in Lithuania the level of commuting physical activity might have even decreased among men during the 10 years. This all presents a huge public health problem now and especially in the future; almost every second person living in the Baltic countries does not meet the recommendations for health-enhancing physical activity either during leisure-time or while commuting. In Finland, about one half of men and women do not meet the recommendations for health-enhancing physical activity either during leisure-time or while commuting.

Socioeconomic differences in leisure-time and commuting physical activity appeared clearly in almost all Finbalt countries during the 10 years. However, only in Latvia (in leisure time physical activity) and in Estonia (in commuting physical activity) hardly any educational differences were found. Some indications were that educational differences in leisure-time physical activity among Finnish men might have even widened from 1998 to 2008. It has been suggested that the socioeconomic differences in physical activity might be explained by adverse childhood conditions, physically or mentally strenuous working conditions or material conditions (9, 10, 11). All these circumstances contribute to the people's chances for being physically active during leisure-time and commuting. For example people who belong to the low educated group might lack money to participate in leisure-time physical activity compared to those who belong to the highly educated group. The low educated may also choose to be physically active while commuting to save money or they may not own a car and thus will engage in commuting physical activity.

The physically or mentally strenuous working conditions might partly influence individual's choice for being physically active (9, 8). Social and cultural factors might also be behind socioeconomic differences in physical activity (12, 13). Cultural factors might also influence what individuals report as being part of their leisure-time physical activity. For example, the low educated might include more other daily physical activities such as gardening and household chores compared to the highly educated. Moreover, highly educated group might want to distinguish themselves from low educated group by engaging exercise.

Urbanisation level has been shown to associate with leisure-time physical activity (14, 15, 16). In this study, living in a metropolitan centre was associated with a higher level of commuting physical activity among Finnish and Latvian women. One explanation for this might be that those who live in the metropolitan centre have better chances (such as better and maintained bike and pedestrian ways) to commute to work compared to those who live in other areas. On the other hand, Finnish and Lithuanian women living outside the metropolitan centres reported more leisure-time physical activity compared to those women living in the metropolitan centres. It might be that women in the rural areas participate more often in daily physical activity such as household chores and gardening compared to those women who live in the metropolitan centres.

To conclude, the results suggest that Finnish men and women are more physically active in leisure time and less active during commuting than Estonian, Latvian, and Lithuanian men and women. Furthermore, the time trends of leisure time and commuting physical activity show no dramatic changes. Importantly, physical inactivity and socioeconomic differences in activity are an apparent public health problem in all Finbalt countries.

All individuals, regardless of gender, age or education, should have equal chances for being physically active. More promotion of physical activity should be focused on those individuals who have low socioeconomic position. For example, chances for leisure-time physical activity should be tailored to fit all income groups and enablers of commuting physical activity, such as having a shower possibility, should be provided at worksites. Environmental policies could focus on building and maintaining bike and pedestrian ways and more so for those who live outside the metropolitan area.

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7 Overweight and obesity

Katja Borodulin & the Finbalt group

7.1 Introduction

To study a change in overweight and obesity levels in the population is of major importance, as high adiposity is associated with many co-morbid conditions, such as cardiovascular disease and type 2 diabetes (1). One study suggested that obesity increases independently coronary mortality by 3.4% when all conventional risk factors are taken into account (2). Studies from European countries (3, 4), the USA (5), Canada (6), as well as from the Finbalt countries (7–9) have shown that prevalence of overweight and obesity has increased. Time period that have been included in these previous studies has varied greatly, but there are not many studies that have used data from the past years, such as 2005 onwards (4). In the USA, it has been estimated that the increasing trend in obesity is leveling off in the past few years (5).

International cross-sectional comparisons have also shown that the levels of overweight and obesity vary significantly between countries (10, 7, 4). Cross-sectional studies have also suggested that older age (3, 7–9), lower education (11, 3, 7–9, 12, 5), low level of leisure time physical activity (13, 8, 14, 9, 15), high amount of sitting (13, 15), and non-smoking (7, 8, 15) are associated with high adiposity. For educational differences in BMI, for example, data over 10 countries showed that women with a university degree had a 2.1 kg/m² lower BMI compared with women with a lowest education level (16). Similar association was found in men, with a BMI difference of 1.3 kg/m² between the educational groups.

While the cross-sectional associations between BMI, age, education, and physical activity are widely reported, the changes over time of these associations are less often studied. There is some indication, for example, that the educational differences in BMI have remained similar over time (9) and that the prevalence of overweight has increased in all educational and physical activity categories (14). It is important to study the variation of overweight and obesity over time across population subgroups, such as using socio-demographic factors for stratification. This will help in identifying risk groups that are the primary prevention target groups for weight reduction and further weight gain.

7.2 Measurement of overweight and obesity

In the Finbalt questionnaire, overweight and obesity were assessed with self-reports on height and weight: 1) How tall are you (in full centimetres)? and 2) how much do weigh (in kilograms)? To calculate Body Mass Index (BMI), weight in kilograms was divided by squared height in meters (kg/m²). The cut-off point for overweight was a BMI of 25 and for obesity of 30, as recommended by WHO (1).

7.3 Overweight

The prevalence of overweight in Estonian, Finnish, Latvian and Lithuanian men between years 1998–2008 (pooled together) was around 50%, with the lowest being 47% (95% CI: 45–48) in Latvia and the highest 55% (95% CI: 54–56) in Finland (Figure 1). In women, the prevalence of overweight between years 1998–2008 was around 40%, with the lowest being 39% (95% CI: 38–40) in Finland and the highest 46% (95% CI: 45–47) in Latvia. The prevalence of overweight was markedly lower among women than among men in all countries except in Latvia.

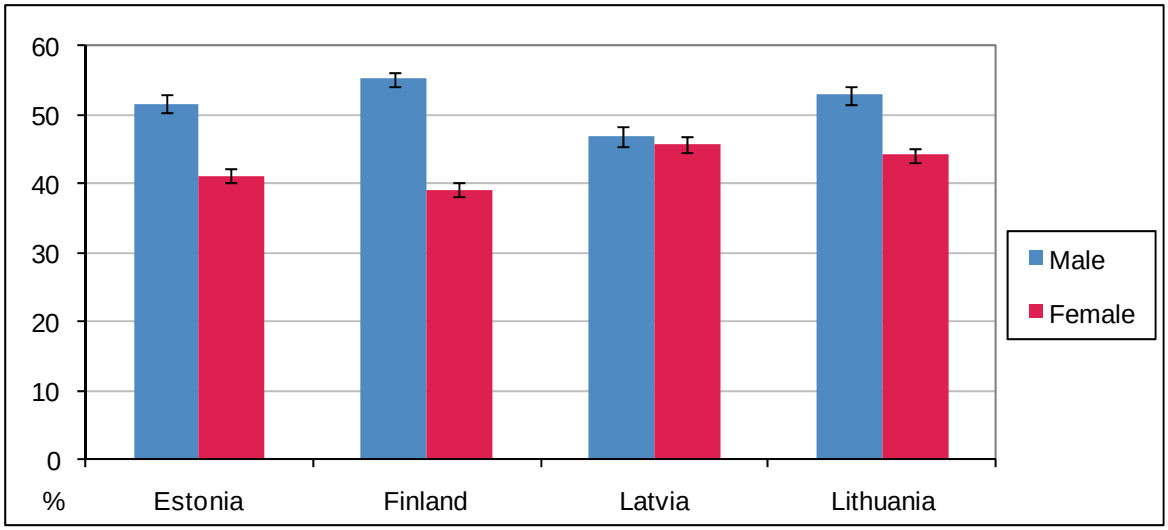

Figure 1. Prevalence (%) of overweight (BMI ≥25) among men and women, all study years from 1998 to 2008 pooled together.

An upward trend during the study years was observed in the prevalence of overweight among men in Estonia (prevalence from 46%, 95% CI: 42–50 to 58%, 95% CI: 55–61), Latvia (from 43%, 95% CI: 40–47 to 55%, 95% CI: 51–59), and Lithuania (from 46%, 95% CI: 43–50 to 60%, 95% CI: 57–64), but not in Finland (from 55%, 95% CI: 52–57 to 56%, 95% CI: 53–59), (Figure 2). As compared to the year 1998, statistically significant increases in overweight were observed for Estonia and Lithuania from 2006 to 2008 and for Latvia in 2008. In Lithuania, there was some fluctuation in the prevalence over the years. In Finland, the proportion of overweight men has remained high and fairly stable through the study period and was also significantly higher in 1998 than in other countries.

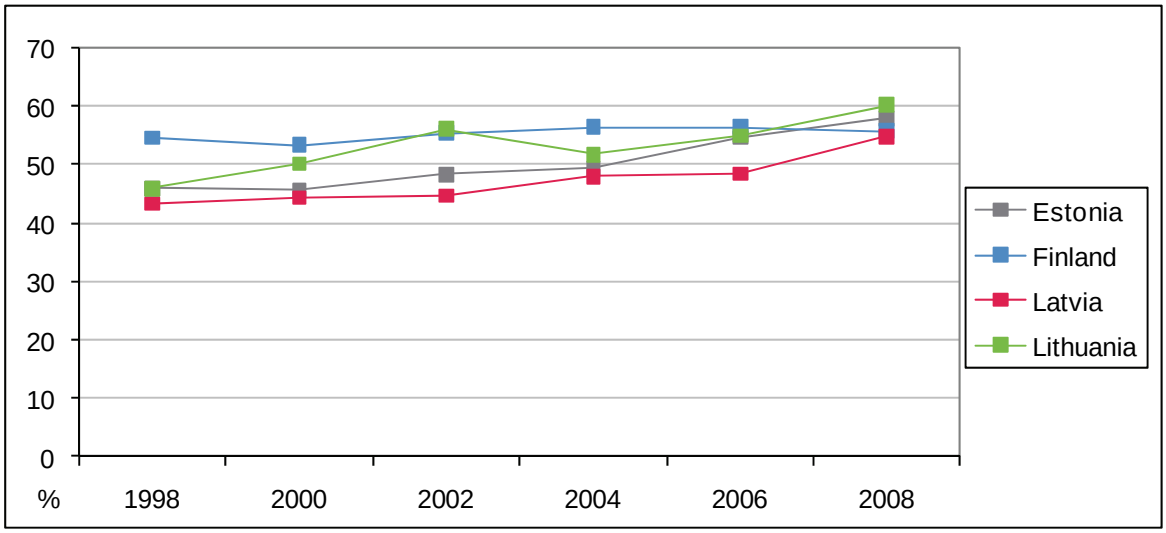

Figure 2. Age standardized prevalence (%) of overweight (BMI ≥25) in men between 1998–2008.

The 10-year time trend in overweight was more varied in women than in men (Figure 3). A slightly upward trend was seen in Estonia (prevalences from 38%, 95% CI: 35–42 to 44%, 95% CI: 42–47) between 1998–2008 and Finland (from 35%, 95% CI: 33–37 to 43%, 95% CI: 41–45) between 1998–2008. Study years 2006 and 2008 in Finnish women and 2008 in Estonian women

differed statistically significantly from 1998. In Latvia and Lithuania, the prevalence of overweight fluctuated across the study years without any clear indication of a sustainable direction. In the time trends for men and women, the 1998 levels showed some differences in the rates between the countries, while this gap has narrowed towards year 2008.

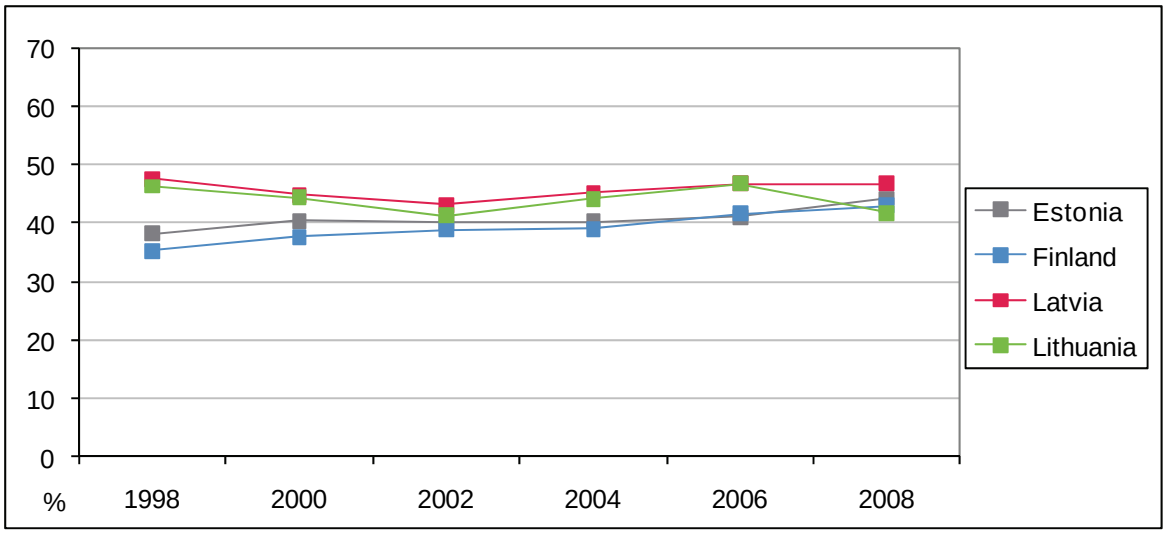

Figure 3. Age standardized prevalence (%) of overweight (BMI ≥25) in women between 1998–2008.

In all countries, age was a statistically significant determinant of overweight in men (results not shown) and women (Figure 4.). In the older 15-year age groups, the prevalence of overweight was higher than in the younger groups. The prevalence of overweight was different across educational groups in women, indicating that lower educated women had a higher prevalence of overweight (Figure 5). In men, the educational differences were less consistent. In Finland, lower educated were more overweight, while in Latvia and Lithuania, lower educated were less overweight. Changes in the educational difference in overweight from 1998 to 2008 remained similar with no systematic indication of widening or narrowing the gap between the educational groups.

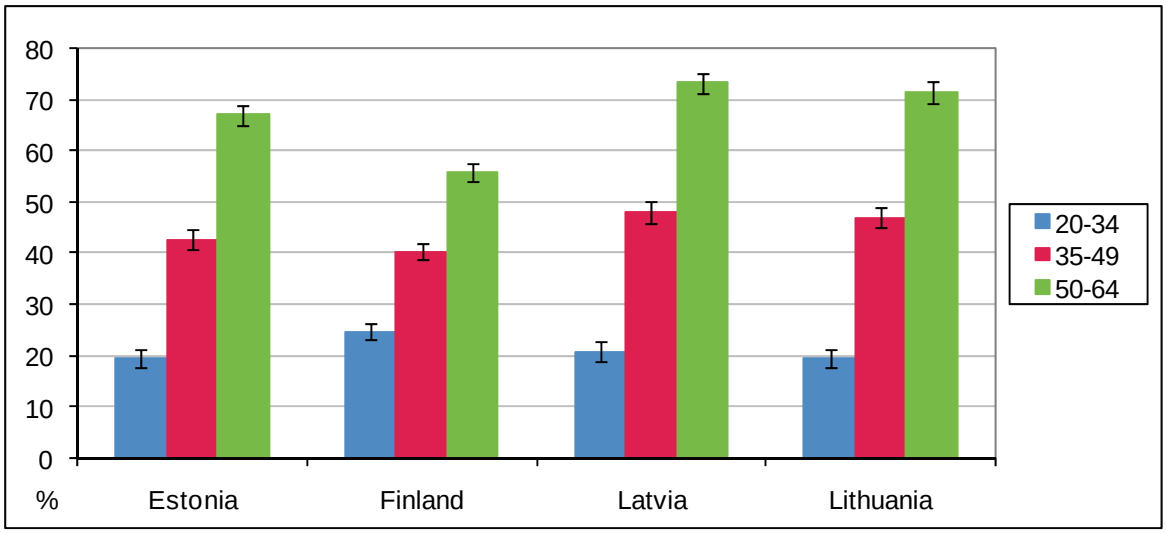

Figure 4. Prevalence (%) of overweight (BMI ≥25) in women by 15-year age groups between 1998–2008.

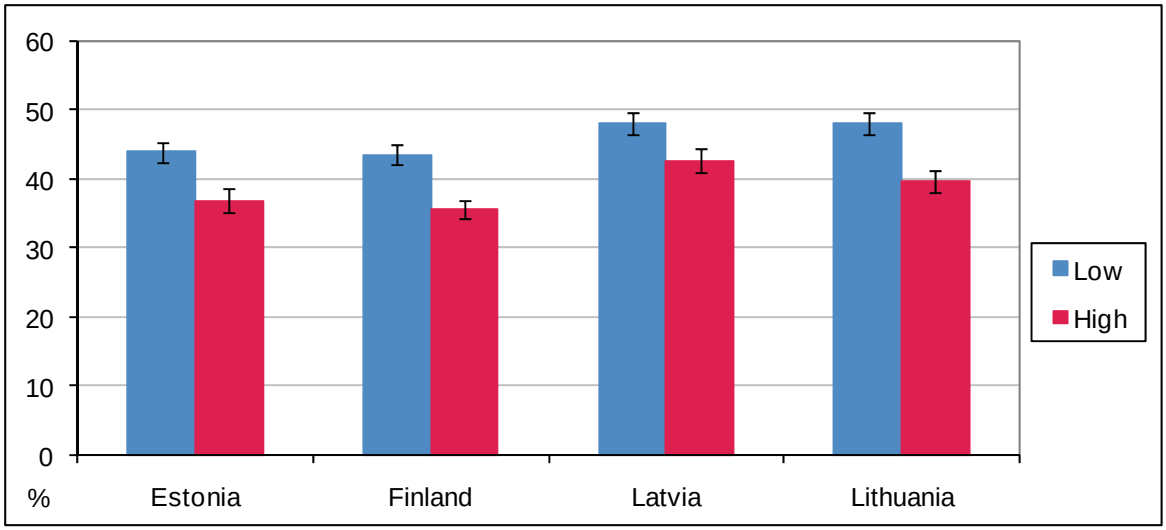

Figure 5. Prevalence (%) of overweight (BMI ≥25) in women by low and high education

In all countries the women living in the metropolitan centres reported less overweight than women living in other regions (results not shown). For men, the place of residence was a significant factor only in Finland, indicating a lower prevalence of overweight in the metropolitan centre than in other regions.

7.4 Obesity

In men, during the study years 1998–2008 (pooled together), the highest prevalence of obesity was found in Estonia (15%, 95% CI: 14–16) and lowest in Latvia (12%, 95% CI: 11–13), (Figure 6).

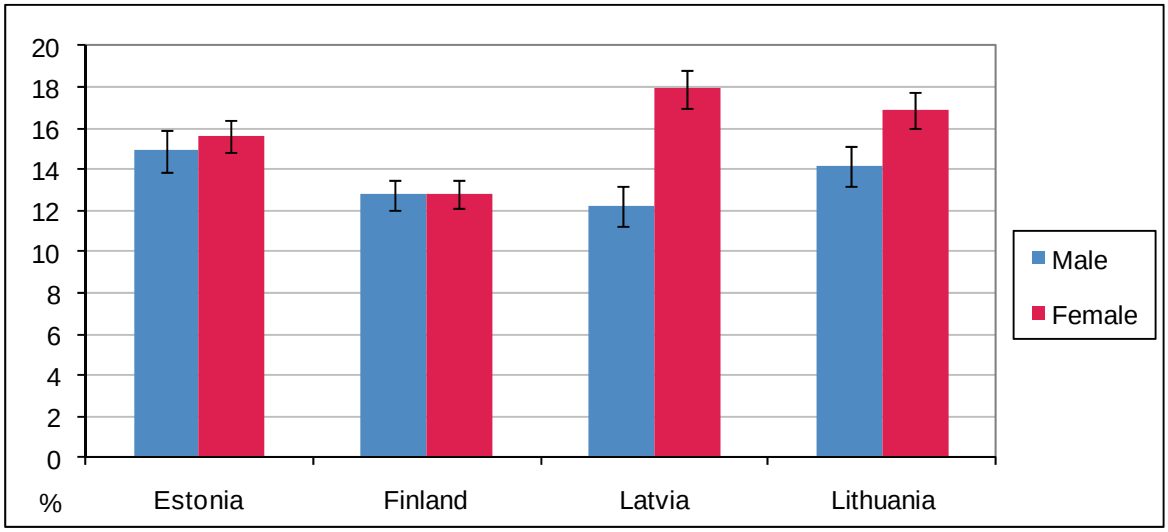

Figure 6. Prevalence (%) of obesity (BMI ≥30) among men and women, all study years from 1998 to 2008 pooled together.

The trend from 1998 to 2008 showed slight increases in the prevalence of obesity in men (Figure 7) in all countries. The Latvian and Lithuanian prevalences fluctuated during the years, but still showed a statistically significant increase from the 1998 levels to 2008 levels. Obesity prevalence increased evenly and statistically significantly in Finnish men from 1998 to 2008. In women, the

time trend showed slight increases in all countries and the change was statistically significant only in Finland, where the prevalence rose from 9% (95% CI: 8–11) in 1998 to 16% (95% CI: 14–17) in 2008 (Figure 8).

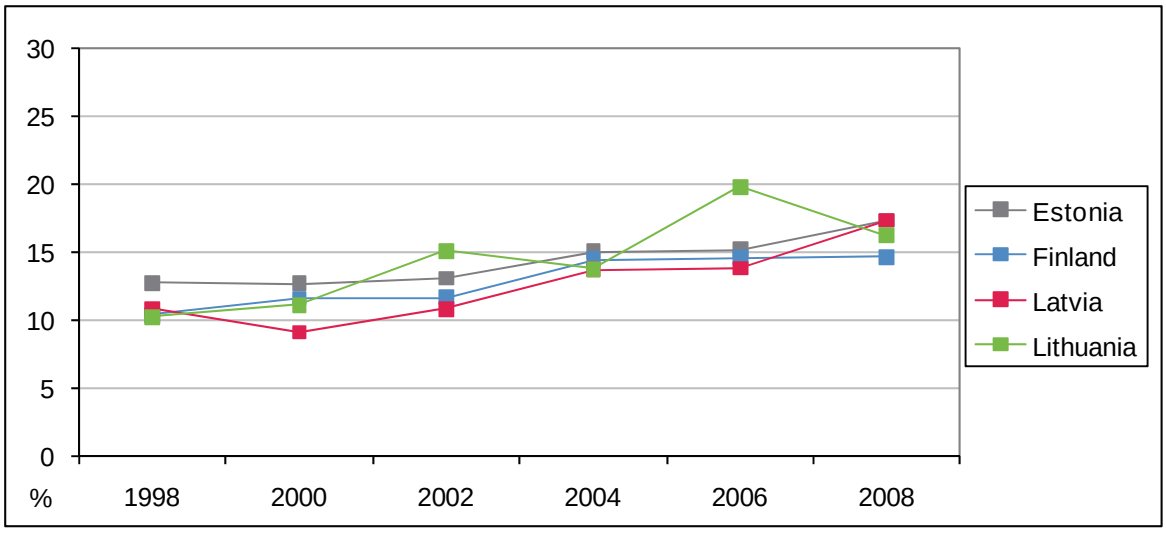

Figure 7. Age standardized prevalence (%) of obesity (BMI ≥30) in men between 1998–2008.

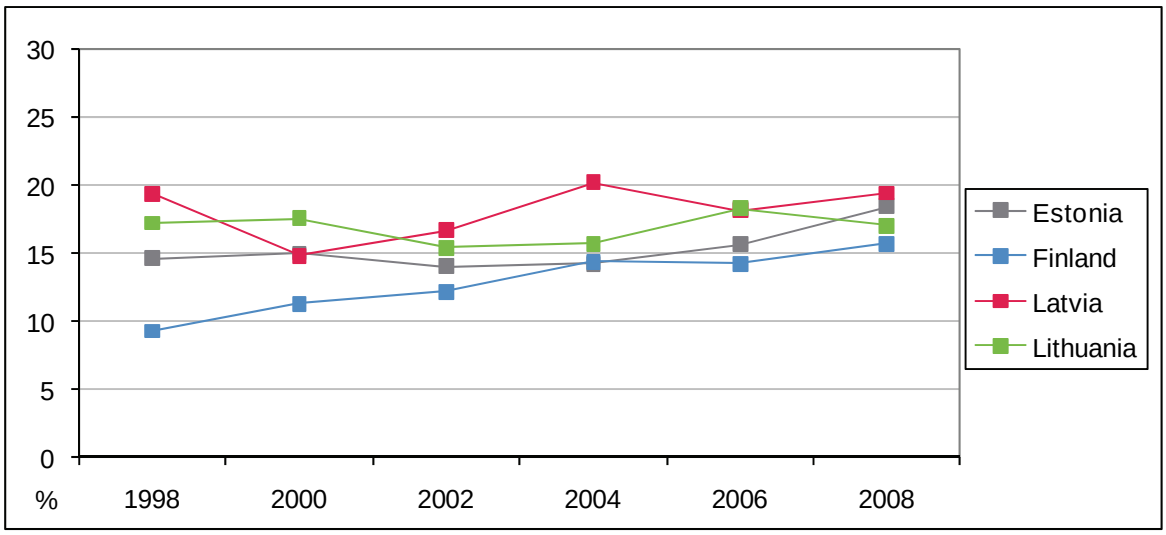

Figure 8. Age standardized prevalence (%) of obesity (BMI ≥30) in women between 1998–2008.

The prevalence of obesity differed across the 15-year age groups, showing higher proportions among older respondents (Figure 9). Similar associations were found in all countries and both genders (results for men not shown). Also education was a statistically significant factor for obesity, though more systematic for women than men (Figure 10). In all countries, lower educated women reported more obesity, while a similar pattern in men was observed only in Finland. Prevalence of obesity remained similar across the educational groups over the observed time period. The prevalence of obesity varied across the place of residence, particularly among women (results not shown). Women in Latvia, Lithuania, and Finland, reported lower prevalence of obesity in the metropolitan centre as compared to other regions. In men, regional differences were found only in Finland.

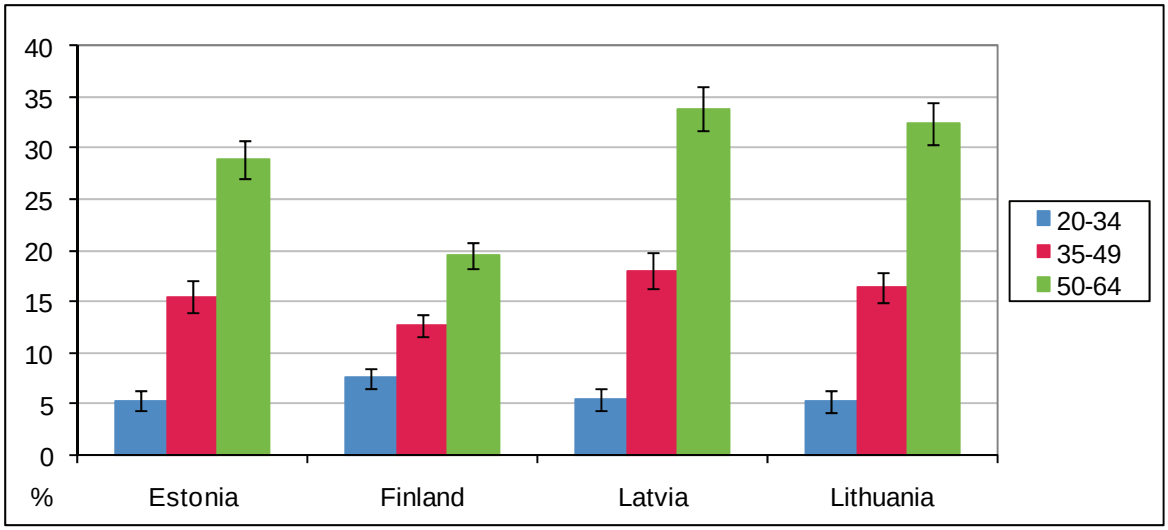

Figure 9. Prevalence (%) of obesity (BMI ≥30) in women by 15-year age group between 1998–2008 (pooled together).

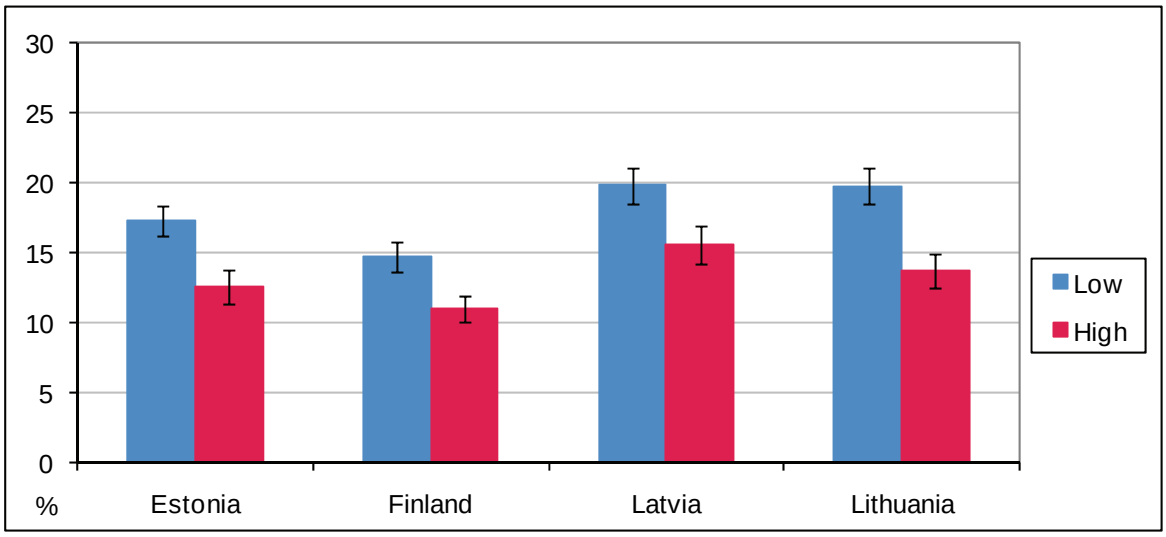

Figure 10. Prevalence (%) of obesity (BMI ≥30) in women by high and low education between 1998–2008 (pooled together).

7.5 Discussion

During the 10-year period, marked increases in the prevalence of overweight and only slight increases in obesity were observed. Estonian men had the most consistent increase in the prevalence of overweight and Finnish women in obesity. In Latvia and Lithuania, the levels of overweight and obesity fluctuated during the study years. Regardless of the fluctuation or statistically non-significant time trends, the direction of the change was towards higher prevalence in overweight and obesity for most countries and both genders. Furthermore, findings suggest that the countries have become closer to each others in the prevalence of overweight and obesity.

In 1998–2008, most often overweight were Finnish men and Latvian women and most often obese were Estonian men and Latvian women. The most important and consistent factor for overweight and obesity was age, as the prevalence increased significantly by each 15-year age groups in all countries and both genders. Other factors to associate with adiposity were education and place of residence. Interestingly, lower overweight and obesity rates were seen in those with a higher education and who lived in the metropolitan centre, but only in women and Finnish men.

An important group was Lithuanian and Latvian men who reported overweight rates in an opposite direction across educational groups, i.e. lower educated were leaner. Potential explanations could be the role of occupational or leisure time physical activity, but further research should be done.

The findings reported in this study are in line with previous reports on overweight and obesity trends (8, 9, 4, 5). Similar factors, such as age, gender, and education have been suggested to be important determinants of adiposity (8, 9, 4, 5).

Self-reported weight is often underestimated while self-reported height is overestimated (17, 18). This results into lower BMI values than the true values and naturally biases the findings in studies. It is interesting to note that obesity prevalence for Estonian women in 1997, as calculated using measured height and weight (7) was lower than that calculated in the same age group using self-reported height and weight in 1994, 1996, and 1998 (8). Similarly, in the National FINRISK 2007 Study of Finnish men and women (19) with a measured BMI, the prevalence of overweight was slightly lower and the prevalence of obesity was higher than in this study, but a comparison between two separate studies is irrelevant due to different sampling procedures, age groups, and participation rates.

In conclusion, overweight and obesity rates have increased and will most likely continue to rise. Overweight and obesity are among the key public health issues now and in the future in all Finbalt countries. Public health initiatives should target all age and educational groups to prevent further weight gain in the population. Furthermore, each country should create their own tailored program for healthy weight management that is based on their risk populations, such as the lower educated or those living in rural areas, and that takes into consideration the gender differences.

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8 Traffic safety

Anita Villerusa & Inese Gobina & Iveta Pudule & the Finbalt group

8.1 Introduction

Road traffic injuries are one of the major public health problems in Europe (1).Traffic crashes cause about 127 000 deaths and 2.4 million injuries a year in the European Region. They are the most common cause of death among children and young people (2). The injury mortality is one of the most important avoidable death causes and a major reason for years of potential life lost (YPLL). There are observable geographical differences in the mortality rate of traffic accidents in the new and old EU countries (3). The deaths by external causes are the third highest of all causes of death in the Baltic countries and Finland. Of particular concern are the number of injuries and deaths due to road accidents.

Risky traffic behaviour means not wearing seat belts, not using child safety seats, not wearing bicycle or motorcycle helmets, driving under the influence of alcohol, driving while fatigued or distracted, speeding, and driving against red lights and aggressive driving (4). As there is a strong association between injury rate and people's safety behaviour, traffic injury rate could be reduced by good preventive policy.

Several preventive strategies can be applied to reduce the amount of road accidents. The strategies include improvement of environment, strengthening technical requirements for vehicles, proclaiming new regulations and laws, increasing supervision and punishment for traffic offences and violations, educating and changing people's attitudes towards traffic safety.

Monitoring traffic safety behaviour has great public health relevance in Finland and in the Baltic countries. The Finbalt Health Monitor survey includes questions about traffic behaviours such as "Do you use a reflector when walking on streets without lights when it is dark?; "Do you use a seat belt when driving or as a passenger in the front seat?"; "Do you use a seat belt in the back seat?"; "Do you personally know anyone who has driven a car under the influence of alcohol during the last year?".

8.2 Use of reflector when walking in the dark

The prevalence of reflector use varies greatly between Finland, Estonia, Latvia and Lithuania. In all countries women use more often reflectors than men (Figures 1 and 2). A consistent increase in the reflector use from 1998 to 2008 appeared in Estonia. The proportion of men using reflectors increased from 18% (95% CI: 14–22) to 47% (95% CI: 43–50) and that of women from 22% (95% CI: 18–26) to 62% (95% CI: 60–65). In Latvia a remarkable increase in reflector use was observed since 2004. The percentage of men who almost always use reflectors in the dark increased from 6% (95% CI: 3–8) in 2004 to 36% (95% CI: 31–41) in 2008. For Latvian women the corresponding figures were from 4% (95% CI: 3–6) to 57% (95% CI: 53–61). In Lithuania no significant changes occurred.

In all Finbalt countries both men and women in older age groups (50–64-year-olds) used reflectors more than the youngest age group (20–34-year-olds) (results not shown). There were no significant educational differences in reflector use. However, in all countries reflector use was more prevalent in other areas than the metropolitan centres. This association remained stable during the whole study period (Figure 3 and Figure 4).

The steepest increase in reflector use from 1998 to 2008 was observed in Latvian metropolitan centre where the percentage of the reflector users increased from 1% (95% CI: 0–2) to 18% (95% CI: 11–24) among the men and from 3% (95% CI: 1–5) to 39% (95% CI: 32–46) among the women. The percentage of reflector users outside the metropolitan centre increased by 10 times, from 5% (95% CI: 3–6) to 45% (95% CI: 39–51) for men and from 6% (95% CI: 4–8) to 64% (95% CI: 60–69) for women.

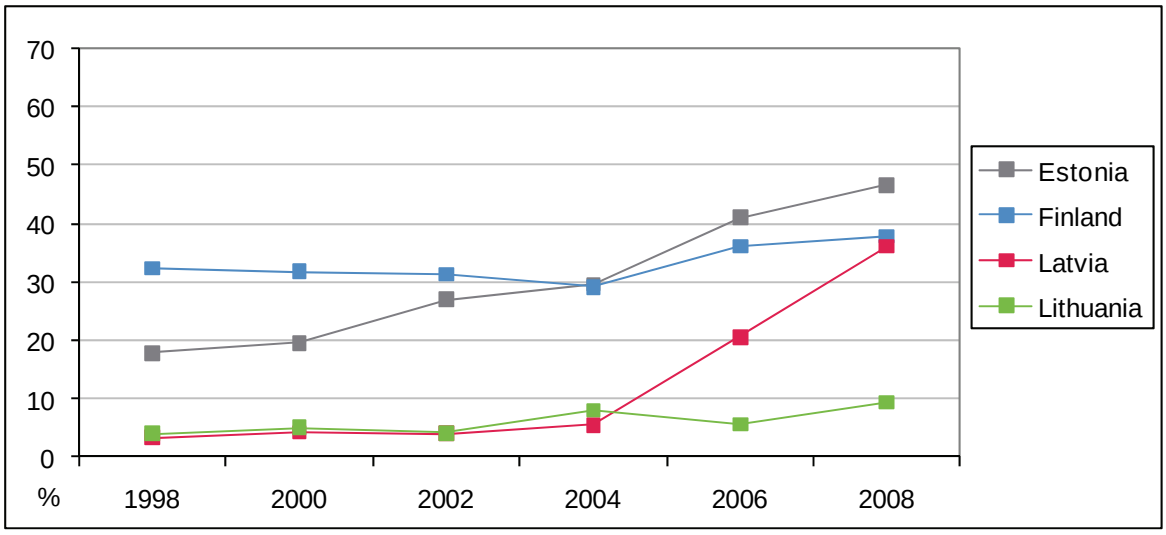

Figure 1. Ten-year trends in age-standardized prevalence (%) of reflector use in men.

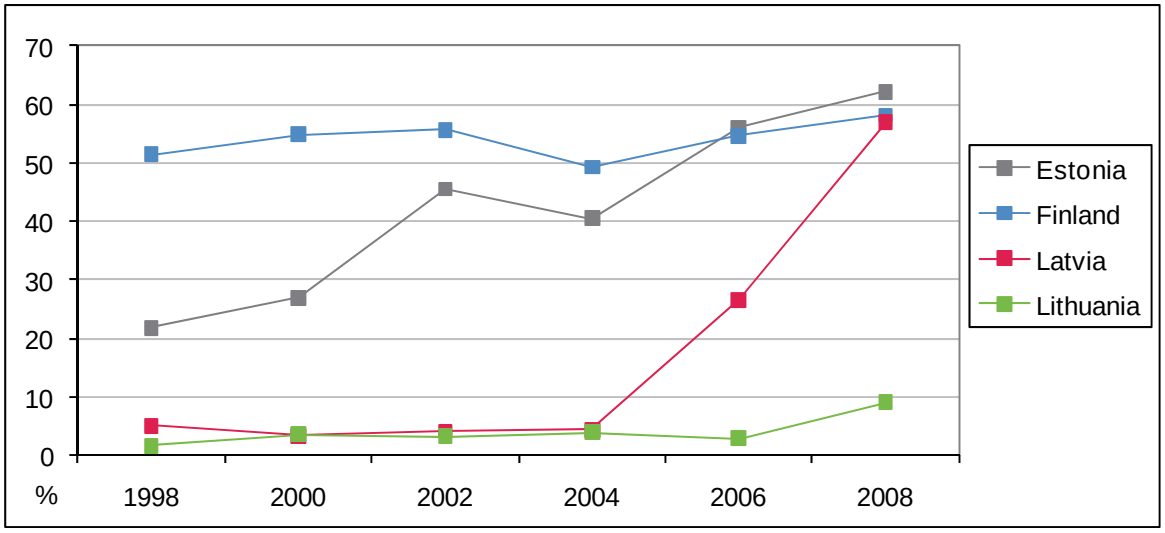

Figure 2. Ten-year trends in age-standardized prevalence (%) of reflector use in women.

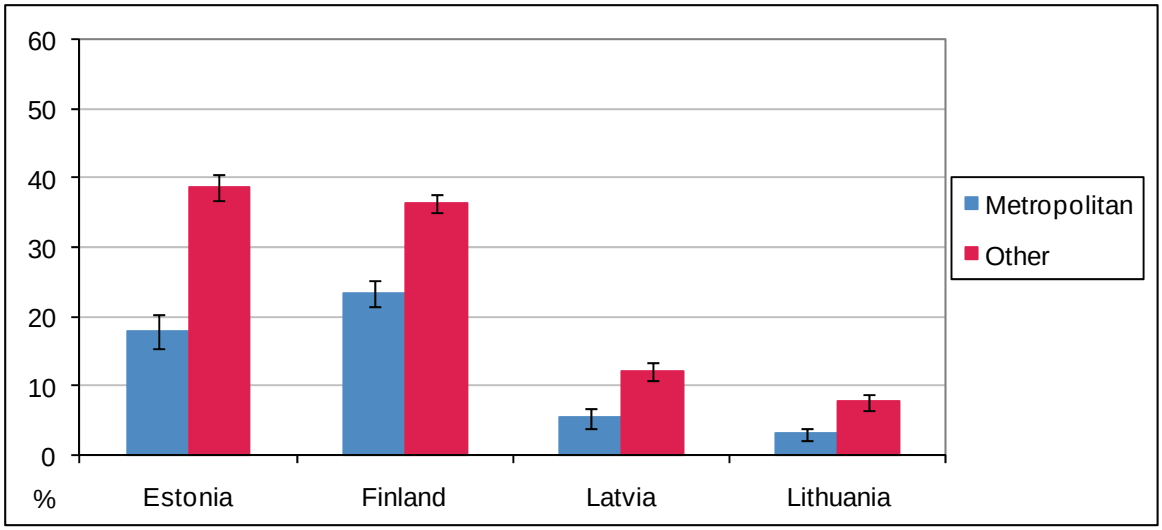

Figure 3. Age-standardized prevalence (%) of reflector use in men by place of residence in 1998–2008 (all study years combined).

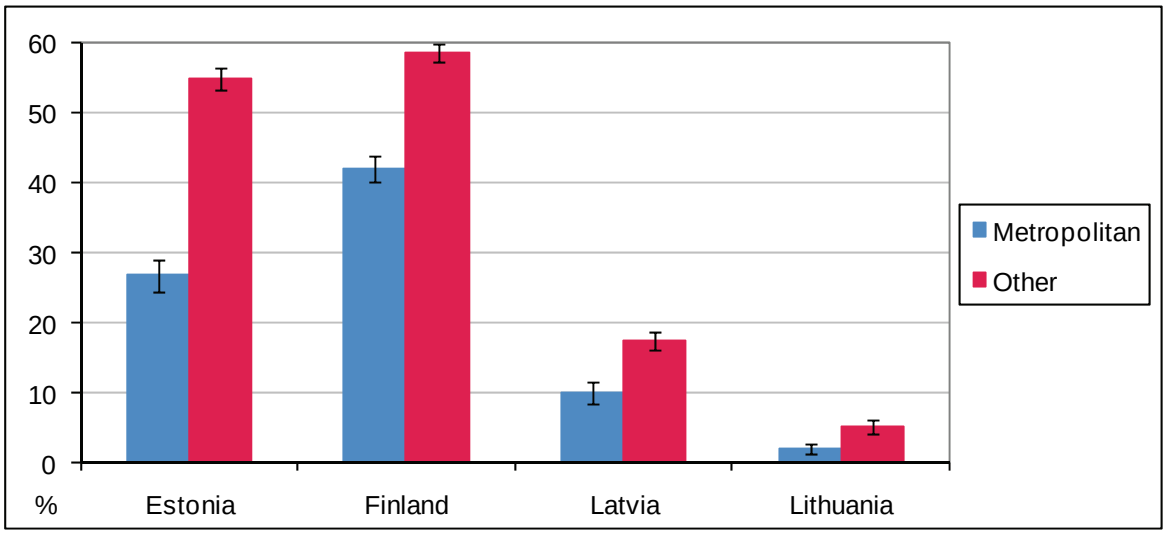

Figure 4. Age-standardized prevalence (%) of reflector use in women by place of residence in 1998–2008 (all study years combined).

8.3 Use of seat belt in the front seat

Although seat belt use is mandatory in all Finbalt countries, not all the respondents use seat belts. The prevalence of using seat belt in the front seat was the highest in Estonia and Finland: more than 90% of adult population always used seat belts in the front seat (Figure 5). In comparison, approximately 1/4 of Latvian men and 1/5 of Latvian women did not always use seat belts in the front seat of the car. In all four countries the prevalence of seat belt use was higher among women than men. The gender difference varied from 9 percent points in Latvia as the highest to 4 percent points in Lithuania as the lowest (Figure 5).

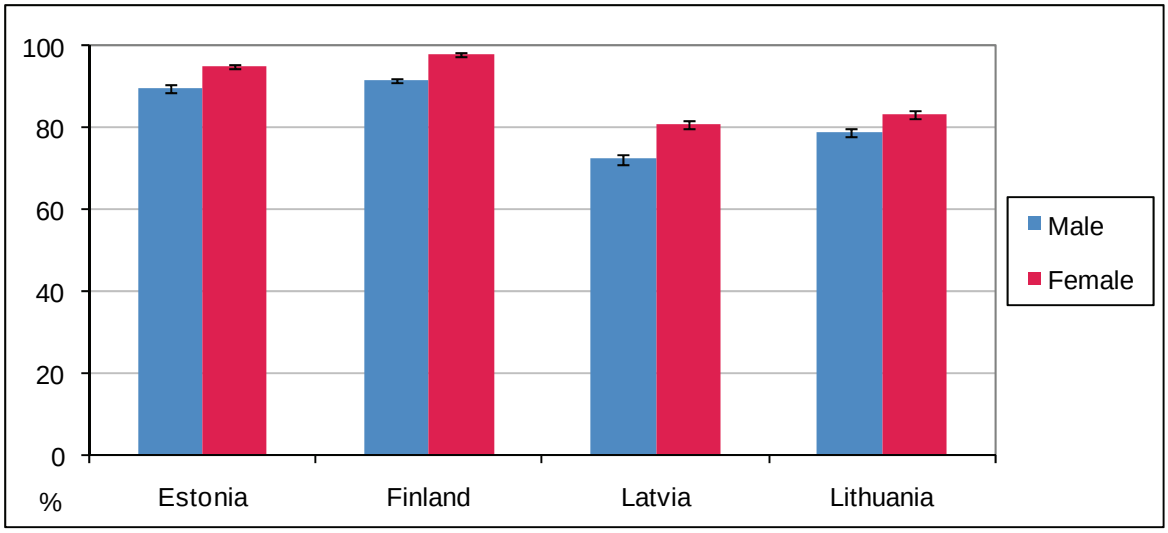

Figure 5. Age-standardized prevalence (%) of seatbelt use in the front seat by gender in 1998–2008 (all study years combined).

From 1998 to 2008 the prevalence of seat belt use was stable and the highest in Finland. In Estonia, Latvia and Lithuania there was a tendency towards increasing prevalence (Figure 6 and 7). Therefore the gap between the countries diminished. The largest improvement in seat belt use took place in Latvia, where the prevalence of the seat belt use increased from 72% (95% CI: 69–75) to 88% (95% CI: 85–90) among men and from 79% (95% CI: 76–81) to 95% (95% CI: 94–97) among women (Figure 6 and 7). In Estonia the prevalence of the seat belt use exceeded the prevalence in Finland and reached 97% (95% CI: 96–98) for men and 99% (95% CI: 99–100) for women. Both in Latvia and Estonia the most significant increase took place in the age groups of 20–34- and 35–49-year-olds.

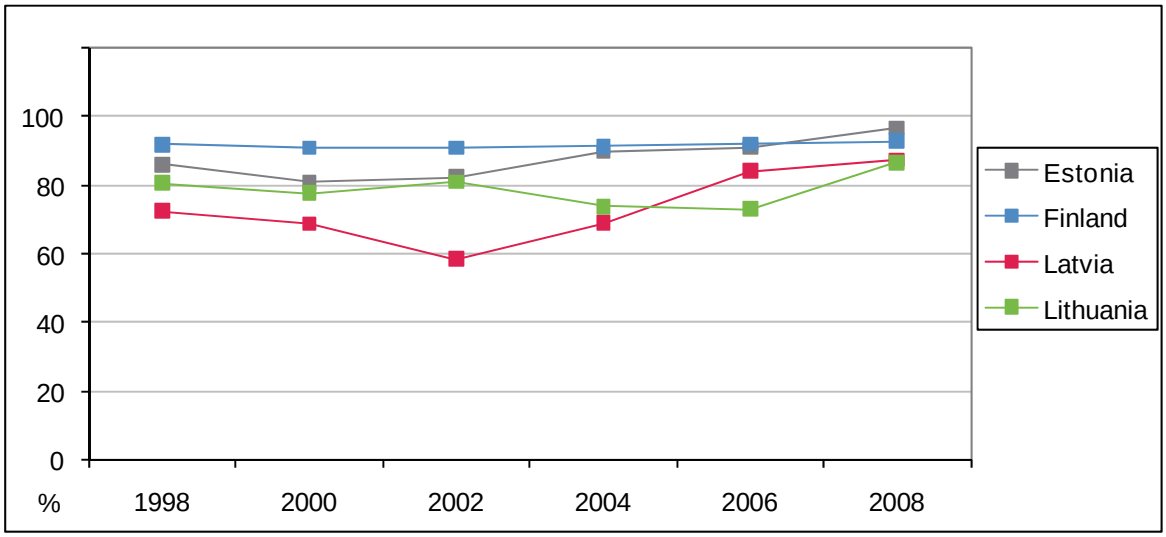

Figure 6. Ten-year trends in age-standardized prevalence (%) of seatbelt use in the front seat in men.

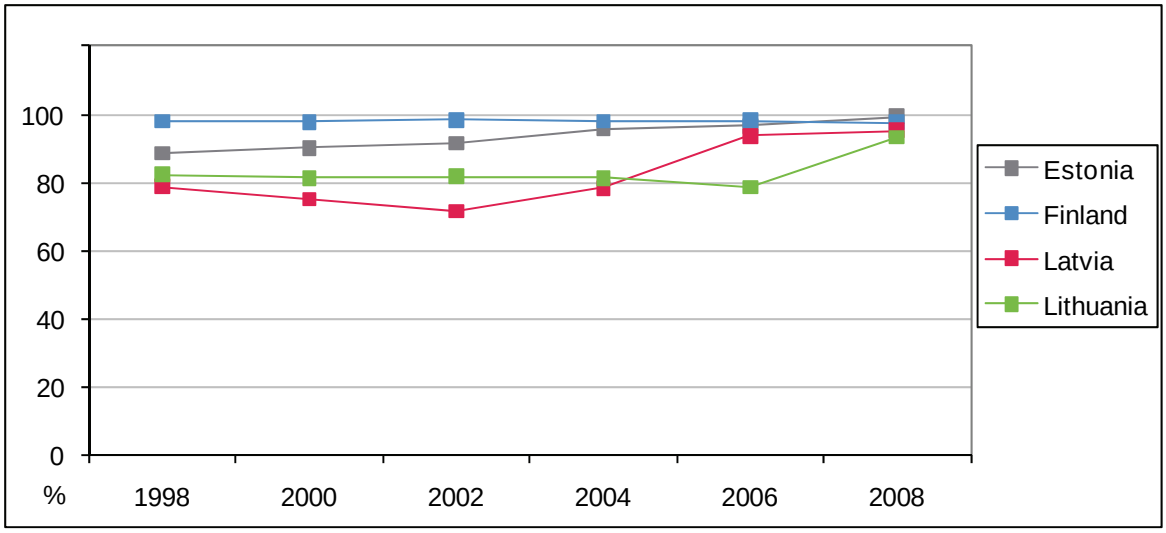

Figure 7. Ten-year trends in age-standardized prevalence (%) of seatbelt use in the front seat in women.

Educational differences in seat belt use were small. The largest difference appeared among Finnish men: 96% (95% CI: 95–97) of men with higher education used seat belts in comparison with 89% (95% CI: 88–90) of the men with lower education. There were no educational differences among men in Latvia and Lithuania (results not shown).

In all Finbalt countries, except Latvia, the respondents living in metropolitan centre used seat belts more often than those living in other places. During the study period the largest increase in the prevalence of seat belt use could be seen among adults living in the Latvian metropolitan centre, for example, among men from 64% (95% CI: 58–70) in 1998 to 84% (95% CI: 77–89) in 2008 (results not shown).

8.4 Use of seat belt in the back seat

There were huge differences in the use of seat belts in the back seat between the Baltic countries and Finland. In 2008, the prevalence of seat belt use in Finnish men was 81% (95% CI: 79–83), in Estonian men 50% (95% CI: 47–53) but in Latvia and Lithuania men much less: 30% (95% CI: 26–34) and 17% (95% CI: 14–20) respectively (Figure 8). In 2008, 91% (95% CI: 89–92) of Finnish women used seat belts in the back seat, in comparison with 58% of Estonian women (95% CI: 55–60), 34% of Latvian women (95% CI: 31–38) and 17% of Lithuanian women (95% CI: 15–19).

From 1998 to 2008 seat belt use in the back seat increased among the men and women most rapidly in Estonia, especially since 2006. In Latvia the increase started in 2004 but was not as large as in Estonia. The Finbalt study showed a diminishing gap in seat belt use between Finland vs. Estonia and Latvia. The slowest improvement during the time period of 1998–2008 was observed in Lithuania (Figure 8 and 9).

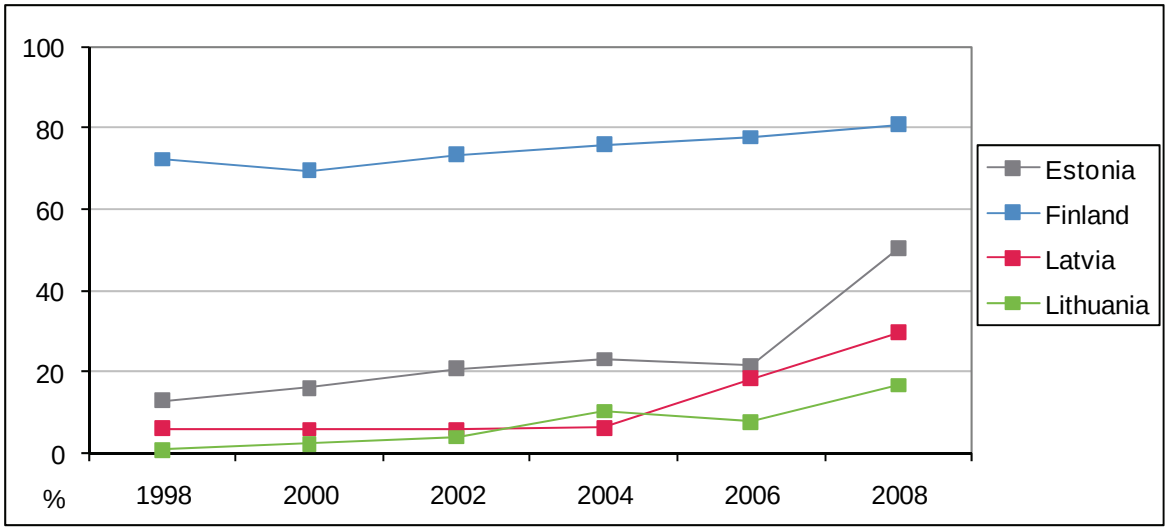

Figure 8. Ten-year trends in age-standardized prevalence (%) of seatbelt use in the back seat in men.

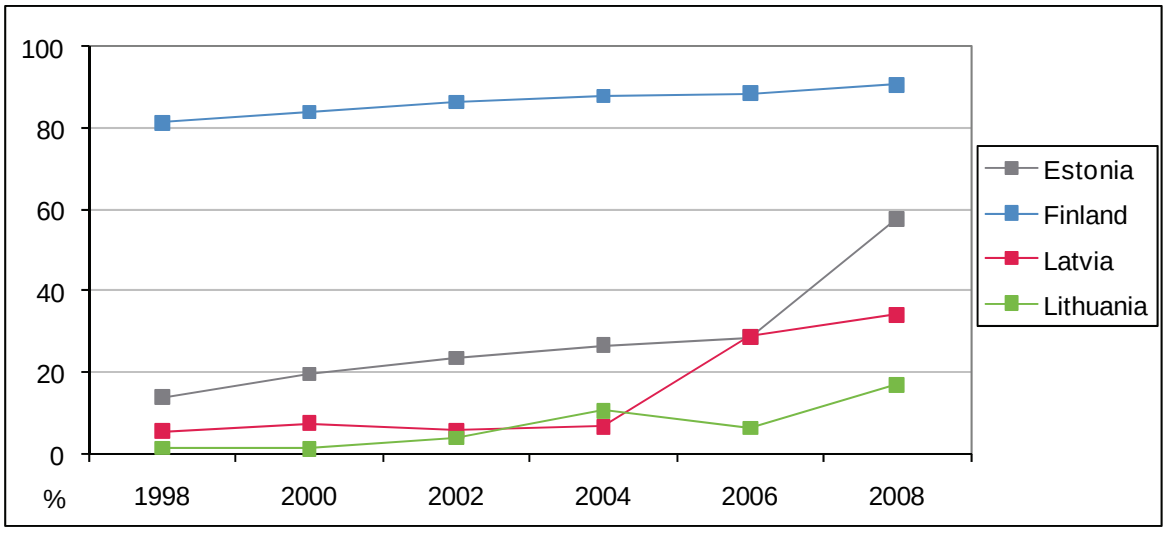

Figure 9. Ten-year trends in age-standardized prevalence (%) of seatbelt use in the back seat in women.

Use of seat belt in the back seat was more common among the older respondents in all countries. The trends from 1998 to 2008 in each age group were mainly similar to the overall change in the country. In Finland and Estonia men and women with higher level of education used seat belts in the back seat more often than those with lower level of education. In Latvia and Lithuania the level of education was not associated with seat belt use. In Finland people living in the metropolitan centre, but in Baltic countries those living in the other areas reported more often using seat belts in the back seat.

8.5 Driving under the influence of alcohol

The Finbalt survey included a question where the respondents reported whether they knew somebody who had driven under the influence of alcohol during the last year. Results suggested that drunken driving was more common in the Baltic countries and among men (Figure 10). In Finland 29% (95% CI: 28–30) of men and 19% (95% CI: 18–19) of women reported about such cases. In Latvia as many as 62% (95% CI: 60–63) of men, and 46% (95% CI: 45–48) of women

reported knowing a drunken driver. The difference between Finland and the rest of the Baltic countries – Estonia and Lithuania ¬ is slightly less pronounced but anyway considerably high.

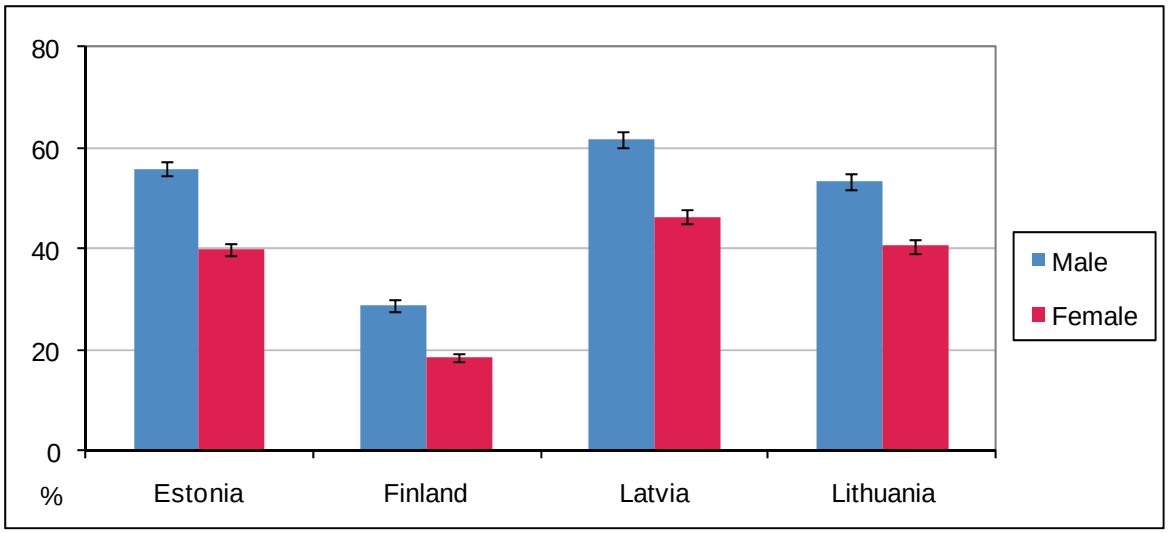

Figure 10. Age-standardized prevalence (%) of knowing someone who had driven under the influence of alcohol during the last year in 1998–2008 by gender (all study years combined).

The trends from 1998 to 2008 in knowing somebody who had driven under the influence of alcohol are shown in Figures 11 and 12. There was a tendency towards a decrease in the prevalence of known drunken driving, especially since 2002 for both genders, but among men the decline was more evident. The largest decline occurred in Latvia and Estonia but the proportion still remained the highest in Latvia. In Latvia the proportion of men knowing somebody who had driven under the influence of alcohol decreased from 72% (95% CI: 68–75) in 2002 to 58% (95% CI: 53–62) in 2008. In Estonia the same proportion decreased from 61% (95% CI: 56–65) in 2002 to 50% (95% CI: 47–53) in 2008. Similar trends could be observed among the women but the decline was less pronounced (Figure 12).

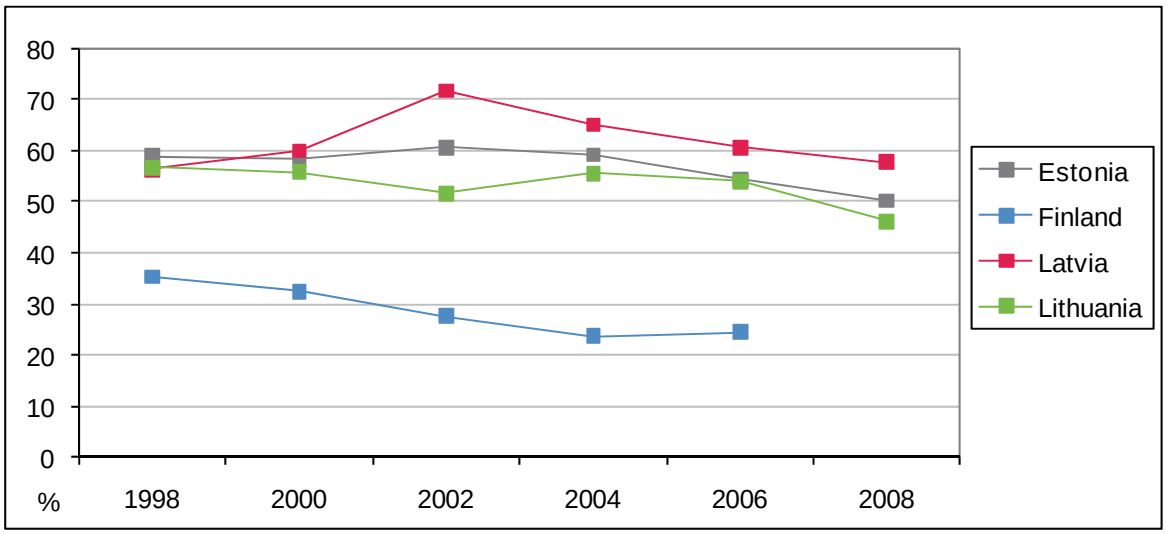

Figure 11. Ten-year trends in age-standardized prevalence (%) of knowing someone who had driven under the influence of alcohol during the last year in men.

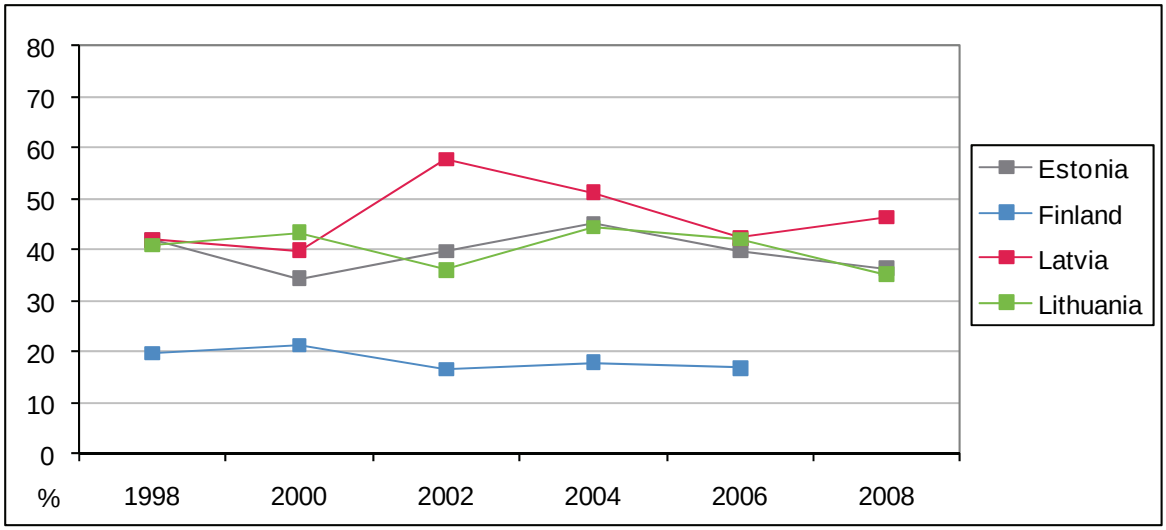

Figure 12. Ten-year trends in age-standardized prevalence (%) of knowing someone who had driven under the influence of alcohol during the last year in women.

There is a strong association between the age and knowing persons who have driven under the influence of alcohol. In all countries and both genders this proportion was higher in younger age groups (Figure 13 and Figure 14). The highest proportion was observed in the age group of 20–34 among men in Latvia (75%, 95% CI: 72–77) and Estonia (68%, 95% CI: 66–70). The lowest proportion was found in Finland (41%, 95% CI: 38–43). Since 2002 in Estonia and Latvia and since 2000 in Finland the proportion of men knowing about drunken driving diminished in the age groups of 20–34 and 35–49. In the age group of 50–64 it remained almost the same among Latvian and Estonian men and decreased among Lithuanian men. No statistically significant changes were observed among the women (results not shown).

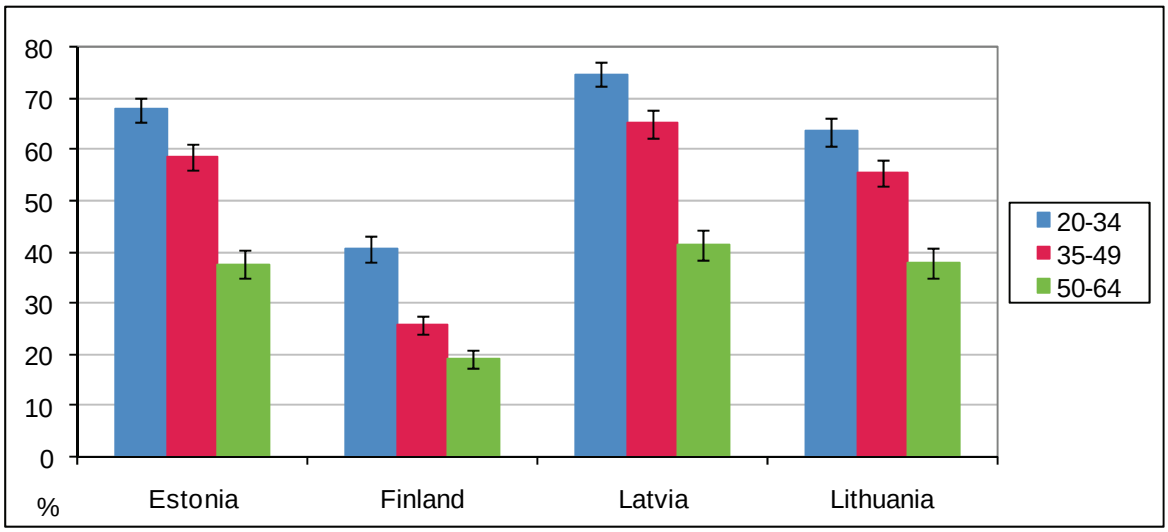

Figure 13. Proportion of men (%) reporting about someone who had driven under the influence of alcohol during the last year by age group and country (all study years combined).

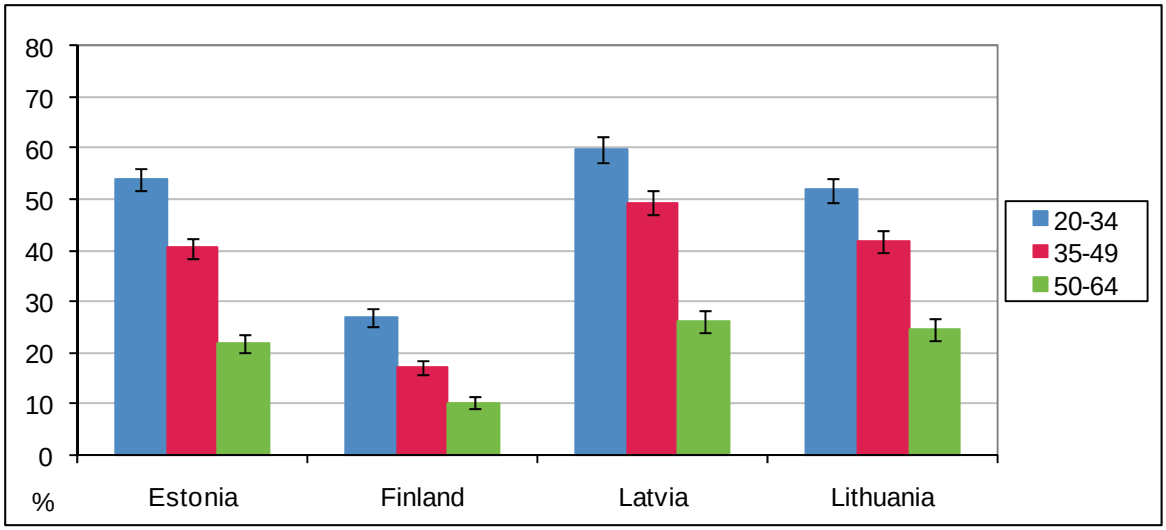

Figure 14. Proportion of women (%) reporting about someone who had driven under the influence of alcohol during the last year by age group and country (all study years combined).

A statistically significant educational difference in the proportion of knowing about drunken driving cases was observed in Finland: 34% (95% CI: 32–35) of the low educated Finnish men and 22% (95% CI: 20–24) of the high educated knew a drunken driver. In women the proportions were 23% (95% CI: 21–24) and 16% (95% CI: 14–17), respectively. In all countries respondents living outside the metropolitan centres reported more drunken driving cases than respondents living in other parts of the countries (results not shown).

8.6 Discussion

Our results suggest that women take fewer risks in traffic than men in Estonia, Finland, Latvia and Lithuania. Women use reflectors and seat belts more often and know fewer cases of drunken driving than men. However, there are large national differences. In Finland all types of behaviours improving traffic safety are more common than in the Baltic countries. Remarkable changes in reflector and seat belt use have taken place in Latvia and Estonia. In Lithuania the reduction of risky traffic behaviours has been less prominent. As a consequence, the differences in the use of reflectors between Finland vs. Estonia and Latvia have almost disappeared during the ten-year period from 1998 to 2008. When it comes to seat belts, the national differences diminished, as well. Seat belt use in the front seat was around 90% in every country in 2008 whereas the Finns used seat belts in the back seat significantly more than the Baltic respondents.

Several enforcements of traffic legislation, such as the increase of penalty fee, tight police control, stronger requirements for training of drivers etc. have been introduced in the Baltic countries and Finland. More attention has also been paid to public education. In Estonia the main priorities of the national traffic safety program 2003–2015 are education, reduction of intoxicated driving and speeding, an increase of the use of passive safety measures, improvement of road infrastructure and safety for vulnerable road users (5). Different projects and programs have been introduced, such as training of specialists, local authorities and city planners, as well as, training and certification of traffic education teachers, traffic safety campaigns and training for journalists (5).

Traffic safety policies and programs have long traditions in Finland. The target to improve road safety was set by the Finnish State Council in 1997 and revised in 2001 when new aims by 2010 were outlined. Traffic safety actions have been implemented both on national and local level. Road safety work focuses on speed surveillance, drunken driving, use of safety equipment

and on high-risk drivers. Several changes in laws and regulations have been introduced, such as stricter limits for drugs and alcohol and making reflector use compulsory (6).

In Latvia administrative penalties have been increased in the framework of the National Road Safety Program (2000–2006). Implementation of a penalty point system has been very effective in reducing the number of traffic injuries and fatalities. Road Traffic Safety Directorate has carried out several campaigns in order to promote traffic safety behaviours among road users (7). In Latvia an increase has been achieved in the use reflectors and seat belts. Furthermore, the number of alcohol-related accidents has decreased.

In Lithuania the Traffic Safety Department was established in 2002 under the Ministry of Transport and Communication. Since 2004 use of rear seatbelts has been a compulsory. In 2005 a new national action plan fort traffic safety was introduced. More effective traffic safety campaigns are needed in Lithuania. The municipalities have to be more active than they have been so far (8).

The legislative and preventive activities in the Baltic countries and Finland are in line with changes in seat belt and reflector usage and also with drunken driving observed in our study. Reflector use increased from 1998 to 2008 especially Estonia and Latvia where population based campaigns were introduced. However, in every country too few adults use reflectors in the dark. In Latvia, a clear increase in seatbelt use appeared after 2002 when enforcement of seat belt law with increased penalties was introduced. Our data suggest that the activities implemented on traffic safety in Lithuania have not yet been sufficient. Although seat belt use has significantly increased in the Baltic countries, it is still too rare, especially in the back seat. Despite the decrease in drunken driving which our data suggest, alcohol remains an important contributor to road traffic mortality (9).

Studies from other countries show that safety belt use has increased during the last decade (10). Increases in belt use are generally highest in states with low baseline rates of seat belt use (11). The enforcement of existing laws, perhaps through selective traffic enforcement programs, should increase safety belt use and thereby save lives and reduce costs for individuals and governments (12).

The development of the national road safety policies in the Finbalt countries shows similarities and differences. All the countries have used quantitative and time-bounded targets for reducing traffic deaths and injuries. The countries have addressed specific risk factors such as speeding, drunken driving, road infrastructure and vulnerable road users. The countries also share similar characteristics in terms of organizational settings with safety issues debated in the parliament, a strong central coordinating ministry. Finland shows good vertical coordination of safety activities from central to local groups with supporting finance. Influential Finnish non-governmental and non-profit organizations have a strong interest in a traffic safety. Local communities in the Baltic countries should consider coordinated safety promotion and injury prevention programmes as a complement to national safety promotion framework (13).

A clear improvement in traffic safety related behaviours in Finland and especially in the Baltic countries has taken place after implementation of new legislation and traffic safety programs. The case of traffic safety in Estonia, Finland, Latvia and Lithuania demonstrates how health policies and large-scale prevention programmes change risky health behaviours.

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9 Good self-assessed health

Mare Tekkel & Tatjana Veideman & the Finbalt group

9.1 Introduction

It is well established that self-rated health is a strong predictor of morbidity, functional capacity and, especially, an independent predictor of mortality. Thus it constitutes a simple and global indicator for monitoring of population health (1, 2).

In this survey self-rated health status was assessed by using answers to the following question – How would you assess your current state of health? The relevant response options were: good, reasonably good, average, rather poor, and poor. Health was classified as good when the answers stated “good” or “reasonably good”. As self-rated health is closely related to age, age standardized results were used for analysis.

9.2 Results

During the study period in 1998–2008, the majority of respondents (more than 65% of men and women) in Finland consistently assessed their current state of health as good. In the Baltic countries, the percentage of respondents reporting good health exceeded 50% for men for the first time in 2002 (consequently only in 2008) in Lithuania and for women in 2008 in Estonia and Lithuania (Figure 1 and 2).

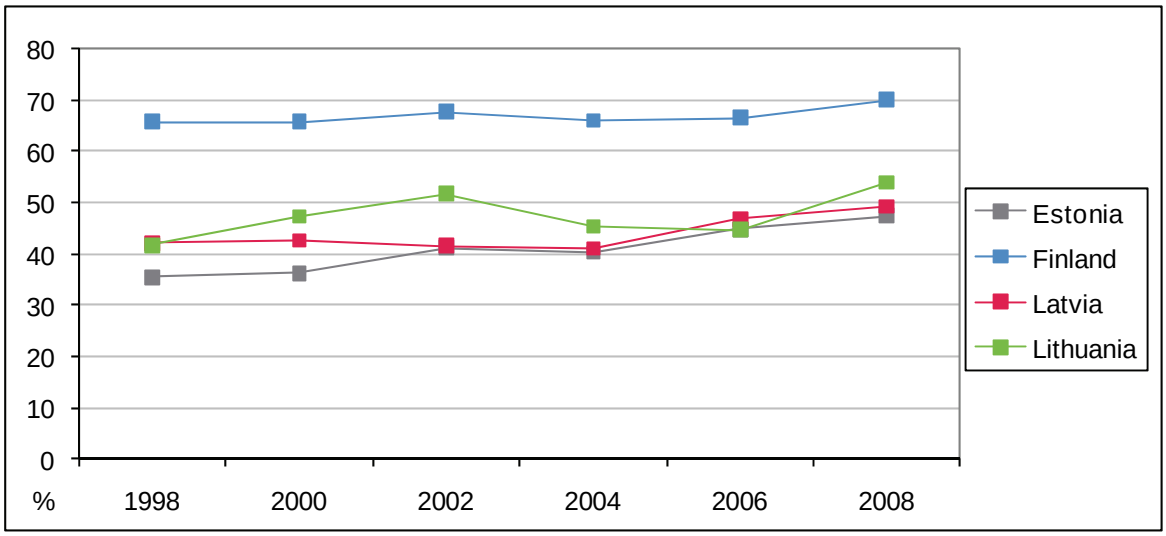

Figure 1. Age standardized prevalence (%) of good self-rated health in men between 1998–2008.

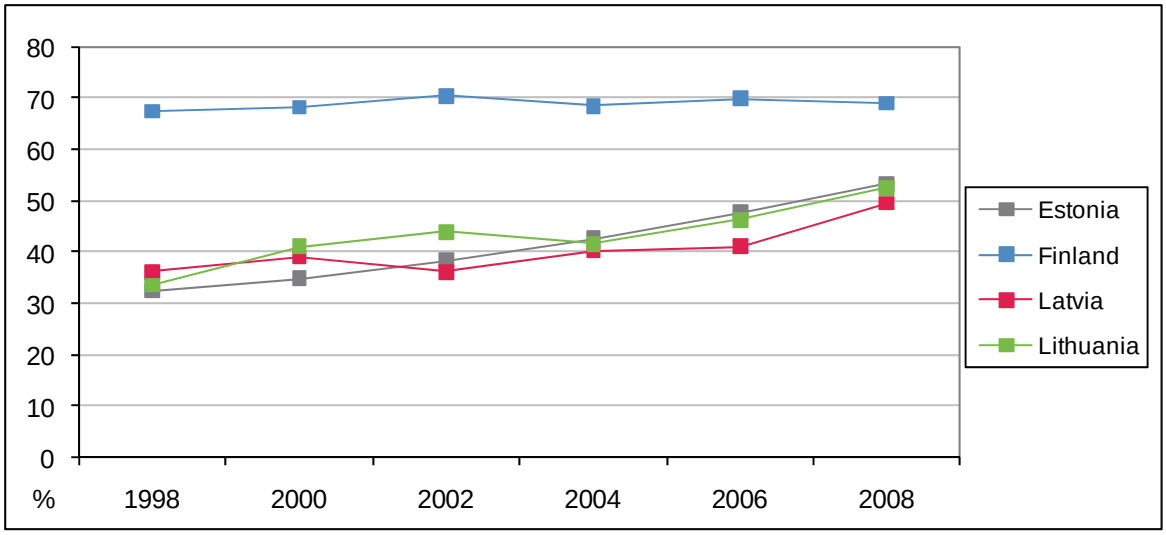

Figure 2. Age standardized prevalence (%) of good self-rated health in women between 1998–2008.

During the first studies aforenamed prevalence was somewhat higher for men than for women in all Baltic countries (statistically significantly in 1998 in Latvia and in 1998–2002 in Lithuania); starting from 2004 it became somewhat higher for women in Estonia (in 2008 statistically significantly). The same situation occurred in Latvia during next study and in 2008 in Lithuania. In Finland the prevalence of good self-rated health of men exceeded the level of women in 2008. In all Baltic countries, statistically significant increase of the prevalence of good self-rated health appeared for both genders by year 2008.

In all studied countries the percentage of good self-rated health decreased with increasing age (Figure 3 and 4). During the ten-year study period a statistically significant increase of corresponding indicator occurred for men in the youngest age group (20–34-year-olds) in Estonia, where the prevalence increased from 50% (95% CI: 42–58) in 1998 to 70% (95% CI: 65–74) in 2008. A statistically significant increase was observed also in the following age group (35–49-year-olds) in Lithuania, where the prevalence grew from 36% (95% CI: 30-41) in 1998 to 57% (95% CI: 51–62) in 2008. The same occurred for women in all age groups in Estonia and Lithuania and in two younger age groups in Latvia, where the prevalence of the youngest age group increased from 54% (95% CI: 49–59) to 70% (95% CI: 63–75) and the prevalence of the middle age group from 32% (95% CI: 27–37) to 48% (95% CI: 42–54) during the study period.

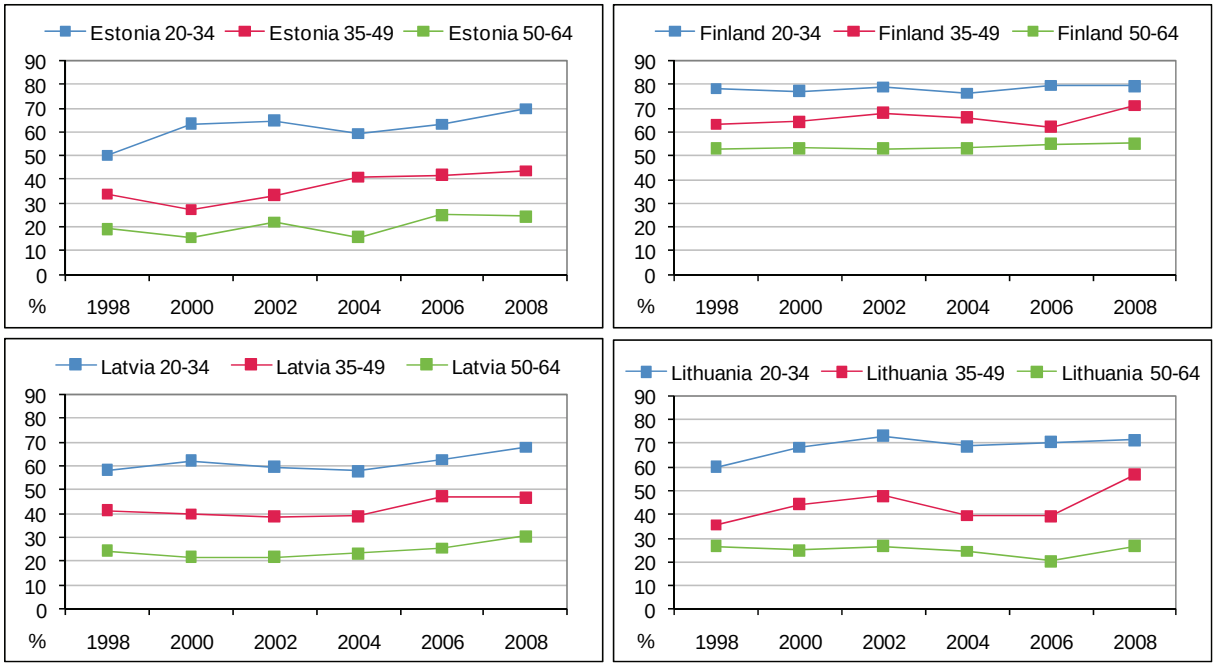

Figure 3. Prevalence (%) of good self-rated health in men by country, year of study and age group.

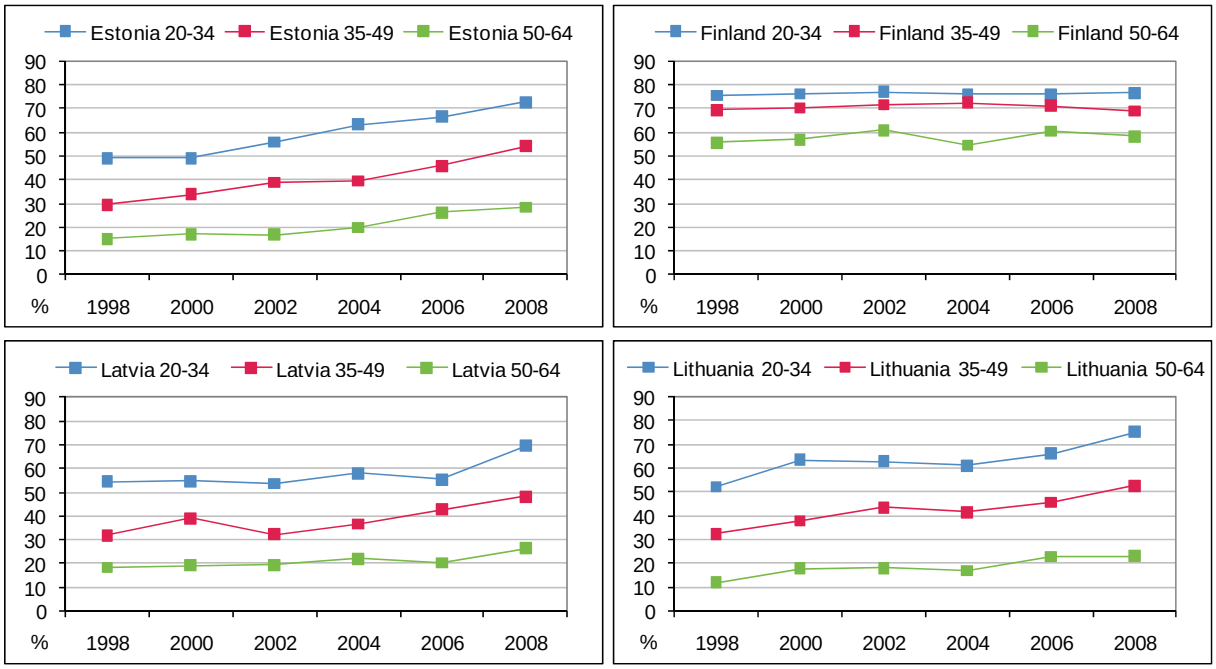

Figure 4. Prevalence (%) of good self-rated health in women by country, year of study and age group.

During the whole study period in all studied countries, women with high education rated their health better than women with low education (Figure 5). The same applied to men in most study years for Lithuania, Finland and Estonia (Figure 6). The prevalence was somewhat higher for men in Latvia and Lithuania and for women in Finland irrespective of educational level during the entire study period and for women in Estonia starting from 2004. Comparing the last study year to the first, a statistically significant increase in the prevalence of good self-rated health appeared among women in all Baltic countries irrespective of educational level. For men, the increase

appeared in the low education group in Estonia – 1998: 33% (95% CI: 29–38); 2008: 42% (95% CI: 38–45) and Lithuania – 1998: 38% (95% CI: 34–42); 2008: 49% (95% CI: 45–54); in the high education group in Estonia and Finland – 1998: 42% (95% CI: 33–51) and 70% (95% CI: 65–74) respectively; 2008: 58% (95% CI: 53–63) and 78% (95% CI: 74–81) respectively.

The prevalence of good self-rated health was somewhat higher in the metropolitan area in all of the countries for both genders during the entire study period (for men in Latvia, starting from 2004) (Figure 7). Comparing the last study year to the first, a statistically significant increase in the prevalence of good self-rated health appeared for women in all Baltic countries and for men in Estonia irrespective of place of residence; in Latvia for men living in the metropolitan centre – 1998: 41% (95% CI: 35–46); 2008: 54% (95% CI: 47–61) and in Lithuania for men residing outside of the metropolitan centre – 1998: 38% (95% CI: 33–42); 2008: 53% (95% CI: 48–57) (Figure 8).

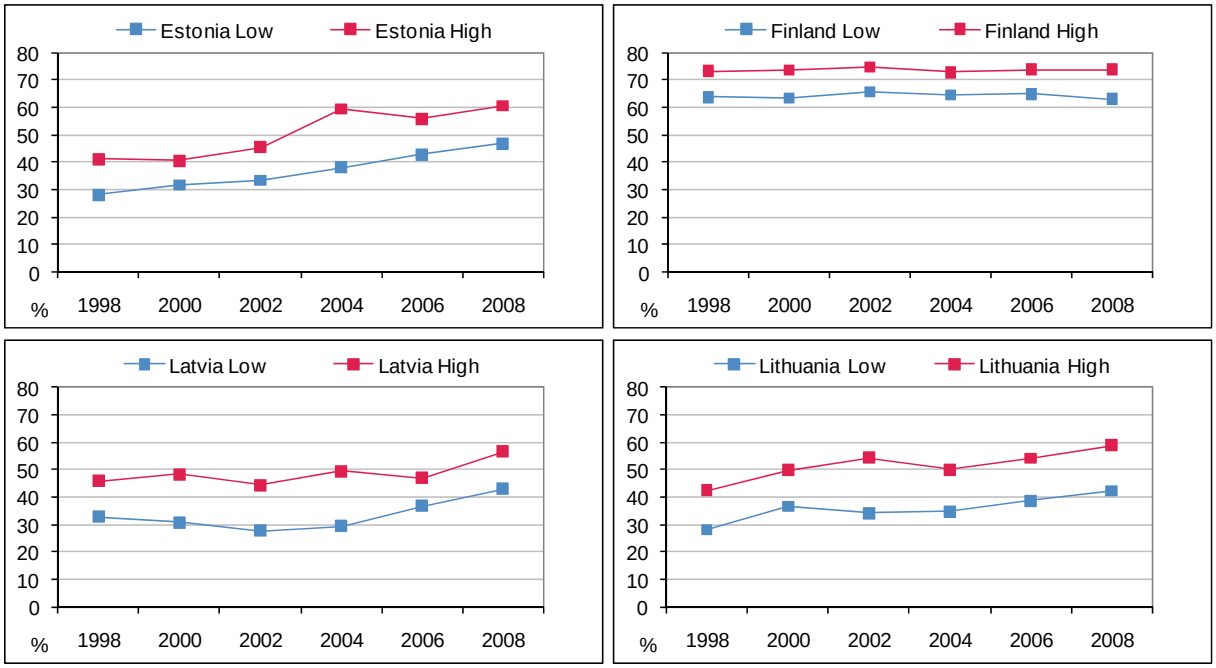

Figure 5. Age-standardized prevalence (%) of good self-rated health in women by country, year of study and education.

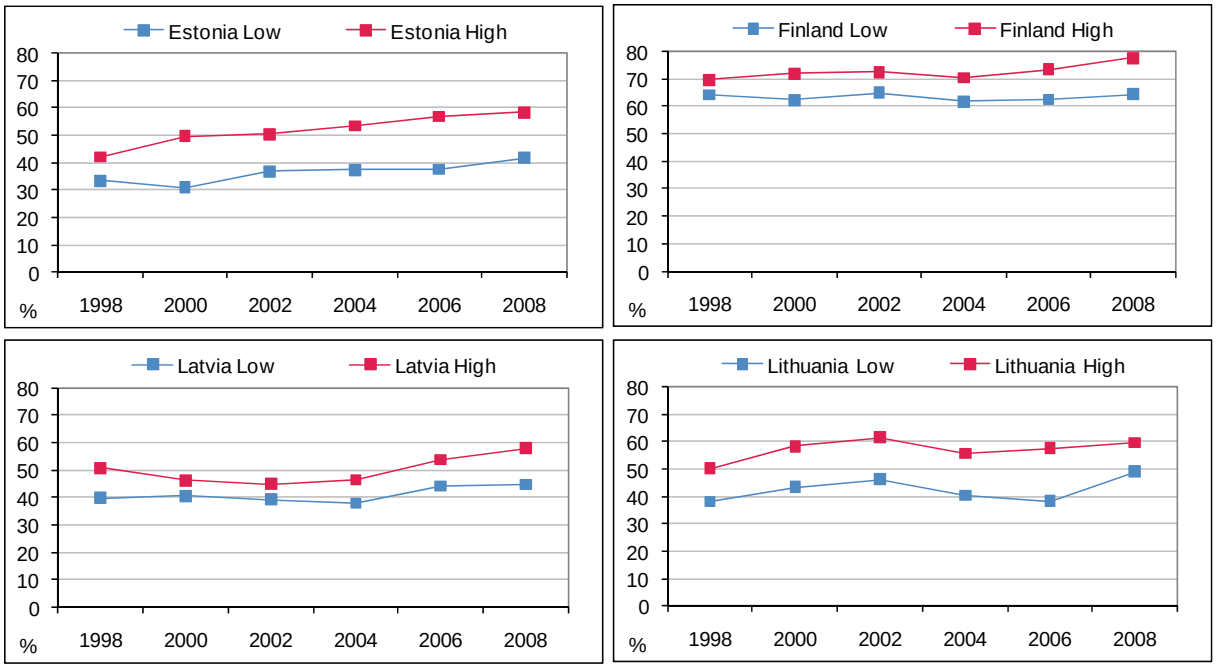

Figure 6. Age-standardized prevalence (%) of good self-rated health in men by country, year of study and education.

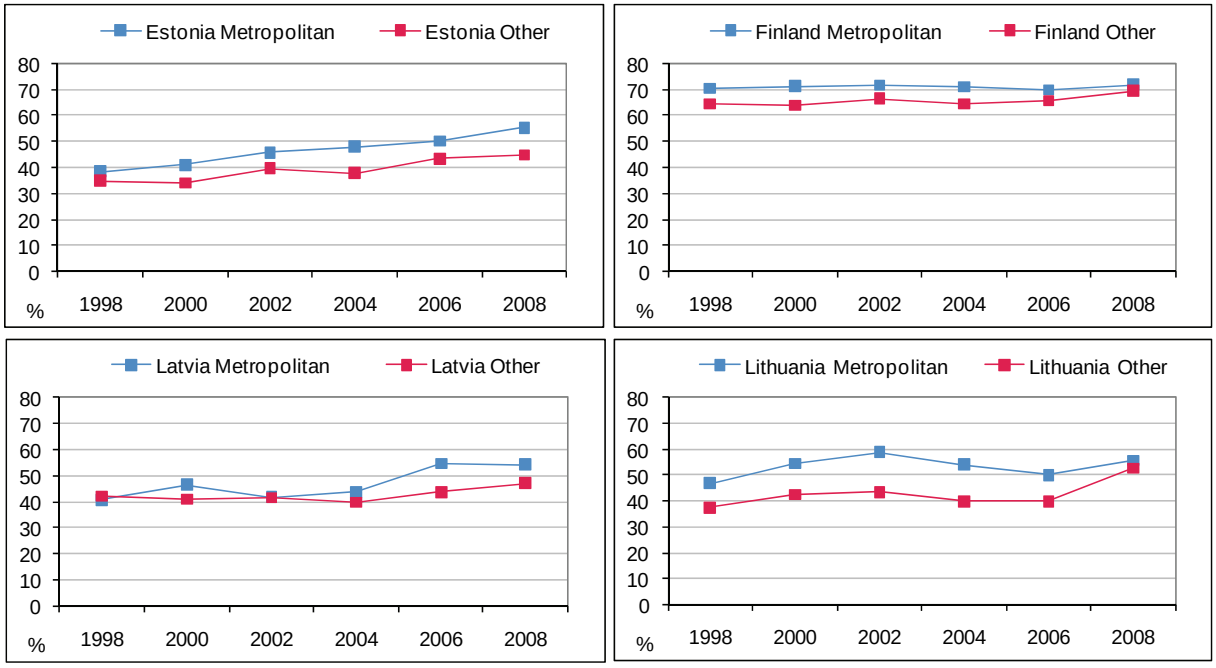

Figure 7. Age-standardized prevalence (%) of good self-rated health in men by country, year of study and place of residence.

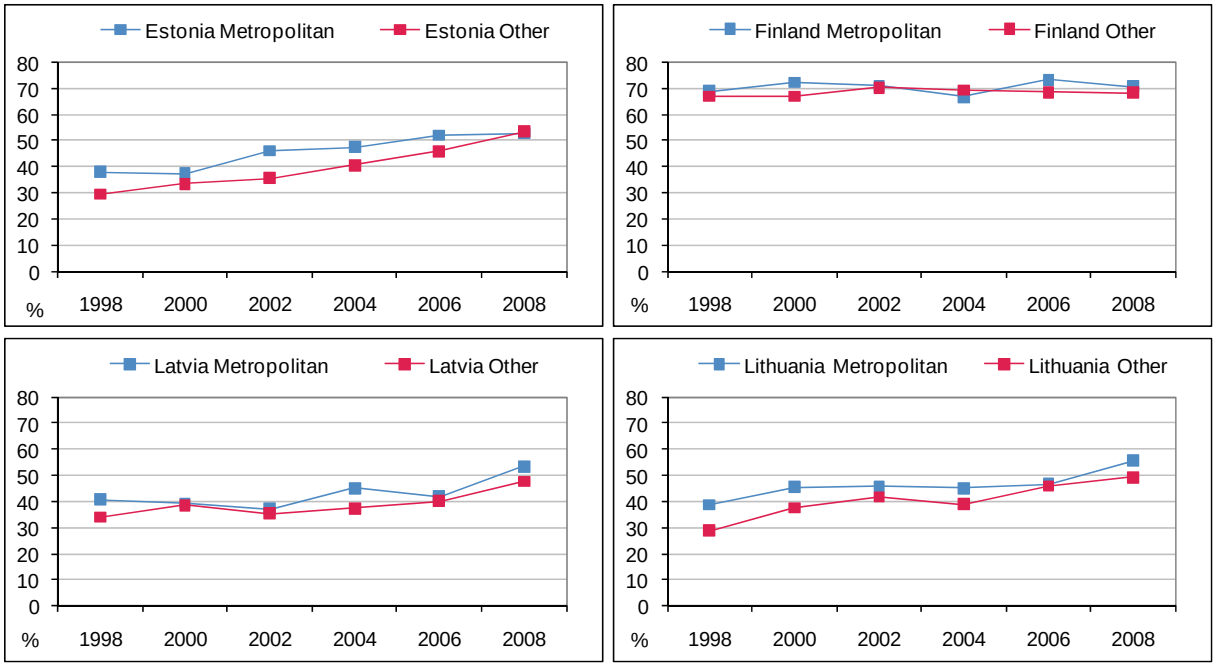

Figure 8. Age-standardized prevalence (%) of good self-rated health in women by country, year of study and place of residence.

9.3 Discussion

During the period 1998–2008, the prevalence of good self-rated health was higher in Finland than in the Baltic countries irrespective of gender, age group, educational level or place of residence; it decreased with increasing age and increased with educational level in all studied countries. It was somewhat higher for men in Baltic countries and for women in Finland during the most study years. Comparing indicators from 2008 to those from the initial year of the study, a statistically significant increase in the prevalence of good self-rated health became apparent in the Baltic countries.

The above described situation can be explained in a number of ways. However, first of all, it is not entirely clear whether or not self-assessment of health is understood similarly in different cultures. In 1998, it was suggested that the dominance in all of the Baltic countries of individuals who assessed their health as average, could still have been influenced by the former Soviet psycho-social environment where survival was more likely among “the average” (2). Moving forward in time, this assumption could still prove to be true in 2008 as an average self-rated health was still dominant in all of the Baltic countries.

As methodologies, especially statistical analysis for the relevant published studies differ, it proves difficult to apply direct comparison to results. A tendency for higher prevalence of good self-rated health among men than women was noted for example in Sweden for 49–74-year-old twins born 1926–1950 (1) and in Estonia according to the results of the Health Interview Survey 2006 for 15–84-year-olds (3); the opposite result was described also in Sweden for 18–79-year-old population (4). By previous publications, based on the Finbalt study materials from different study periods, in Finland both women and men rated their health better than persons in the Baltic countries (2), prevalence of good self-assessment of health was somewhat higher for men in the Baltic countries and for women in Finland (2, 5), differences between urban and rural areas were small and inconsistent in all studied countries (5) and in the Baltic countries improvement in self-rated health (for period 1994–2004) was mainly found among the better-educated men and women (6). According to the results of the Estonian Health Interview Survey 2006 probability of rating health as good was the highest among the youngest respondents (15–24-year-olds), for men with secondary education and women with completed academic education as compared to older

and less educated (primary or basic education) respondents (3). In Sweden educational level was independently associated with self-rated health among men, but not among women (4).

Self-assessment of health is fairly sensitive to social and economic factors and it varies by socioeconomic circumstances of studied country; in general, individuals with a low socio-economic status give their health a worse assessment than others (4, 7).

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10 Summary and conclusions

Ritva Prättälä & Noora Sipilä & the Finbalt group

This study was carried out as part of the Finbalt Health Monitor, a collaborative project between Estonia, Finland, Latvia and Lithuania. We described the trends and socio-demographic differences in smoking, alcohol consumption, food habits, physical activity, BMI and behaviours related to traffic safety, as well as, self-assessed health. The results show more similarities than differences between Finbalt countries both in the trends of health behaviours and in their socio-demographic patterns. Furthermore, the countries seem to be approaching each other during the study period of 1998–2008.

10.1 Trends and gender differences

Daily smoking decreased among the men but did not change among the women. The women were less often daily smokers than the men. Passive smoking at home was more prevalent in the Baltic countries than in Finland, especially among the women. Passive smoking decreased in the Baltic countries without reaching the Finnish level, yet.

Moderate to heavy alcohol consumption was on the increase in the Baltic countries. In Finland it remained at the high level reached in the 1990's. A gender gap in alcohol consumption – men drinking more than women – was observed. The gender gap was the smallest in Finland, where women drunk the most across the four countries.

In the Baltic countries vegetable consumption increased, in Finland it remained stable. In Estonia use of butter on bread decreased but in Latvia and Lithuania increased. Use of vegetable oil in cooking was more common in the Baltic countries than Finland, and in Lithuania it still increased. The Finns ate less meat and meat products than Estonians, Latvians or Lithuanians. Consumption of meat and meat products increased in the Baltic countries. The women ate more often vegetables but less meat and meat products than the men. In regard to butter and vegetable oil no consistent gender pattern existed.

The level of physical activity remained nearly the same. Only in Finland some increase in leisure-time physical activity occurred. Gender differences in leisure-time physical activity were inconsistent. In commuting physical activity a consistent gender difference occurred: the women were more active.

During the ten-year period the prevalence of overweight and obesity increased in all four countries. Overweight was more common among the men with the sole exception concerning Latvia, where no gender difference existed. In obesity no gender differences were observed in Estonia and Finland while in Latvia and Lithuania the women were more often obese.

In Finland behaviours improving traffic safety were more common than in the Baltic countries but remarkable changes in reflector and seat belt use took place in Latvia and Estonia. In Lithuania the reduction of risky traffic behaviours was less prominent. As a consequence, the differences in the use of reflectors between Finland vs. Estonia and Latvia almost disappeared. The national differences in seat belt use diminished, as well. The women used reflectors and seat belts more often and knew fewer cases of drunken driving than the men in all countries.

The prevalence of good self-rated health was at a lower level in the Baltic countries than in Finland, where the majority assessed their health as good. However, the prevalence of good self-rated health increased in all Baltic countries.

10.2 Socio-economic differences

Educational differences in smoking remained stable, the higher educational groups smoking less than the lower educational groups. The higher educational groups were also less often exposed to tobacco smoke.

In moderate to heavy drinking there were hardly any systematic educational differences with the sole exception concerning Finnish men. Among the Finnish men moderate to heavy drinking was more common in the higher educational groups in the beginning of the study period. However, towards the end of the study period the educational differences vanished and even reversed. Among women moderate to heavy drinking was more often reported among those with higher education, but the increase was typically stronger in the lower educational group.

Daily consumption of vegetables was consistently more common in the higher educational group while educational differences in the consumption of meat and meat products varied by country. In Estonia the higher educational groups ate meat more often while meat products were more common in the lower educational group. In Finland no differences existed in meat consumption whereas, similarly to Estonia, the lower educational group consumed more meat products. In Latvia and Lithuania no systematic educational pattern existed. In every country daily consumption of vegetables was more common in the metropolitan areas than in the countryside or smaller towns.

Educational differences in physical activity – the higher educational groups being more active during leisure time and commuting were observed both among men and women. Among women the higher educational groups were less often overweight and obese, whereas the socio-economic pattern among men varied by country.

Self-rated health followed an educational gradient in all countries: the higher educated assessed their health more often as good compared to the lower educated. Additionally, those who were living in a metropolitan area rated their health as good more often compared to those living in other places.

10.3 The social context of trends and variation in health behaviours

During the last decade both Finland and the Baltic countries have been characterized by economic growth, increase in material living standard and stronger identification with Western and European economies. However, the social and economic changes have started much earlier in Finland and the Finnish economy has been more stabile during the period of 1998–2008 than the Estonian, Latvian and Lithuanian. Finland became independent 70 years earlier and joined the European Union ten years earlier than the Baltic countries.

The starting point of this report was the assumption that social and economic changes influence health behaviours. Changes in the consumption of vegetables and alcohol and in the prevalence of overweight can be associated with increasing standard of living and better availability of foods and alcoholic drinks.

In addition to social and economic policies also health policies influence behaviours. Health care systems have experienced large reforms in the Baltic countries since the beginning of 1990s. The reforms have included e.g. harmonization of legislation in order to meet with European Union standards. (1–4). In Finland there have not been major reforms of the health care system since 1997 (5). The rapid decreases in passive smoking in all Baltic countries and in risky traffic behaviours in Estonia and Latvia demonstrate the influences of integration to European health policies and health promotion.

The overall picture shows that Finland and the Baltic countries are approaching each other, while socio-demographic differences within the countries show stability over time. Our data does not show diminishing gender or socio-economic differences, women and higher socio-economic groups have healthier behaviours than men and the lower educational groups.

10.4 Public health implications of the main findings

Our findings on trends and gender differences in health behaviours are in line with those observed in mortality and average life expectancy at birth. The women in Finland and the Baltic countries live longer than the men (6); our results show that they have healthier behaviours.

In Finland life expectancy has increased since 1970 (7). Since 1995 Estonia, Latvia and Lithuania have also shown a gain in life expectancy without, however, reaching the level of Finland. Alongside with cardiovascular diseases and cancer, accidents, alcohol-related causes and other external causes of death are common in Finland and the Baltic countries (8–10, 1). In Finland, alcohol related mortality has been increasing (8). Contrary to our findings on tobacco, food and traffic safety, a shift towards healthier behaviours could not be observed in regard to alcohol, physical activity and overweight.

In all Finbalt countries life expectancy and mortality vary by socio-economic status. In Finland the socio-economic differences are below the European average but far from the lowest in Europe. In the Baltic countries socio-economic mortality differences are larger than the European average (11). In Finland (7), Estonia (12, 13) and Lithuania (14) the socio-economic differences have increased. In our study the socio-economic differences were consistent in regard to tobacco, physical activity, vegetable consumption and self-assessed health.

10.5 Uses of the Finbalt Health Monitor data

The Finbalt data can be used in comparing time trends and patterns of health behavior. The data are primarily appropriate for estimating the prevalence of common health behaviors in the general population. They are not suitable for analyzing rare or sensitive phenomena, such as illegal drug abuse or alcohol problems, because persons involved in these type of behaviour usually belong to non-respondents. The unavoidable bias caused by cultural differences can be leveled off if, instead of national averages, patterns of variation in selected habits are compared.

Finbalt Health monitor is a unique project. To our knowledge there are no other projects that have succeeded in collecting comparative data on working age population from four countries and using nationally representative samples over a ten-year period. The success and longevity Finbalt Health Monitor is based on the relatively low costs of data collection and analyses and above all on the multiple uses of the data.

Over the years Finbalt data has offered reliable national background for the planning and evaluation of food and nutrition policies, smoking prevention programs and strategies to tackle health inequalities. The data have also served in education and training of health professionals and in increasing public awareness on health. In addition to its practical purposes, Finbalt Health Monitor has provided a data set to be analyzed in comparative research.

10.6 Conclusions

The following conclusions can be drawn on the basis of our study on health behaviours and their socio-demographic differences in Estonia, Finland, Latvia and Lithuania in 1998–2008:

- The decrease in passive smoking in the Baltic countries and the improvement in traffic safety related behaviours in Estonia and Latvia are signs of growing health concerns and successful health promotion policies. The favourable changes took place after implementation of new legislation and health promotion programs.They demonstrate how health behaviours can be changed by political interventions.

- Tobacco policies have not succeeded in diminishing the socio-economic differences in smoking. The most vulnerable groups are men and women with a low educational level; men because they smoke themselves, women also because of the exposure to tobacco smoke at home. The future tobacco policies should pay special attention to smoking among the lower socio-economic groups.

- Alcohol consumption seems to have increased more among the lower educational groups. Therefore, special attention should be paid to alcohol policies tailored to decrease drinking in lower educational groups.

- Our results do not suggest diminishing socio-economic differences in food habits. In all Finbalt countries special attention should be paid in developing policy measures tailored to increase vegetable consumption among men, in the lower educational groups and in the countryside.

- The Finns were physically more active during leisure time and less active during commuting than the Estonians, Latvians and Lithuanians. If the Baltic countries follow Finland in the level of commuting physical activity public health problems caused by low physical activity may be even more prevalent in the future than today. Health policies should focus on means to improve chances to be physically active both during leisure time and commuting in every country and especially among the lower educational groups.

- Overweight and obesity are an increasing public health problem. Public health initiatives should target all age and educational groups but among the women special attention should be paid to the lowest educational groups.

- Finbalt Health Monitor data is a valuable source of information for the planning of health policies and health promotion and also for studies comparing time-trends of health behaviours and their social determinants.

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