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Social inequalities in health in Estonia

MAIN REPORT

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All authors have been closely involved in all phases of this study, including the development of the general design, the statistical analyses and the drafting of the final report. As this report is a product of intense collaboration, all authors are willing to assume responsibility for the entire text.

Foreword

It is my pleasure to present you the work that has been done with the joint efforts of the Ministry of Social Affairs, the World Bank and the group of dedicated scientists.

Inequalities in health have been a topic for discussion for some time in the world already. Equity-oriented health policy is a modern standard which has been first stated in "Health for All" strategy in World Health Organization.

It is clear that need for this kind of knowledge about Estonia is more important that ever before after regaining our independence.
Dramatic changes in the whole society and health system have been ongoing during last decade. The main aim has been to improve the effectiveness, but whether the benefits of the more effective system will be equally available to everybody in the society is what really matters. Will the public goods and support reach all groups and especially to these who are in the most need remains unclear until we actually don't analyse it. This is why the present study shall remain as cornerstone for the future planning and policy-making in order to make the difference - so that the actual well-being is possible for for everybody in Estonia.

We know already that the health situation in Estonia is not favourable compared to better-developed countries. What we can learn from this study is that health is distributed very unevenly within the society.
Can we accept the remarkable gaps in health status between different socio-economic groups? What is the broad public's attitude towards these inequalities? These are the questions for future discussions.

The work presented here is a result of a descriptive study and therefore does not give ready-made answers how to reduce these inequalities or solutions about actions to be taken, this study makes the problem visible and is precondition to start discussions about inequalities.
The next step will be challenge to the scientists who should discover why these differences exist and what can we do about them.

And after all it is solid proof for the policy-makers while making their decisions how to decrease the health disparities.

All these preconditions will form the basis to draw public health policy what is based on equity principles in all areas – health status, health behaviour and health services.

Katrin Saluvere
Deputy Secretary General in Health
Ministry of Social Affairs

Acknowledgements

We gratefully acknowledge the important contribution that Katrin Niglas of the Tallinn Pedagogical University made to this study. She performed all analyses on health-related behaviours, the results of which are presented in chapter 6 of this report.

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We would like to acknowledge the financial and practical support that was given to this project by the Ministry of Social Affairs of Estonia. We would like to extend our thanks especially to Silja Marken as her continuous care for organisational matters ensured that this project ran smoothly.

We finally would like to mention that the initiative to this study came from the World Bank. We appreciate especially the contribution of Lorraine Hawkins. She devised the general strategy for this study - a strategy that we had to modify on details only as it turned out to be highly productive.

January 2002

The authors

Contents

1. Executive summary

Background
Since independence in 1991, the health situation in Estonia has undergone large changes. At the same time, several policies were developed with the aim to improve the future health situation, including preventive policies, inter-sectoral policies and health care reform. It is important in all these policies to secure that their benefits accrue to all Estonian citizens, and in particular to the social groups that face most health problems. A first step in the formulation of equity-oriented health policies is to document recent patterns and trends in social inequalities in health.

Objectives
The principal objective of this report is to give a detailed description of social inequalities in self-reported morbidity, mortality, health-related behaviour and health care utilisation within the Estonian population, and to assess whether these inequalities have diminished or widened since independence. Two secondary objectives are to use this detailed description to (a) formulate implications for health sector policies and (b) make recommendations for future research and monitoring of social inequalities in health in Estonia.

Material and methods
Several data sources were used for analysis. Data on self-reported morbidity, health-related behaviour and partly on health care utilisation came from different surveys carried out in the 1990s. Data on cause-specific mortality were obtained from the mortality database, and regional data on health care utilisation were derived from the Health Insurance Fund database. Standard statistical methods were applied to analyse these health indicators in relationship to both gender, ethnicity, socio-economic status (education, income, unemployment and economic activity) and place of residence (rural/urban residence, county/region). Potential data problems were dealt with carefully. Extensive tabulations with detailed results are presented in the technical document. These detailed results were used to make overviews and to summarise the main results in a series of “key findings”, that are presented and illustrated in this main report.

Results
The main results can be summarised into four points.

1. Both morbidity, mortality, health-related behaviours and patterns of health care utilisation strongly vary between subgroups of the Estonian population.
2. People from lower socioeconomic groups live shorter, more often suffer from health problems, engage more often in health damaging behaviour, and have less favourable health care utilisation patterns.
3. Large differences in some of the outcome indicators are also observed between men and women, between Russians and ethnic Estonians, and by place of residence.
4. During the 1990’s, social inequalities in mortality and most types of health-related behaviour have widened.

An illustrative finding is that in 1999-2000 the gap in life expectancy between those with university education and those with lower secondary education was more than 13 years for men and more than 8 years for women. An even larger gap was observed in terms of expectancy of life *in good health* (section 8.1).

Implications for health policies

The findings presented in this report are expected to provide a rich and solid empirical basis for discussions on equity-oriented health policies in Estonia. In chapter 10, a number of observations are made that aim to further stimulate discussion on the objectives and strategies of such policies.

Future research and monitoring

Equity-oriented health policies can be supported by further research and monitoring in four areas: (a) more in-depth description of current inequalities, (2) research aimed at explaining these inequalities, (3) monitoring of future trends, including policy impact assessment, and (4) improving data availability, e.g. by facilitating linkage between data registries. Chapter 11 gives specific suggestions on each of these areas, with an emphasis on actions to be taken on a short term.

2. Background and objectives

Social inequalities in health are a key concern for health policies. Their relevance is expressed in the targets formulated by the European Office of the World Health Organisation for the year 2020 (Organisation 1999). The second Health for All target states that

> *"By the year 2020, the health gap between socioeconomic groups within countries should be reduced by at least one fourth in all Member States, by substantially improving the level of health of disadvantaged groups."*

This target expresses the generally accepted idea that health policies should ultimately aim for improving the health not only of the population at large, but also of each subgroup of the population individually. Special concern needs to be given to socially disadvantaged subgroups, who are likely to be disadvantaged in terms of health as well. If so, a main challenge to health sector policies is to secure that future gains in population health accrue to these groups as well (Vågerö 1994; Whitehead 1990).

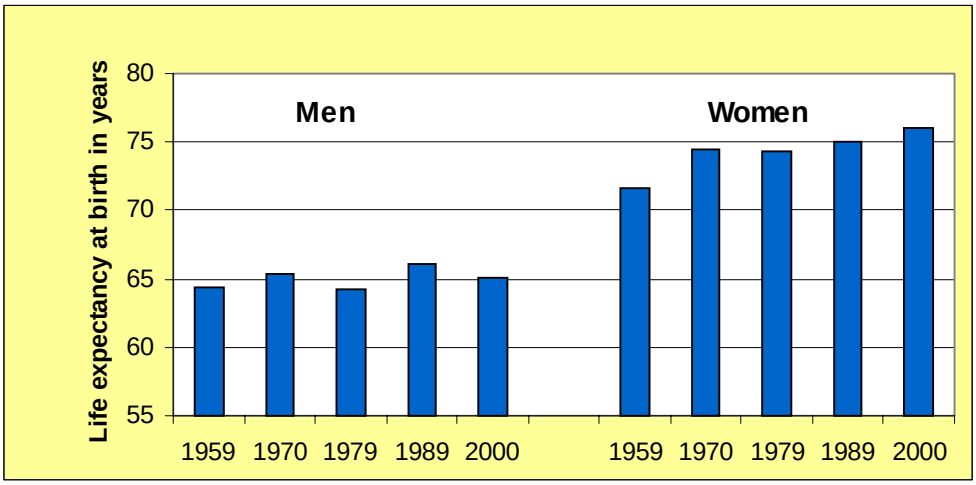
In several European countries, equity-oriented health policies are being developed, as for example in Sweden (Östlin and Diderichsen 2000), the United Kingdom (Health 1999; Health 2001a; Shaw et al. 1999) and the Netherlands (Health 2001b). Also within the European Union, policies to reduce inequalities in health are given increasingly more attention (Mackenbach and Bakker 2002). In Estonia, until recently, inequalities in health were not given much explicit attention in health sector policies. None the less, there are strong reasons to be concerned with the health of disadvantaged groups in Estonia.

The most important reason is that the health situation in Estonia is far from favourable. Over the last 40 years there have been no substantial improvements in the average life expectancy at birth in Estonia (figure 1). From 1959 to 2000, the life expectancy at birth has increased about one year for men and about four years for women (Estonia 1998; Estonia 2001). At the same time, the life expectancy has increased considerably in western countries. For example, in Sweden, over the same period the life expectancy has increased about six years among men and about seven years among women. In Estonia, not only the life expectancy is at low levels internationally, but there occurred an unprecedented decrease of life-expectancy during the first half of the 1990s. From 1988 to 1994 the life expectancy decreased more than five years for men and about two years for women. This decrease reflected unfavourable developments in mortality mostly among the middle-aged population and from the several causes of death, and especially from cardiovascular diseases and from injuries and poisonings. At the same time, there has been a considerable increase of the incidence of infectious diseases (particularly tuberculosis and venereal diseases) that are known to be linked to adverse social circumstances (Põlluste 1998).

All these unfavourable trends raise the concern that some groups in the Estonian society may have been particularly affected. If recent trends are indeed less favourable among

some groups, a special focus on these groups may be essential for successfully fighting these diseases in the years to come.

Figure 1. Average life expectancy at birth among men and women from 1959 to 2000 in Estonia.



Another reason to be concerned with socially disadvantaged groups within the Estonian population relates to health care reforms. Since 1992, a series of reforms has started that has the ultimate aim to fundamentally change the health care sector in Estonia. The old health care system that was inherited from the Soviet era is undergoing several changes: (a) from a centralised system to a decentralised system with a strong emphasis on health sector development at the level of the 15 counties, (b) from a tax-based to a mainly insurance-based finance system, (c) from polyclinic health care system to a system including a well developed primary care with general practitioners as gate keepers. In next years new reforms will mainly aim to re-centralise second-stage specialist care and hospital care, and to develop long-term and nursing care systems.

A main incentive for these reforms is to increase efficiency and cost-effectiveness of the entire health care sector. It is important, however, to ensure that more efficiency will not be achieved at the price of considerably less equity. For example, when health services are decentralised, it is important to ensure that residents from all 15 counties will be assured of having access to health care of comparable quality. Inequalities in access would not only be unfair in themselves, but may in addition affect the health of disadvantaged groups. If so, inequalities could hinder the attainment of the ultimate goals of health sectors reform, that is, to improve the health of the entire Estonian population.

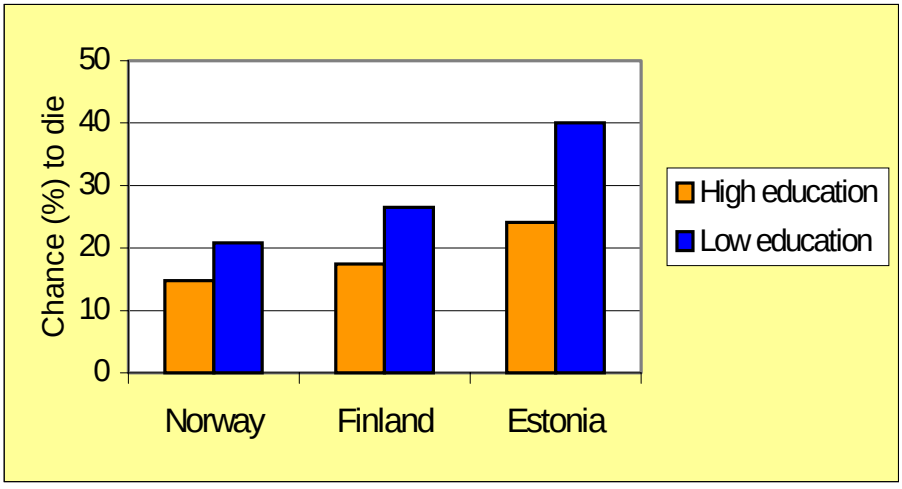
Introducing equity in health sector policies is by no means an easy process. The experience from other countries tells that equity-oriented policies can be developed only gradually, as several steps are to be taken, including (a) the acquisition, evaluation and

judgement of information on health inequalities, (b) the evaluation of alternative strategies and instruments for reducing these inequalities, (c) the formulation of ambitious but realistic objectives and goals, involving all relevant stakeholders, (d) the implementation of selected series of strategies and instruments and (e) a continued process of policy-oriented research, monitoring and impact assessment.

An important first step in the development of equity-oriented health policies is to give a descriptive overview of social inequalities in health. Even though the simple demonstration of health inequalities may give highly predictable results, and will fall far short from providing all sorts of information that is needed to develop effective strategies and instruments, it may serve important functions. First, reliable descriptions have the function to document the existence of these inequalities, thereby making visible what is suspected. Second, if descriptions are made in some detail, they will identify the specific social groups that have the worst health, and those health outcomes that are most unequally distributed. Third, an up-to-date description will provide the baseline data against which future progress in reducing inequalities in health can be assessed. Thus, reliable, detailed and up-to-date descriptions of health inequalities can provide the documentation that is essential, although in itself not sufficient, to start the development of equity-oriented health policies.

At the beginning of our project, the descriptive evidence for Estonia was highly fragmentary. A few studies were made with the specific aim to describe social inequalities in health in Estonia. For example, one study demonstrated large differences between those with high and low education in the risk of premature death (Kunst 1997; Mackenbach et al. 1999). These inequalities were large as compared to the other Nordic countries (see figure 2). However, as this study referred to the years shortly before independence in 1991, the results may be obsolete and raise the important question whether inequalities in mortality have widened or diminished since then.

Figure 2. Probability of dying between the 45th and 65th birthday. Men with high and low educational level in Estonia compared to Norway and Finland in the late 1980s.



Another study focussed on socioeconomic inequalities in the utilisation of health care (Habicht and Habicht 2000). Data from the Finbalt surveys of 1996 and 1998 were analysed with the aim to assess whether socio-economic factors influence health care use (measured by contacts with doctor) among people with same health needs (measured by self reported morbidity). The frequency of doctor visits was found to vary according to income, ethnicity, and rural-urban residence. In another study based on the Estonian Birth Registry data, it was found that lower educated, non-Estonian, and non-married mothers were at greater risk of having babies with a lower birth weight or of having a pre-term delivery (Koupilova et al. 2000).

Further information on social inequalities in health can be found in table books that are produced as part of surveys that were carried out in Estonia during the 1990s (Kasmel et al. 1999; Leinsalu et al. 1999; Marksoo et al. 2000). These table books provide basic data on social inequalities in both self-reported morbidity, health-related behaviour and health care utilisation. These books have the important function to demonstrate the existence of health inequalities. However, these publications have not been written with the specific aim to document social inequalities in health and, as a result, they do not describe these inequalities in much detail, nor do they discuss possible implications for equity-oriented health sector policies.

In the present report, we aim to provide the first comprehensive description of social inequalities in health indicators in Estonia. The principal objective of this report is to give a detailed description of social inequalities in mortality, self-reported morbidity, health-related behaviour and health care utilisation within the Estonian population, and to assess whether these inequalities have diminished or widened since independence. Two secondary objectives of this report are to use this detailed description to (a) formulate implications for health sector policies and (b) make recommendations for future research and monitoring on social inequalities in health in Estonia. In this way, we hope to lay a solid and rich empirical basis for further discussions on equity-oriented health policies in Estonia.

3. Methodology

In this chapter we briefly discuss the material and methods that were used to prepare a comprehensive description of social inequalities in health in Estonia. The methodology is discussed in more detail in the technical document that is published together with this report (Kunst et al. 2002).

3.1. General approach

The project was carried out between May 2001 and December 2001 and consisted of three phases. In the first phase, we made an inventory of existing data sources that could be used for monitoring social inequalities in health in Estonia. Based on this inventory, a selection was made of data sources and indicators to be used for this report. In the second phase, a detailed analysis of social inequalities in all selected health indicators was performed and the results were laid down in a large series of tabulations presented in the Technical document. In phase three, the main conclusions from these detailed analyses were summarised by formulating a series of "key findings", which are presented and illustrated in Part Two of the present report.

3.2. Data sources and health indicators [1]

In this section, we briefly mention which data sources were used, and what health indicators were selected for analysis. In the technical document, we explain why these data sources and health indicators were selected.

Social inequalities in self-reported morbidity were analysed by using data from the Estonian Health Interview Survey in 1996 (Leinsalu et al. 1998). Nine health indicators were selected for analysis: (a) self-rated general health as 'bad or average', (b) self-rated general health as 'bad', (c) any long-standing physical health problem, (d) emotional distress, (e) depression, (f) self-report of any injuries, (g) any problem with instrumental activities of daily living (iADL), (h) any problem with mobility, and (i) any problem with speaking, hearing or vision.

Social inequalities in mortality were studied by means of 'unlinked' cross-sectional analysis. This type of analysis can be made around the time of a population censuses that can provide the sex and age distribution of population stratified according to social

[1] Following the EU Health Monitoring Program, we use the term 'health indicators' as an umbrella term that covers both morbidity, mortality, health determinants and health care utilisation.

indicators. In this report, we applied this method to study inequalities in mortality around the population censuses of 1989 and 2000. As a result, we could also study changes in mortality differentials between these two years. In addition to total mortality, we analysed mortality by six broad groups of causes of death (infectious diseases, neoplasms, circulatory diseases, respiratory diseases, all other diseases, and injuries and poisonings) and by ten of the most important single causes of death (stomach cancer, lung cancer, breast cancer, ischaemic heart disease, cerebrovascular disease, chronic respiratory disease, transport accidents, alcohol poisoning, suicide, and homicide).

Data on health-related behaviour were obtained from the Health Behaviour Surveys among Estonian Adult Population (Finbalt) of the years 1990, 1992, 1994, 1996, 1998 and 2000 (Kasmel et al. 1999). These data were used to study inequalities in the recent years (1998 and 2000 combined) as well as trends in inequalities during the 1990s. Several indicators were selected for analysis, including four main behavioural risk factors (nutrition, physical exercise, use of alcohol, and smoking), overweight, and two indicators of preventive behaviour (use of seat belt in cars, having had cholesterol tests).

Social inequalities in health care utilisation were analysed with data from the Living Conditions Surveys in the Baltic Countries (Norbalt) of 1994 and 1999 (Marksoo et al. 2000). Five indicators were selected: (a) telephone consultations with a doctor, (b) visits to general practitioner, family doctor or local polyclinic, (c) visits to specialist, (d) visits to dentist and (e) hospitalisation in the last 12 months. Only the latter indicator was available for 1994 in a way comparable to 1999. Therefore, changes over time were analysed for hospitalisation only. In addition to the Norbalt surveys, data were also obtained from the Estonian Health Insurance Fund database, in order to estimate variations in health care utilisation at the level of the 7 insurance regions and 15 counties respectively.

It may be noted that we thus utilised data from three of the most important interview surveys in Estonia, and from two of the most important data bases. Thanks to this broad coverage of data sources, we were able to obtain a sufficiently wide range of experience to make informed recommendations for future research and monitoring (in chapter 11).

3.3. Social indicators

We studied inequalities in health indicators according to age group, gender, three socio-economic indicators (education, income, employment status; in mortality analysis we could use only education) and two other variables delimiting specific subgroups of the Estonian population (rural versus urban place of residence, Estonian/Russian/other ethnicity). For health care utilisation, we also studied differences between the seven insurance regions and between the 15 counties of Estonia. In the technical document, we discuss in more detail why we selected these social indicators, and how each social indicator is measured.

Inequalities in health indicators were assessed in relation to each of the seven social indicators mentioned above. In addition, more in-depth analyses were made. For example, educational differences in health were assessed not only for the Estonian population at large, but also for men and women separately, for different age groups, and for both urban and rural areas separately. In this way, we hoped to accurately identify those subgroups of the Estonian population that are worst off in terms of health, health care use or health-related behaviour.

3.4. Analytical methods

The data were analysed using methods that have been developed over the last decade in inequality research in the European Union. We also followed the recommendations and guidelines that have been developed for the Health Monitoring Program of the European Union (Kunst et al. 2001).

In Part Two of this report, we most often present measures that are standardised for age, including standardised mortality rates and standardised prevalence rates. Age standardisation is essential if one population subgroup is compared to another and these subgroups have different age structures. For example, since older people on average have lower levels of education than younger people and old age is associated with increased disability, the failure to control for age would give a biased (too high) estimate of educational differences in disability. By means of age standardisation, we remove the effect of age from all our estimates. Details on the standardisation procedure are given in the technical document.

In the technical document, we also present estimates that were obtained by applying other analytical methods. We used regression-based methods that yield inequality indices such as Odds Ratios and Rate Ratios. These regression-based indices have a number of methodological advantages. For example, for these measures, 95 percent confidence intervals can be estimated accurately and easily. Confidence intervals are important as they tell us how *precise* the estimates are. However, regression-based indices are more abstract and therefore more difficult to interpret, mainly because they do not directly show the absolute levels of mortality (or any other outcome indicator) of each social group. Therefore, we decided not to present such summary indices in this report but, instead, we used them only to check whether they support the 'key findings' that we illustrate in this report by using more basic data.

3.5. Evaluation of data problems

The data that are presented in this report are not perfect. In order to give a comprehensive description of social inequalities in health in Estonia, we had to use data that might be biased in a number of ways. In this respect, the situation in Estonia is similar to that

elsewhere in Europe (Kunst et al. 2001). In most European countries, estimates of social inequalities in health are surrounded by uncertainty, and the best one can do is to evaluate the degree of uncertainty and to take this uncertainty into account when formulating the main conclusions.

This was our approach. In the technical document, we discuss in some detail the most important problems that we encountered with the data from the interview surveys and the mortality database. We evaluated whether the available data, despite of the potential data problems, provided sufficient empirical support for formulating the key findings in the way we did this in Part Two of the present report.

From that evaluation, three conclusions were drawn. First, there is little or no doubt that the health inequalities observed in this project are reflecting true inequalities within the Estonian population. Second, due to small sample sizes and some other data problems, we cannot estimate for most health indicators with much precision *how large* social inequalities are. Third, several specific findings (e.g. that education and income have much larger effects on most health indicators than ethnicity and place of residence) cannot be explained by specific data problems and therefore are most likely to reflect true patterns.

Whenever we judged that some findings could be attributed to specific data problems, they are not mentioned in Part Two of this report.

3.6. On 'equity' and related terms

A final word is needed on the terminology used in this report.

We start with discussing the terms that are included in the title of the report. By 'social inequalities in health' we refer to all differences in health between subgroups of the Estonian population, and in which these subgroups are defined in socio-economic terms (e.g. education, income, occupational class) or in terms of other social or demographic variables (e.g. age, gender, ethnicity, place of residence). Thus, 'social inequalities in health' refers to all health variations that are systematically related to social-economic or social-demographic characteristics of people.

In this report, the term 'inequalities' is used in a purely descriptive sense, similar to the terms 'differences' and 'variations'. It is not intended to convey any message on the fairness of the observed differences in health between social groups. We do recognise that, in English, the word 'inequalities' has a slight moral judgement that the words 'differences' and 'variations' lack. However, others terms exists in English, that convey this moral judgement more explicitly. These terms, such as 'inequities' or 'equities', refer to a subset of the observed health differences between social groups, namely those differences that are judged to be unfair and avoidable (Whitehead 1990). Assessing to what extent certain observed differences are also 'inequities' requires knowledge on the

causes of these differences and a judgement as to the fairness of these causes. For example, differences due to genetic differences would generally not be considered unfair, whereas differences due to material living conditions would. Therefore, 'inequities' cannot be measured directly, whereas 'inequalities' can.

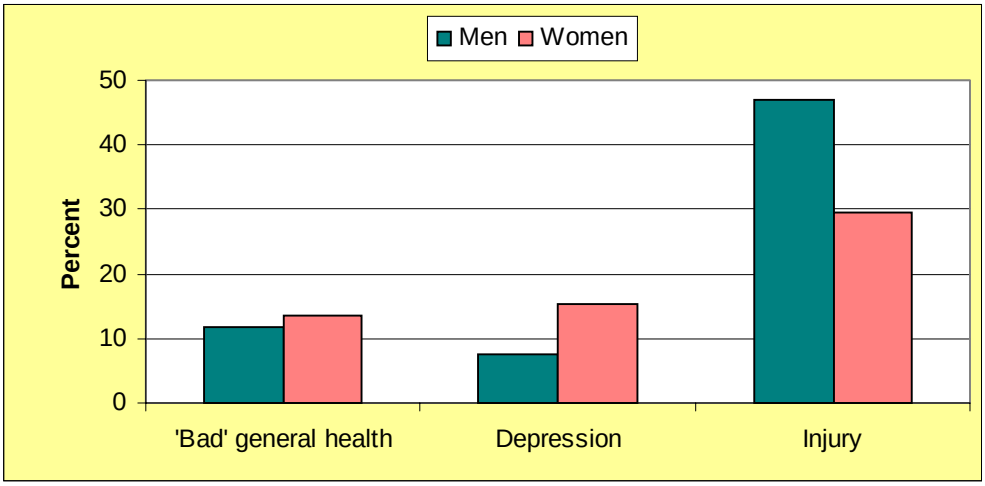
One comment should be made to the use of the term 'social'. We usually add this term to 'inequalities' in order to stress that this report does not refer to *all* health differences between individuals, but only those differences that are systematically related to social indicators. Even though this restriction is obvious to most researchers and policy makers that are interested in social inequalities in health, using the term 'inequalities' only may cause confusion among those who tend to think in terms of inequalities in a broader sense. For example, the authors of the World Health Report 2000 use to term 'inequalities' to refer to all health differences between persons, irrespective whether these health differences are systematically related to social and demographic characteristics (Gakidou, Murray and Frenk 2000; Murray, Gakidou and Frenk 1999). In order to avoid confusion with this (much less common) approach, in this report we often add the term 'social' to 'inequalities'.

4. Key findings on self-reported morbidity

4.1. Gender

Men and women generally have similar levels of ill health. However, women more often have mental health problems, and less often report injuries.

Figure. The percentage of respondents who report 'bad' general health, having depression, or having had any injury among men and women in the age range 25–79.
Source: technical document, chapter 9, tables B.1, E.1 and F.1.



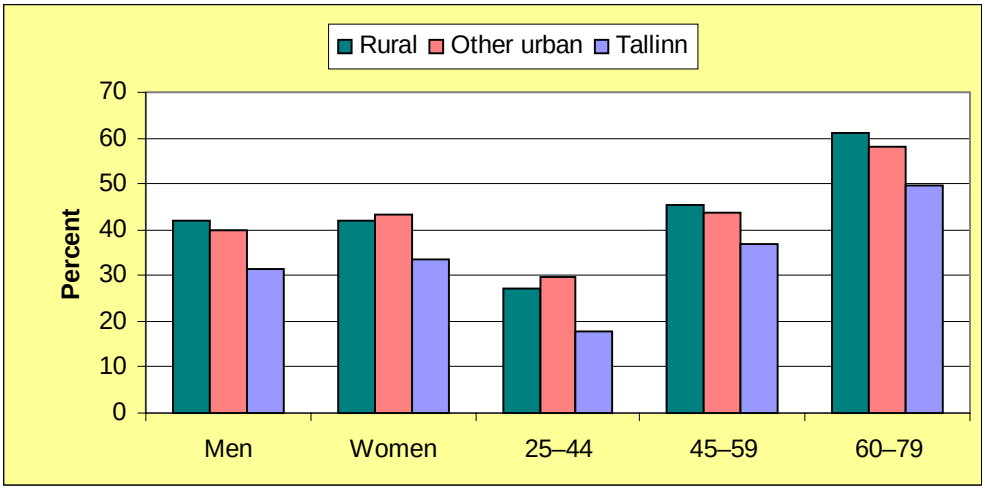
The percentage of respondents who report that their general health is 'bad' (instead of 'good or average') is almost the same among men and women. However, the percentage of respondents who have depression is twice as high among women than among men, but much more men report having had an injury during the life-time as compared to women.

The additional results given in the technical report show that the higher prevalence of depression among women is observed in all age groups and in both urban and rural areas. Similarly, women more often have emotional distress. On the other hand, men and women equally often report having any long-term physical health problem. In the age group 60 to 79, men more often report having problems with hearing, speaking or vision as compared to women. The gender differences in reporting injuries and disabilities are highest in rural areas.

4.2. Place of residence

Residents of rural or other urban areas more often report physical health problems, but they equally often report mental health problems as compared to residents of Tallinn.

Figure. The percentage of respondents having any long-term physical health problem among residents in Tallinn, in other urban, and in rural areas by gender and three age groups in the age range 25–79.
Source: technical document, chapter 9, tables C.2–C.6.



The percentage of respondents who report having any long-term physical health problem is higher among residents living in rural, or other urban areas as compared to residents in Tallinn. These differences are observed for both men and women and in all age groups.

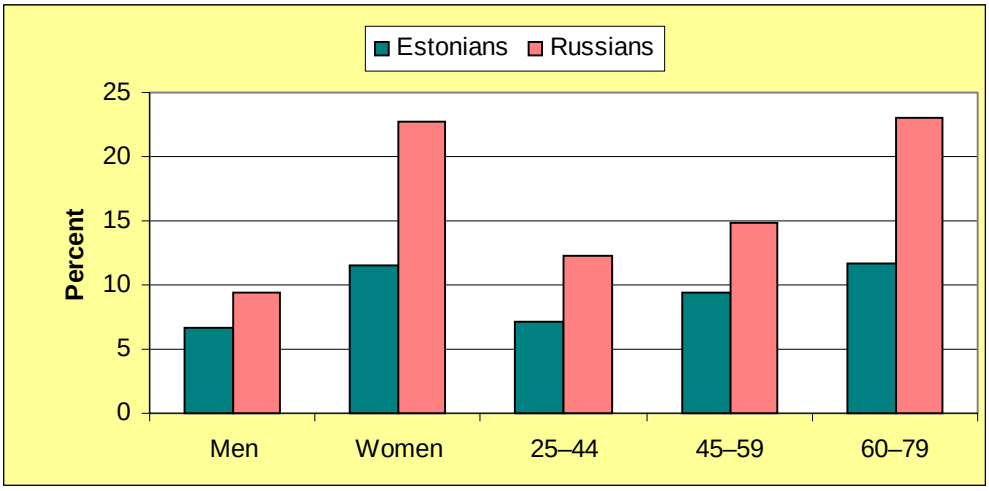
Similarly, men and women from other urban, or rural areas more often report ‘bad or average’ general health as compared to those from Tallinn and the association is particularly strong in the age group 60 to 79. Men, in the age group 45 to 59 living in rural areas more often report having had injuries.

At the same time, there were no differences in the prevalence of depression or emotional distress between the residents of cities and those living in rural areas.

4.3. Ethnicity

Russians more often report mental health problems, but they equally often report physical health problems as compared to Estonians.

Figure. The percentage of respondents having depression among Estonians and Russians by gender and three age groups in the age range 25–79.
Source: technical document, chapter 9, tables E.2–E.6.



Russians, as compared to Estonians, more often have depression. The ethnic difference is larger among women: Russian women have a twice as high prevalence of depression than Estonian women. Russians have more depression in all age groups. While the prevalence of depressive symptoms increases with age for both Estonians and Russians, the increase is larger for Russians resulting in a particularly high prevalence of depression among Russians aged 60 to 79.

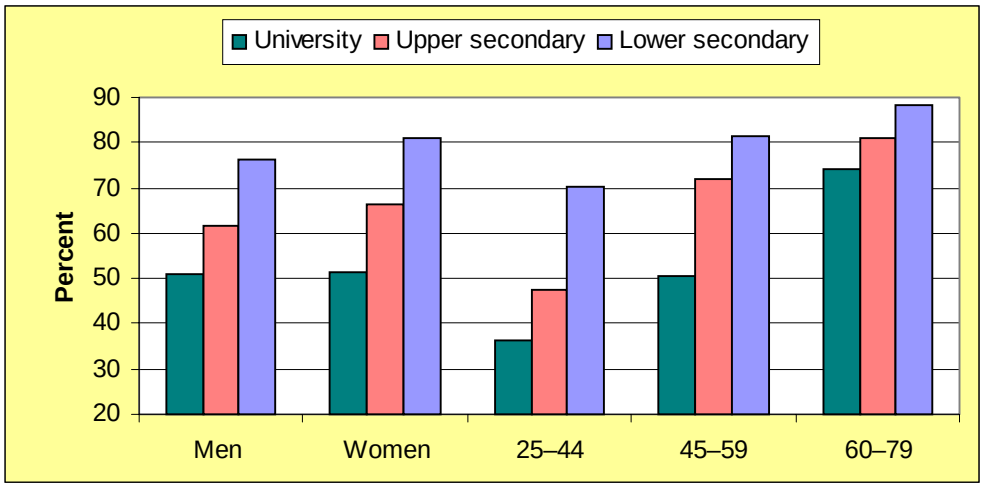
The other results in the technical report reveal that similar ethnic differences are observed in reporting emotional distress among both men and women. The differences between Estonians and Russians in reporting mental health problems are larger in Tallinn than in other urban or rural areas.

Russians also more often report ‘bad or average’ general health than Estonians, but they equally often report any long-term physical health problem, or injuries during their life-time.

4.4. Education

Lowly educated men and women much more often report both mental and physical health problems as compared to highly educated men and women.

Figure. The percentage of respondents reporting 'bad or average' general health in different educational levels by gender and three age groups in the age range 25–79.
Source: technical document, chapter 9, tables A.2–A.6.



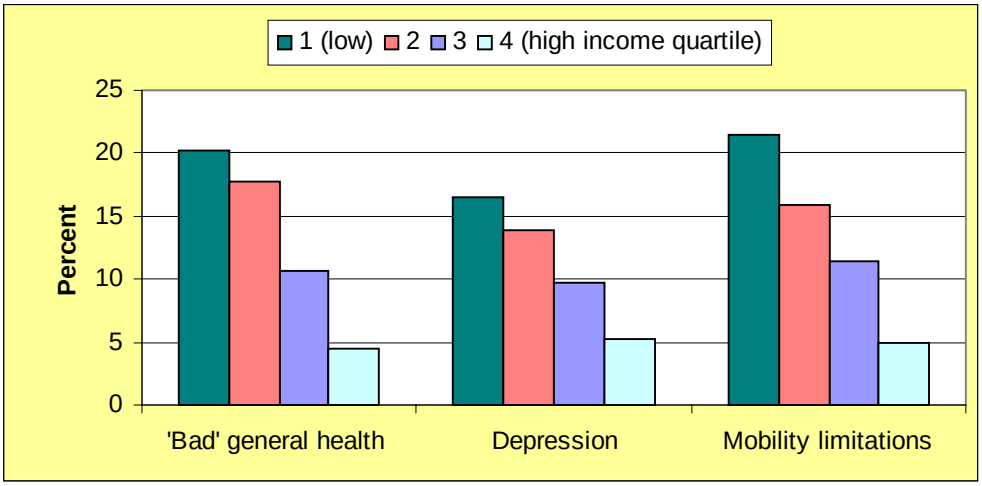
As compared to those with university education, men and women who are less educated much more often report ‘bad or average’ (instead of ‘good’) general health. The highest prevalence of ‘bad or average’ general health is among respondents with the lowest educational level, but also respondents with upper secondary education more often report ‘bad or average’ general health than those with the highest educational level. The differences between educational levels in self-rated general health are largest in the younger age groups.

Educational differences found in self-rated general health are largest in rural areas. Similar associations were observed for all other physical and mental health indicators, for both men and women, for different age groups, and for urban and rural areas. Thus, strong educational differences in health are observed in all population groups and across all ill-health indicators.

4.5. Income

Those in low income groups much more often report 'bad' general health, and both mental and physical health problems as compared to those in high income groups.

Figure. The percentage of respondents reporting 'bad' general health or depression (age group 25–79), or reporting mobility limitations (age group 60–79) in different personal income quartiles.
Source: technical document, chapter 9, tables A.1, E.1 and H.1.



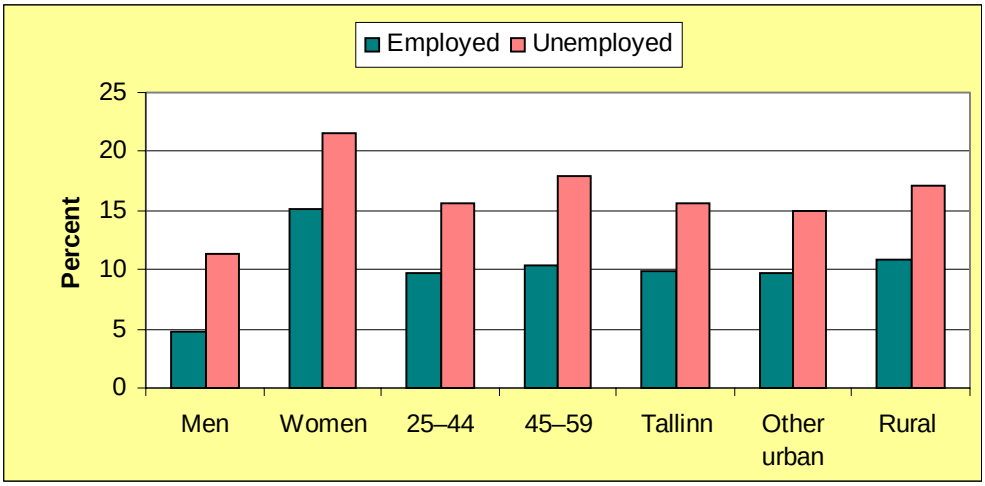
The percentage of respondents who say that their general health is 'bad' (instead of 'good or average') is larger among lower income groups than among higher income groups. Similarly, respondents with lower income more often report having mobility limitations or depression. Those in the lowest income quartile have the highest prevalence. However, people in the next lowest income quartile also report health problems more often than those belonging to the top 25 percent of the population.

From additional analyses it can be seen that similar associations were observed for all other physical and mental health indicators. These associations were found for both men and women, for different age groups, and within both Tallinn, other urban areas and rural areas. Thus, income-related health differences are observed in all population groups and across a wide range of health indicators.

4.6. Economic activity

The unemployed more often report mental health problems and injuries as compared to the employed.

Figure. The percentage of respondents having emotional distress among the employed and unemployed by gender, three age groups and place of residence in the age range 25–59. Source: technical document, chapter 9, tables D.2–D.9.



The percentage of respondents who have emotional distress is much higher among the unemployed than among the employed. This association is observed for both men and women, for different age groups and for urban and rural residents. However, the differences are larger among men, and in the age group 45–59.

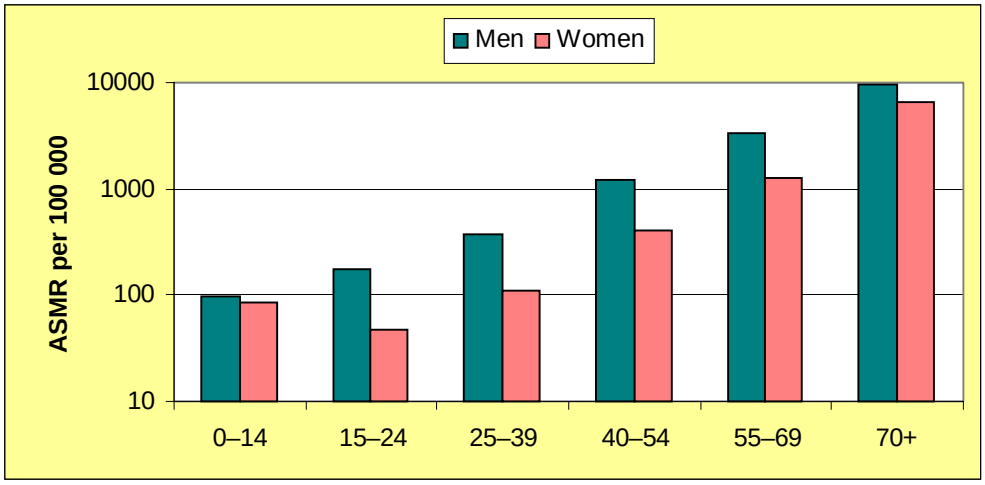
Similar associations are observed for depression. As compared to those who are employed the unemployed more often report having had injuries during their life-time. This association is observed for both men and women and for different age groups. On the other hand, no consistent differences are observed for other health indicators: the unemployed and employed equally often report any long-term physical health problem, and the association between unemployment and ‘bad’ general health is found among women but not among men.

5. Key findings on mortality

5.1. Gender

Men have higher mortality than women, especially between ages 15 and 70.

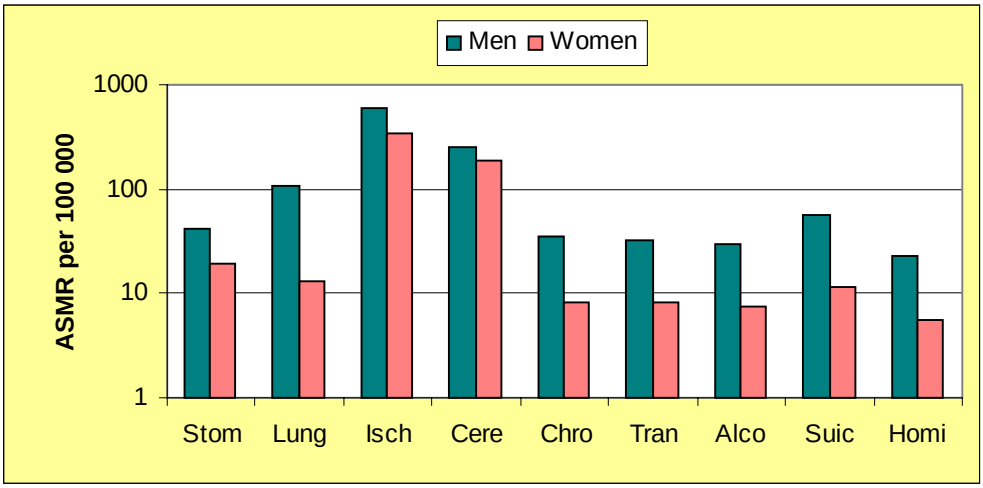
Figure. Age-standardised mortality rate (ASMR) among men and women by age group in 1999–2000. Rates presented on logarithmic scale.
Source: technical document, chapter 10, table 1.



Age-standardised mortality rates are higher for men than for women in all age groups. In the age group 0–14, men have only slightly higher mortality as compared to women, whereas the largest difference is found for the age group 15 to 54. The gender difference in total mortality decreases in older age groups. When all ages are combined, men have 90% higher mortality than women.

Men have higher mortality than women from all causes of death; the differences are largest for lung cancer, chronic respiratory diseases and injuries and poisonings.

Figure. Age-standardised mortality rate (ASMR) among men and women by selected causes of death in 1999–2000. Rates presented on logarithmic scale. All ages combined. Source: technical document, chapter 10, table 2.

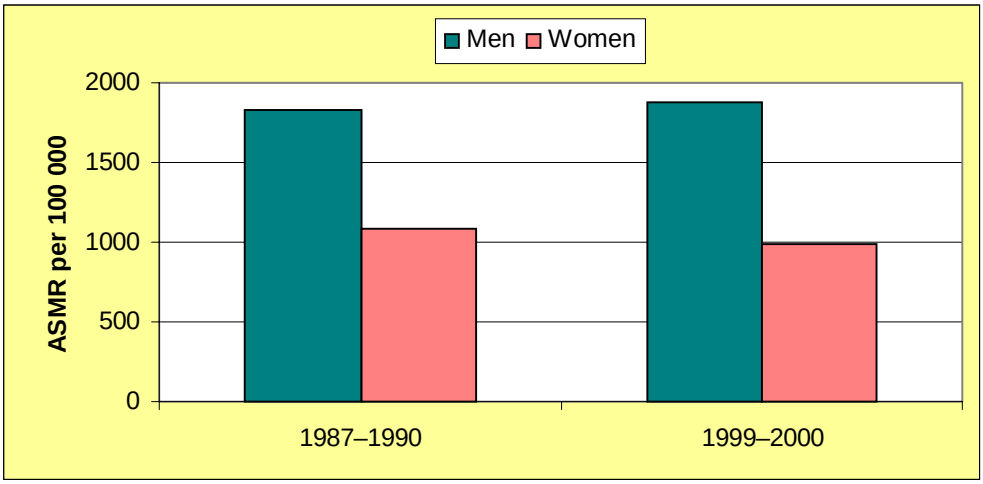


Stom - stomach cancer; Lung - lung cancer; Isch - ischaemic heart disease; Cere - cerebrovascular disease; Chro - chronic respiratory disease; Tran - transport accidents; Alco - alcohol poisoning; Suic - suicide; Homi – homicide.

Gender differences are observed for all causes of death. The greatest difference is found for lung cancer: men have a mortality rate which is more than eight times as high compared with that of women. The age-standardised mortality rates are also much higher among men for chronic respiratory disease, transport accidents, alcohol poisoning, suicide and homicide. When all injuries and poisonings are combined, men have a mortality rate which is over four times as high when compared with that of women.

Between 1987–1990 and 1999–2000, gender differences in mortality increased for all causes of death and in most age groups.

Figure. Age-standardised mortality rate (ASMR) among men and women in 1987–1990 and 1999–2000. All ages combined.
Source: technical document, chapter 10, table 1.



Between 1987–1990 and 1999–2000, the gender difference in total mortality increased by 21%, whereas the age-standardised mortality rate increased for men but decreased for women.

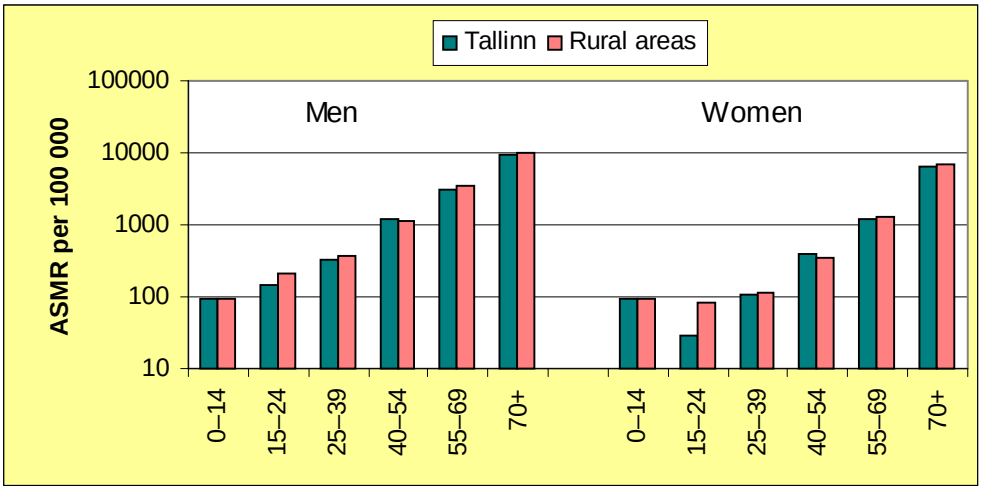
The more detailed results in the technical report show that between 1987–1990 and 1999–2000, the gender difference in total mortality increased for nearly all age groups and especially for the age group 15 to 24. The difference in mortality between boys and girls only decreased in the age group 0–14.

In cause-specific mortality, the gender differences increased for all causes of death between 1987–1990 and 1999–2000, and especially for infectious diseases, respiratory diseases and for injuries and poisonings.

5.2. Place of residence

Men and women living in rural areas have slightly higher mortality as compared to those living in Tallinn, especially between ages 15 and 25.

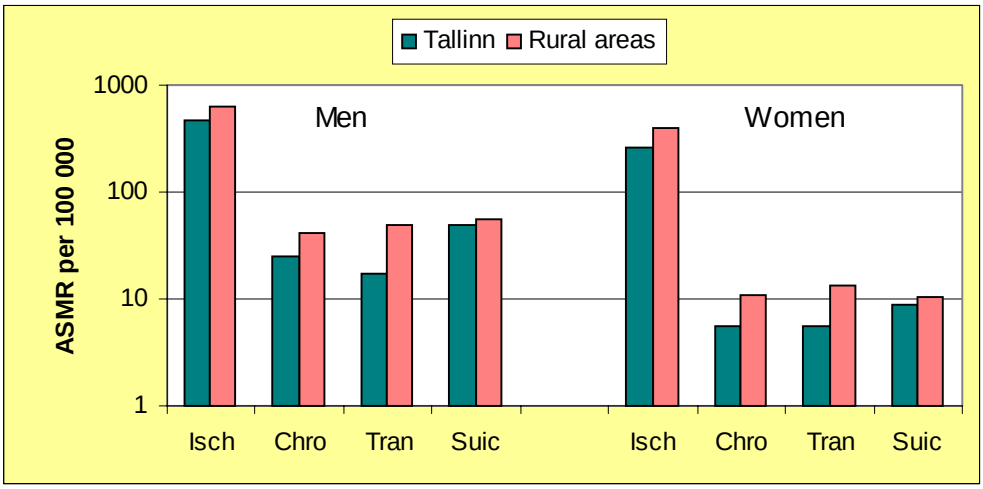
Figure. Age-standardised mortality rates (ASMR) in Tallinn and in rural areas by gender and age group in 1999–2000. Rates presented on logarithmic scale.
Source: technical document, chapter 10, tables A.1–A.6.



The age-standardised mortality rate for all age groups combined is nearly ten percent higher among men and women living in rural areas as compared to men and women living in Tallinn. The difference in total mortality between Tallinn and rural areas is largest for those aged 15 to 24 for both men and women.

Residents of rural areas have higher mortality from ischaemic heart disease, chronic respiratory disease, transport accidents and suicide as compared to residents of Tallinn.

Figure. Age-standardised mortality rates (ASMR) in Tallinn and in rural areas by selected causes of death and by gender in 2000. Rates presented on logarithmic scale. All ages combined. Source: technical document, chapter 10, tables K, M, N and P.



Isch - ischaemic heart disease; Chro - chronic respiratory disease; Tran - transport accidents; Suic - suicide.

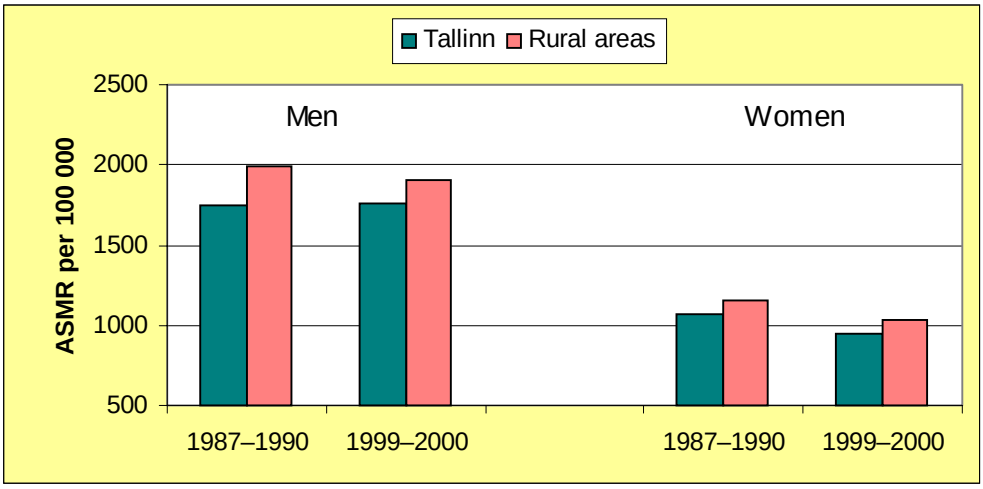
In rural areas, as compared to Tallinn, age-standardised mortality rates are substantially higher for ischaemic heart disease, chronic respiratory disease and transport accidents, and slightly higher for suicide among both men and women.

At the same time the urban/rural differences are not so consistent for all causes of death. Mortality from stomach cancer, breast cancer, alcohol poisoning and homicide is substantially higher in Tallinn, for both men and women.

Lung cancer mortality is a special case: whereas women in rural areas have much lower mortality than those living in Tallinn, men in rural areas die from lung cancer much more often compared to men in Tallinn.

Mortality differences between rural and urban areas remained fairly stable between 1987–1990 and 1999–2000.

Figure. Age-standardised mortality rate (ASMR) in Tallinn and in rural areas in 1987–1990 and 1999–2000 by gender. All ages combined.
Source: technical document, chapter 10, table A.



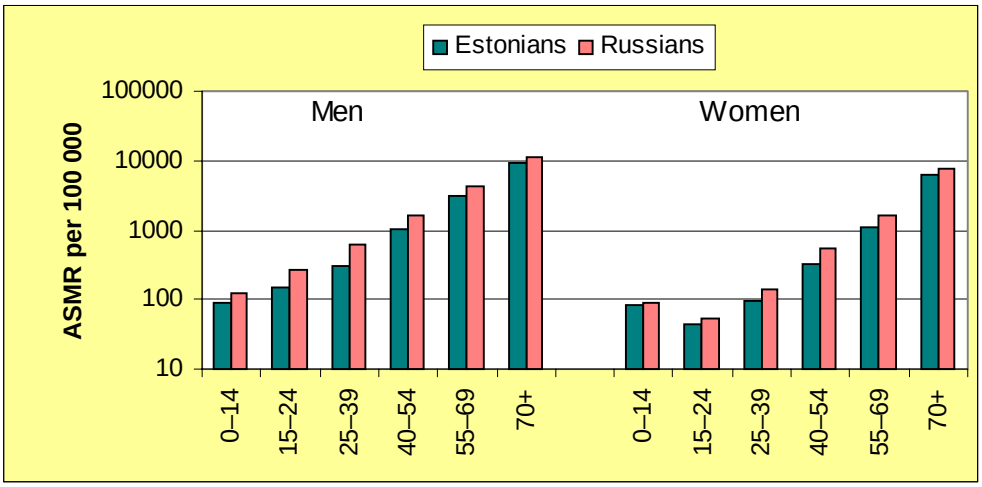
Mortality differences between Tallinn and rural areas did not change substantially from 1987–1990 to 1999–2000 among women, but decreased slightly among men.

Differences remained fairly stable in the different age groups.

5.3. Ethnicity

Estonians have lower mortality than Russians, especially among men aged 15 to 39 years.

Figure. Age-standardised mortality rate (ASMR) among Estonians and Russians by gender and age group in 1999–2000. Rates presented on logarithmic scale.
Source: technical document, chapter 10, tables A.1–A.6.

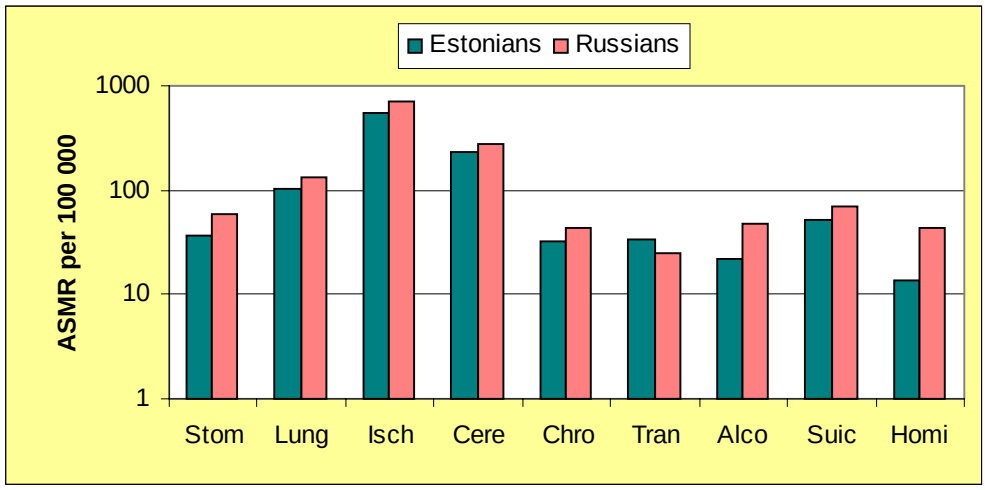


Russian men and women have a higher level of mortality than Estonians. The age-standardised mortality rate for all ages combined is 31% higher for Russian men and 17% higher for Russian women as compared to Estonians. The mortality rate for Russians is higher in all age groups, but especially among men aged 15 to 39 years. Among women the difference between Russians and Estonians is greatest in the age group 40 to 54.

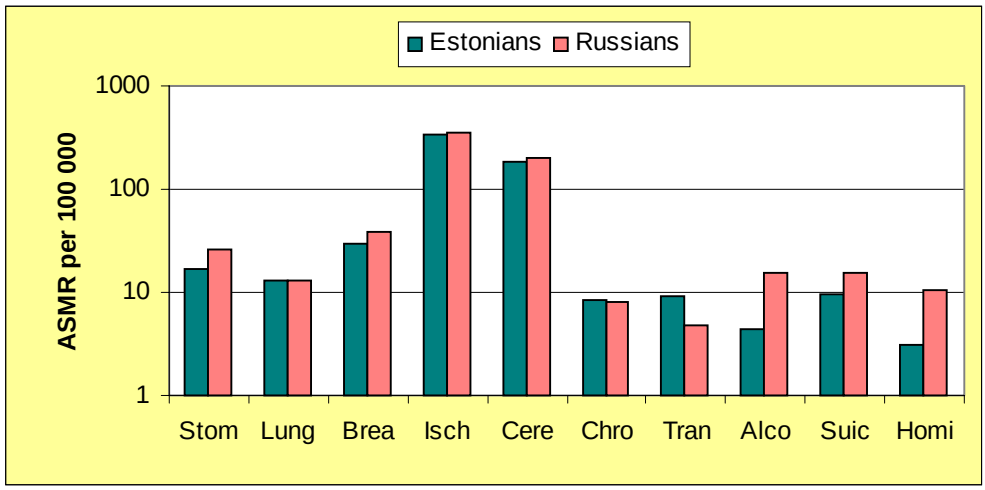
As compared to Estonians, Russians have higher mortality from nearly all causes of death, and especially from alcohol poisoning and homicide.

Figure. Age-standardised mortality rate (ASMR) among Estonians and Russians by selected causes of death in 1999–2000. Rates presented on logarithmic scale. All ages combined. Source: technical document, chapter 10, tables H–Q.

Men



Women

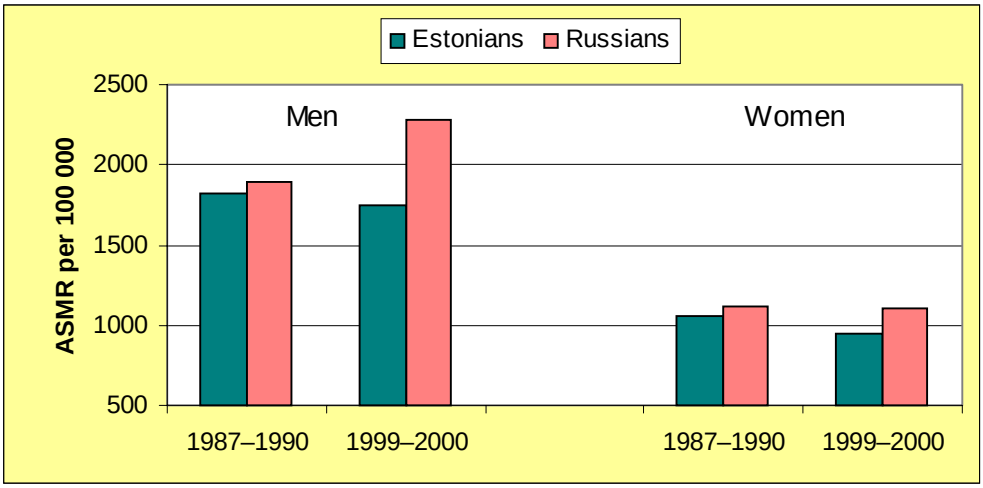


Stom - stomach cancer; Lung - lung cancer; Brea – breast cancer; Isch - ischaemic heart disease; Cere - cerebrovascular disease; Chro - chronic respiratory disease; Tran - transport accidents; Alco - alcohol poisoning; Suic - suicide; Homi – homicide.

Russian men and women have higher mortality from nearly all causes of death, and especially from alcohol poisoning and homicide. However, mortality from transport accidents is higher for Estonians, among both men and women, and no differences are found in mortality from lung cancer and chronic respiratory diseases among women.

Mortality differences between Estonians and Russians increased among both men and women and for nearly all causes of death between 1987–1990 and 1999–2000.

Figure. Age-standardised mortality rate (ASMR) among Estonians and Russians in 1987–1990 and 1999–2000 by gender. All ages combined.
Source: technical document, chapter 10, table A.



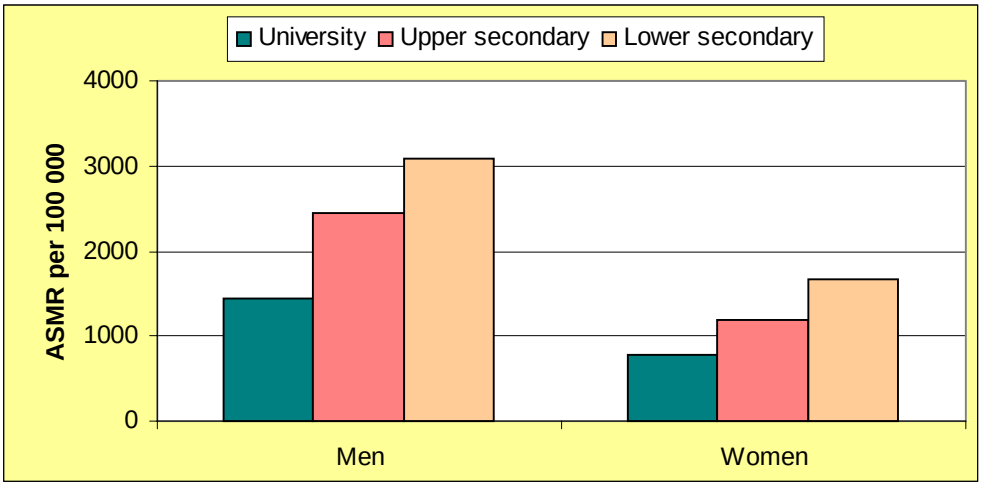
The mortality differences between Estonians and Russians increased from 1987–1990 and 1999–2000 among both men and women. The increase was particularly large for men.

A more detailed analysis shows that ethnic differences in total mortality increased for all age groups between 1987–1990 and 1999–2000. The increase in mortality difference between Estonians and Russians was largest in the age group 25–39 among men and in the age group 40–54 among women. The ethnic differences in mortality increased over these ten years especially for ischaemic heart disease among men, and alcohol poisoning, suicide and homicide among both men and women.

5.4. Education

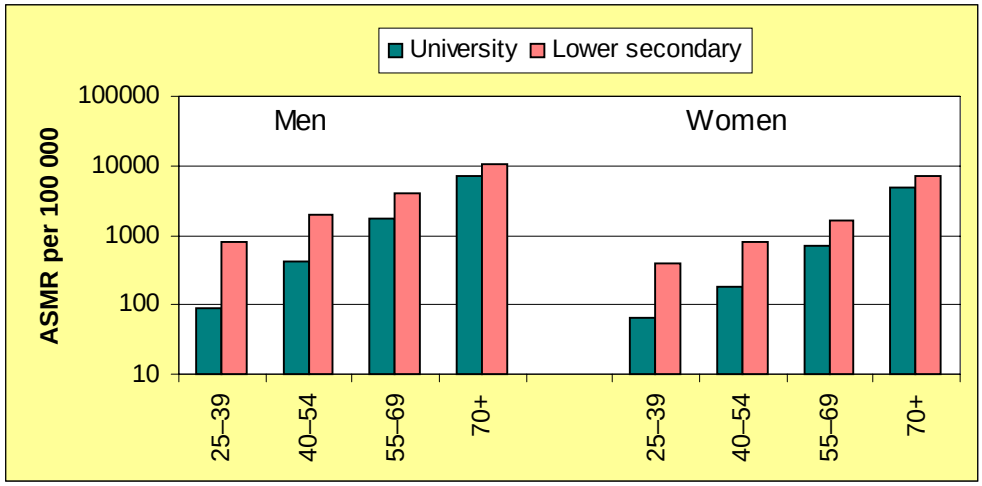
Lowly educated people have much higher mortality, especially among men and women aged 25 to 54 years as compared to those with university education.

Figure. Age-standardised mortality rate (ASMR) in different educational levels by gender in 1999–2000. Ages 20 years and above included.
Source: technical document, chapter 10, table A.



As compared to those with a university education, people with a lower secondary education or less have over two times as high mortality among both men and women. But even those with an upper secondary education have about 70 % higher mortality among men and about 50% higher mortality among women as compared to those with a university education.

Figure. Age-standardised mortality rate (ASMR) among people with a university and lower secondary education by age group and gender in 1999–2000. Rates presented on logarithmic scale.
Source: technical document, chapter 10, tables A.3–A.6.

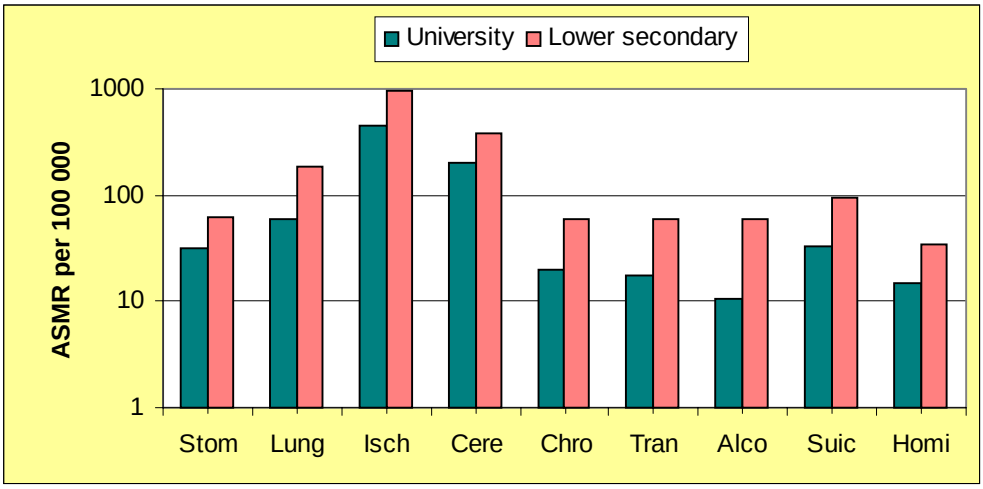


Men and women with a university education have a much lower mortality level in all age groups, where the biggest difference is found in the age group 25 to 54. Those with lower secondary education or less in the age group 25–39 have higher mortality than those in the age group 40–54 with university education. The educational differences in mortality decrease with age, but even at age 70 years or above, people with a university education clearly have lower mortality when compared to the lowest educated group.

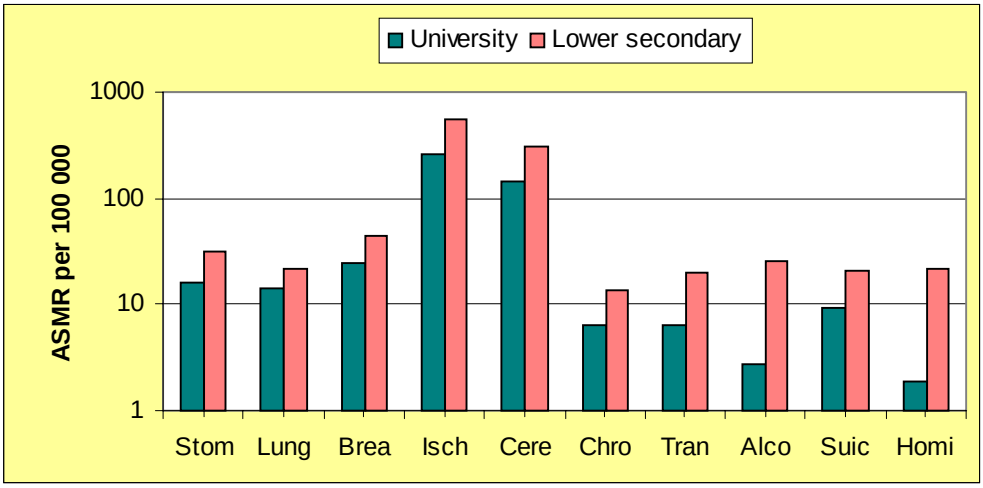
Educational differences in mortality are observed for all causes of death.

Figure. Age-standardised mortality rate (ASMR) among people with a university and lower secondary education by selected causes of death in 1999–2000. Rates presented on logarithmic scale. Ages 20 years and above included.
Source: technical document, chapter 10, tables H–Q.

Men



Women

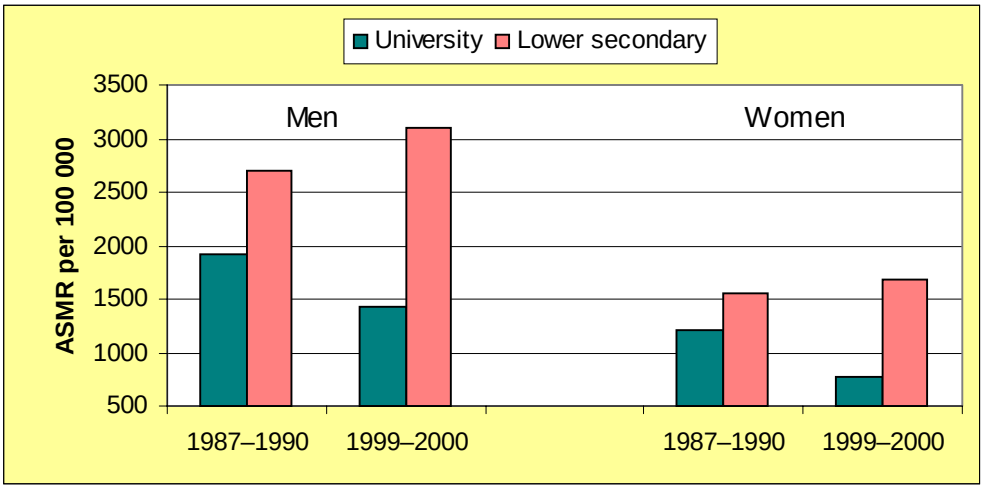


Stom - stomach cancer; Lung - lung cancer; Brea - breast cancer; Isch - ischaemic heart disease; Cere - cerebrovascular disease; Chro - chronic respiratory disease; Tran - transport accidents; Alco - alcohol poisoning; Suic - suicide; Homi – homicide.

Men and women with a lower secondary education or less have much higher mortality from all causes of death. As compared to those with a university education, low educated men have particularly high mortality from lung cancer, chronic respiratory disease, transport accidents and alcohol poisoning. Lowly educated women have much higher mortality from alcohol poisoning and homicide than women with a university education.

Between 1987–1990 and 1999–2000, educational differences in mortality increased strongly among both men and women.

Figure. Age-standardised mortality rate (ASMR) among people with a university and lower secondary education in 1987–1990 and 1999–2000 by gender. Ages 20 years and above included.
Source: technical document, chapter 10, table A.

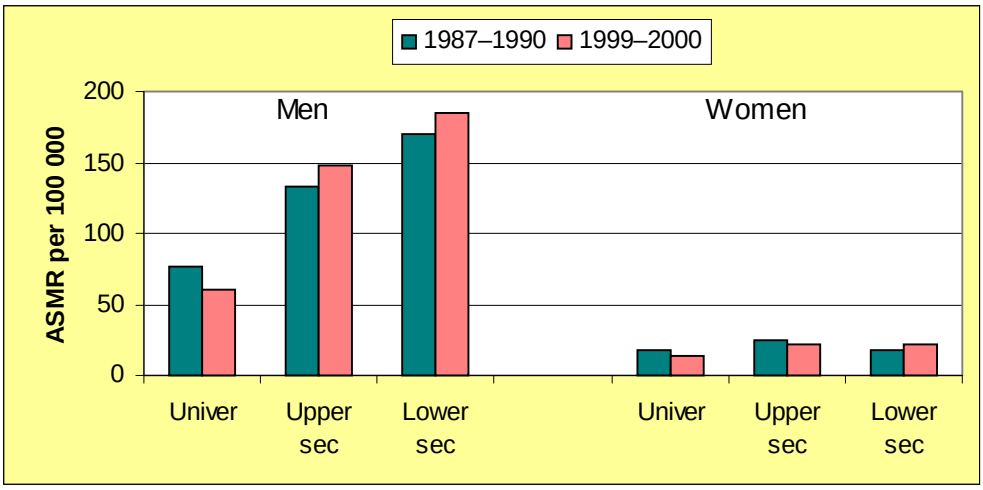


Educational differences in mortality increased strongly between 1987–1990 and 1999–2000 among both men and women. During this period, mortality rates increased among those with a low level of education, whereas they decreased among those with a university education.

Additional results in the technical report show that the increase in educational differences is observed for all age groups, and especially for those aged 25 to 54 years.

Educational differences in lung cancer mortality increased between 1987–1990 and 1999–2000.

Figure. Age-standardised mortality rate (ASMR) for lung cancer in different educational levels in 1987–1990 and 1999–2000 by gender. Ages 20 years and above included.
Source: technical document, chapter 10, table I.



Educational differences are particularly high in lung cancer mortality among men: those with a lower secondary education or less have three times as high mortality as those with a university education. Between 1987–1990 and 1999–2000, lung cancer mortality decreased for those with university education. At the same time, lung cancer mortality increased for those with a secondary education. A similar pattern is observed for women although at lower absolute levels.

The more detailed results given in the technical report show that similarly, in the 1990s, breast cancer mortality decreased among women with a university education, but increased for those with a lower education. For stomach cancer, ischaemic heart disease and cerebrovascular disease, mortality decreased in all educational groups, but especially among those with a university education among both men and women. For injuries and poisonings, mortality among men increased in all educational groups, but especially among those with a lower education. Mortality from injuries and poisonings decreased among women with a university education, but increased in the other educational levels.

6. Key findings on health-related behaviour

6.1. Gender differences

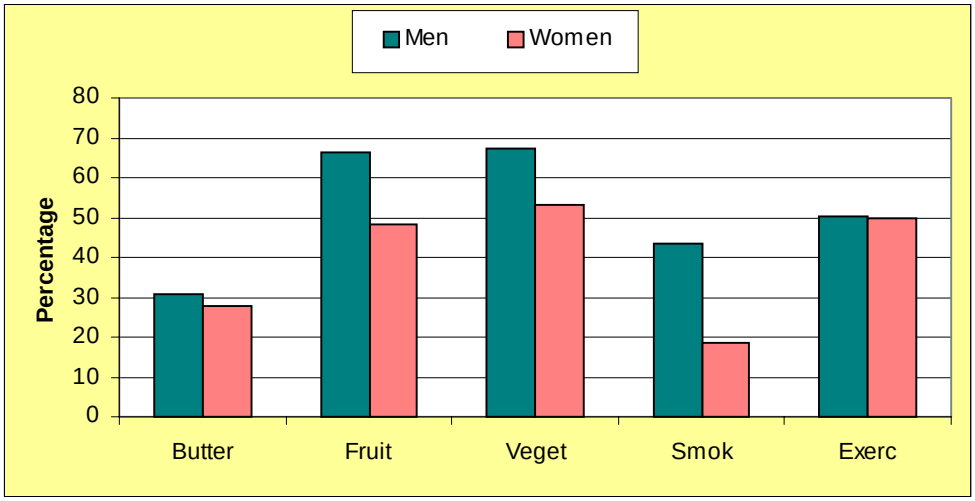
1. As compared to men, women have more health enhancing behaviour.

2. Gender differences are largest for smoking and consumption of strong spirits.

3. Between the years 1990 and 2000 gender differences in health related behaviour remained about stable for most behaviours.

The proportion of respondents who have declared using butter as main fat on bread, is higher among men than women. This is found for most age groups and in both urban and rural areas. Between the years 1990 and 2000 use of butter as main fat on bread decreased among both men and women.

Figure. The proportion of respondents who use butter as main fat on bread, fresh fruits only 0–2 days a week, smoke daily and are physically active less than once a week, according to gender.
Source: technical document, chapter 12 , tables A.1, B.1, C.1, E.1 and D.1.



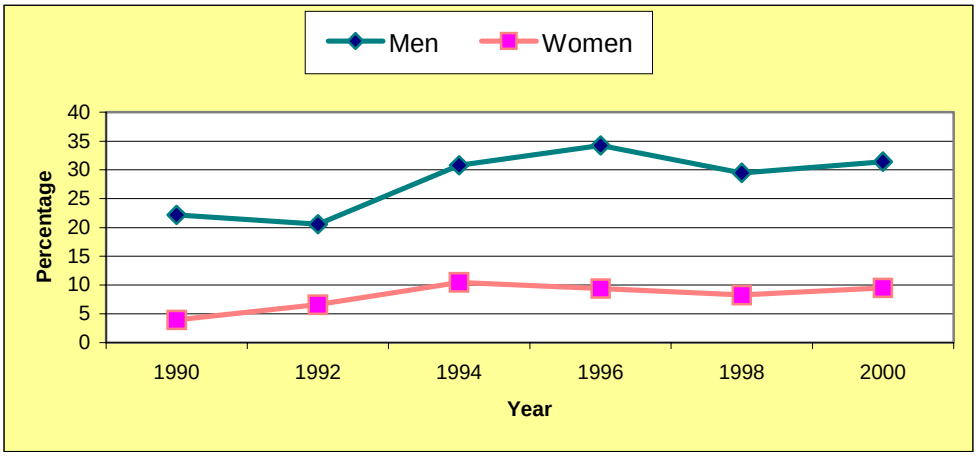
Infrequent consumption of fresh vegetables and fruits (i.e. only 0 to 2 days a week) is more frequent among men. During the last ten years, use of fresh vegetables and fruits increased for both men and women, but especially among women.

Physical exercise at leisure time (at least 30 minutes) for less than once a week is as frequent among men as among women. Among younger age groups (16 to 39 years old) infrequent exercise is more frequent among women.

The proportion of respondents who declare smoking daily is higher among men than women. During last ten years, daily smoking has increased considerably among women and slightly among men. Daily smoking is more common among respondents from middle age groups.

Consumption of strong spirits for once or more a week is more frequent among men than women. Between the years 1990 and 2000 gender differences in use of strong spirits once a week or more increased in absolute terms.

Figure. The proportion of respondents who use strong spirits once a week or more, according to the gender and study year.
Source: technical document, chapter 12 , table T.6.1



If to compare with women, men reported more often Body Mass Index higher than 25 (overweight). This applies to most age groups (except older one) and both urban and rural areas. During last ten years, Body Mass Index higher than 25 decreased for men and especially for women.

The proportion of respondents who never or more than five years ago measured their blood cholesterol is higher among men than among women. This is found in most age groups, except the older age group. Between the years 1990 and 2000, the proportion of respondents who have measured their blood cholesterol never or more than five years ago decreased among men and women.

The percentage of men who use seat belt never or sometimes, is higher than that of women. This applies to all age groups and all residential areas. Between the years 1990 and 2000, the proportion of respondents who never or sometimes use seat belt, decreased among both men and women.

6.2. Place of residence

1. ***In general, respondents from urban areas have more health enhancing behaviour than respondents from rural areas.***

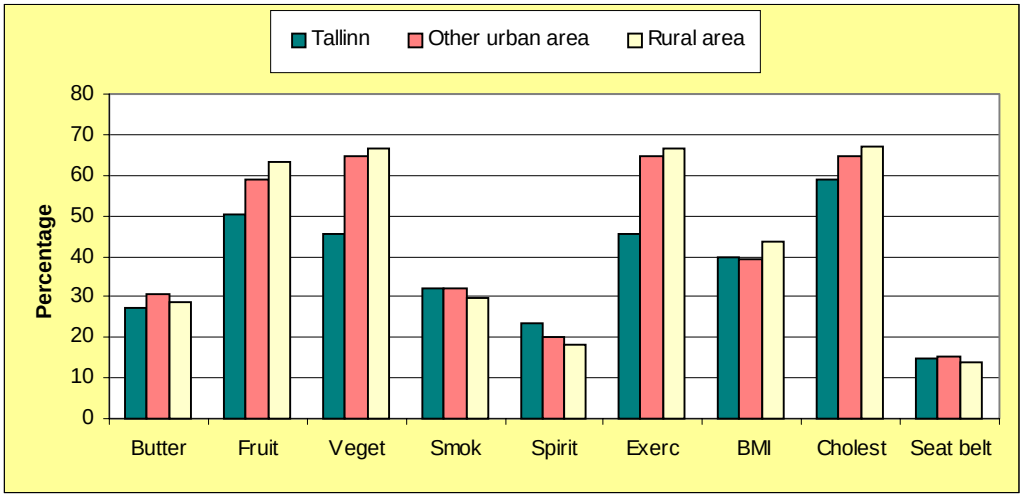
2. ***As compared to Tallinn, respondents living in rural areas consume less fresh vegetables and fruits, exercise less and measure their blood cholesterol less often.***

3. ***Addictive behaviours (use of strong spirits and daily smoking) are slightly more common among respondents from urban areas.***

4. ***Differences between rural and urban areas in most health related behaviours remained almost the same between 1990 and 2000.***

The proportion of respondents who use butter as main fat on bread is slightly lower among Tallinn population and higher among respondents from other urban areas, especially among men.

Figure. The proportion of respondents by selected self reported health behaviours according to the place of residence.
Source: technical document, chapter 12 , tables A.1, B.1, C.1, D.1, E.1, F.1, G.1, H.1 and I.1



Use of fresh vegetables and fruits for less than three days a week is most common in rural areas, both among men and women and among most age groups. Between the years 1990 and 2000 the infrequent use of fresh vegetables and fruits decreased among respondents from all urban and rural areas.

Physical exercise during leisure time (at least 30 minutes) for less than once a week, is higher among respondents from rural areas. This is observed for both men and women, and for most age groups. During the last ten years, a slight decrease is observed in infrequent physical exercise among respondents from rural areas.

Daily smoking is slightly less common among respondents from rural areas, both among men and women and in most age groups, especially the for older group.

Respondents from rural areas less often report use of strong spirits for once or more a week than respondents from urban areas. Between the years 1990 and 2000, frequent use of strong spirits increased among respondents from both urban and rural areas.

Body Mass Index higher than 25 (overweight) is slightly higher among respondents from rural areas than among respondents from urban areas. It does not have the same pattern in all age groups. Between the years 1990 and 2000, the proportion of respondents with overweight decreased in all urban/rural areas.

Respondents from rural areas report more often measurement of their blood cholesterol never or more than 5 years than respondents from urban areas. The frequency of measurement of blood cholesterol increased among respondents from all residential areas.

The proportion of respondents, who report never or sometimes use seat belt, when driving or as a passenger on front seat, is almost the same among respondents from rural and urban areas. Between the years 1990 and 2000, infrequent use of seat belts decreased among respondents from both urban and rural areas.

6.3. Ethnicity

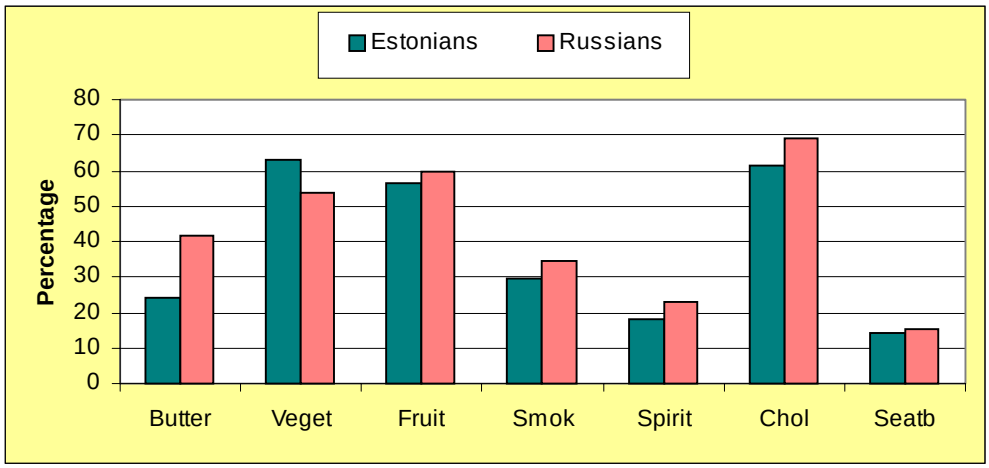
1. ***As compared to Russian men, Estonians have lower consumption of butter and fresh vegetables, and higher consumption of fresh fruits.***

2. ***Estonian men have better preventive behaviour (measurement of cholesterol, use of seatbelt) and lower addictive behaviour (use of strong spirits, daily smoking) than Russians.***

3. ***Ethnical differences in health related behaviour increased during last ten years for most behaviours, except preventive behaviours (use of seatbelt, measurement of cholesterol).***

The proportion of respondents who declare use of butter as main fat on bread is higher among Russian men and Russian women as well. The same pattern is observed for all age groups and in both urban and rural areas. Between the years 1990 and 2000, the ethnic differences in consumption of butter as main fat on bread increased.

Figure. The proportion of selected self reported health behaviours according to the ethnicity. Source: technical document, chapter 12 , tables A.1, B.1, C.1, E.1, F.1, H.1 and I.1.



Infrequent consumption of fresh vegetables (0–2 days a week) is more common among the ethnic group of Estonians. This is observed for both genders, for all age groups and for both urban and rural areas. Between the years 1990 and 2000 the differences in consumption of fresh vegetables increased between Estonians and Russians.

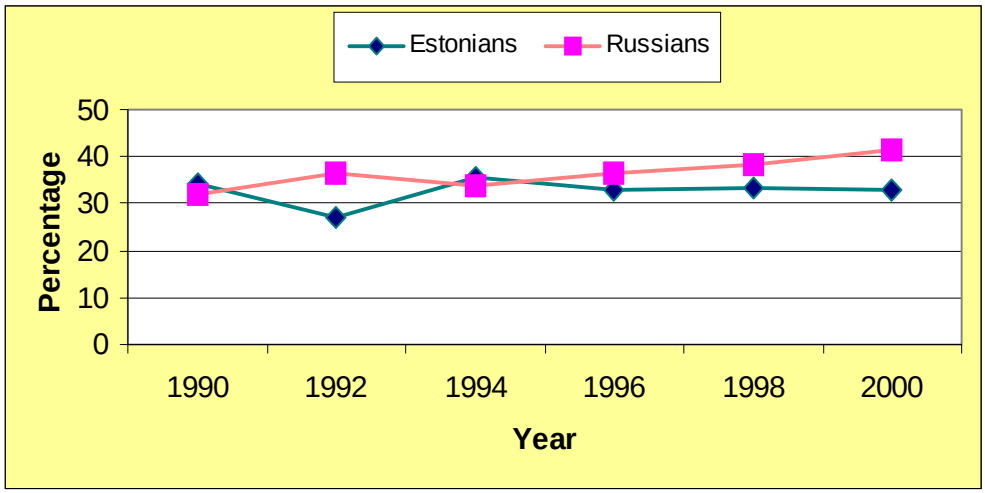
Infrequent consumption of fresh fruits (0–2 days a week) is slightly more common among Russian than among Estonians respondents. Russian respondents report rare use

of fresh fruits more frequently in all age groups (except the older group) and in all residential areas. Between the years 1990 and 2000, infrequent consumption of fresh fruits decreased among both ethnic Estonians and Russians.

The proportion of respondents who declare that they are dealing with physical exercise (at least 30 minutes, which makes them at least mildly short of breath or perspire) for less than once a week is almost the same among both ethnic groups and was stable during the years 1990-2000.

The proportion of respondents who report smoking daily is higher among Russians, especially among men. There are observed large ethnic differences in regular smoking among younger age groups (16–39) of respondents. The proportion of respondents who smoke regularly was almost stable among Estonians between the years 1990 and 2000, but it increased among Russians.

Figure. The proportion of respondents who are smoking regularly, according to the ethnicity and study year 1990–2000.
Source: technical document, chapter 12, table T.E.1



Use of strong alcohol for once a week or more is higher among Russian respondents. This is found for men and for women as well. In Tallinn and other urban areas, Russian respondents report drinking strong alcohol more frequently, but in rural areas they drink less frequently than Estonian respondents. Frequent consumption of strong spirits became more common between the years 1990 and 2000 among respondents from both ethnic groups. Differences between ethnic groups in use of strong alcohol increased during the years 1990–2000.

As compared to Russians, the proportion of respondents who never or more than 5 years ago measured their blood cholesterol is lower among Estonians. Between the years 1990 and 2000, the measurement of cholesterol became more common among both ethnic groups, but especially among Estonian respondents.

The proportion of respondents who never or sometimes use seat belt (while driving or as a passenger at the front seat of car) is slightly lower among Estonians than Russians, especially among Tallinn respondents and the older age group. Between the years 1990 and 2000 the use of seatbelt increased among both ethnic groups.

6.4. Education

1. ***Low educated people have less health enhancing behaviour than high educated people.***

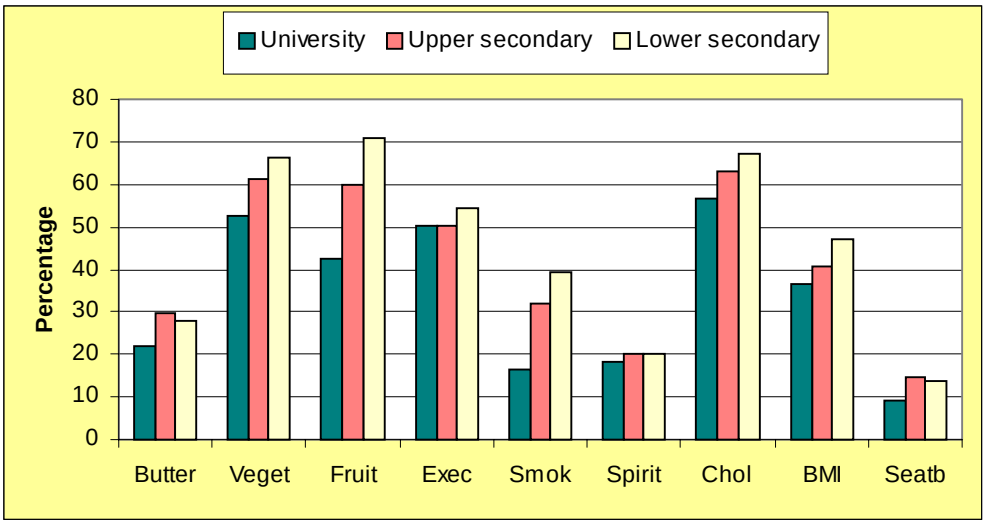
2. ***Educational differences in health related behaviour are observed for most types of behaviour, except in use of strong spirits among men.***

3. ***Educational differences in daily smoking are large and are increasing.***

4. ***Between 1990 and 2000, educational differences in health related behaviour increased except in use of strong spirits and in consumption of fresh vegetables.***

Nutrition behaviour among respondents with low education is less health enhancing than among respondents with high education. The percentage of respondents, who report use of butter as main fat on bread is higher among respondents with low education, especially among men. There is no substantial difference in consumption of butter on bread among respondents with upper secondary education and university education. Educational differences are largest among youngest (16–24 years old) age group. Between the years 1990 and 2000 the differences between educational groups in consumption of butter as main fat on bread increased.

Figure. The proportion of selected self reported health behaviours according to the education. Source: technical document, chapter 12 , tables A.1, B.1, C.1, D.1, E.1, F.1, G.1, H.1 and I.1.

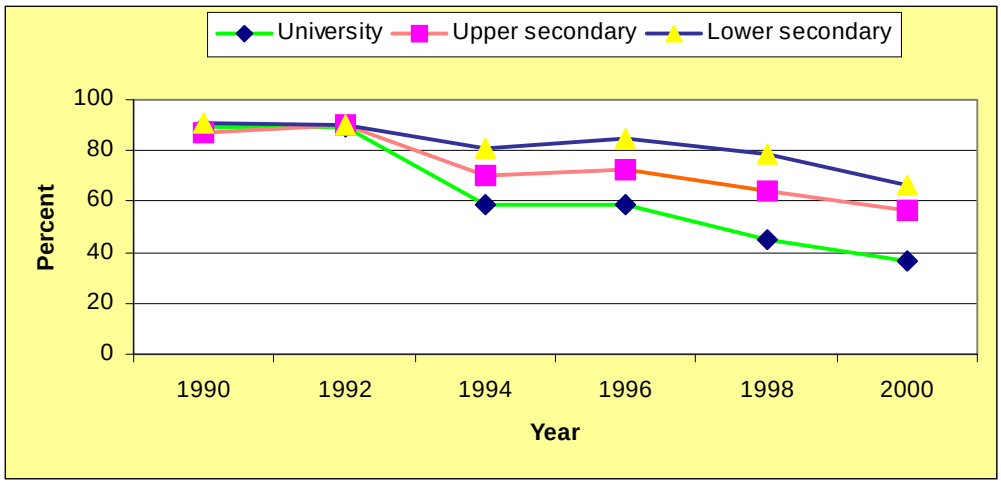


Respondents with upper secondary and university education report less often that they consume fresh vegetables no more than 0–2 days a week. Among men and among

residents of Tallinn, educational differences in infrequent consumption of fresh vegetable (0–2 days a week) are larger than among women and residents of other areas. Between the years 1990 and 2000, educational differences in consumption of fresh vegetable increased.

Respondents from high education report less often to consume fresh fruits for only 0–2 days a week. In the years 1990 and 1992 there were no educational differences in the frequency of consumption of fresh fruits. However, differences between low education and high education groups have appeared since 1994 and tended to increase.

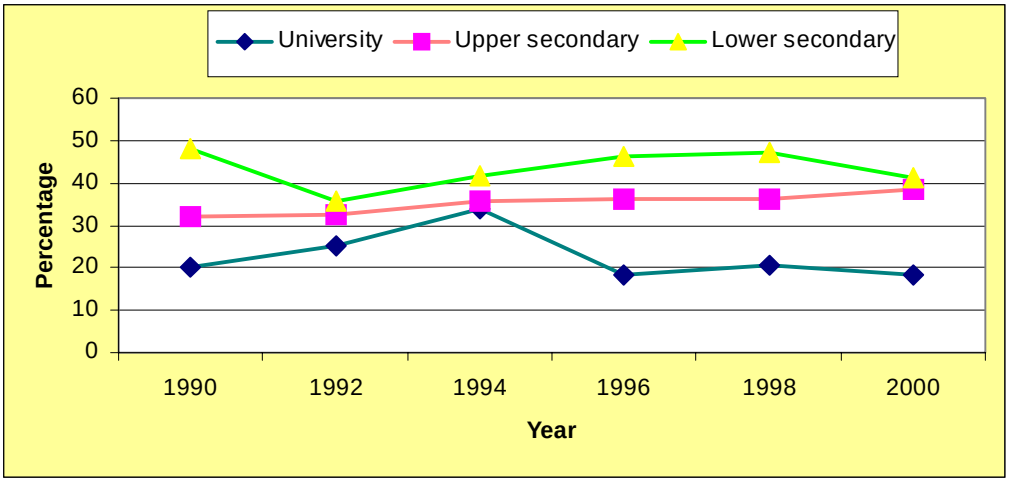
Figure. The proportion of respondents who use fresh fruits 0–2 days a week, according to the education and study year.
Source: technical document, chapter 12, table T.C.1



The proportion of respondents who report leisure time physical activity (at least 30 minutes) for less than once a week is lower among respondents with higher education. Between the years 1990 and 2000, educational differences were increasing.

Daily smoking is considerably higher among respondents with low education. This pattern is observed among both genders, in all age groups, and in both urban and rural areas. Especially high is daily smoking among low educated people in young and middle age groups, and in rural areas. Between the years 1990 and 2000, inequalities in daily smoking educational differences increased.

Figure. The proportion of respondents who smoke daily, according to the education and study year.
Source: technical document, chapter 12, table T.C.1



The proportion of respondents who report use of strong spirits for once or more a week is almost the same among men from all educational groups. Women from the low education groups tend to use strong spirits more frequently than women from the high education groups. Respondents from the younger and middle age groups with low education also report using strong spirits more frequently. This pattern is also observed in most urban areas, but not in Tallinn and rural areas. Between the years 1990 and 2000, frequency of drinking strong spirits increased among all educational groups.

Body Mass Index more than 25 (overweight) is higher among respondents with low education, a pattern found among both genders and all age groups. Between the years 1990 and 2000, educational differences in body mass index increased.

The proportion of respondents who report that they never or more than 5 years ago have measured their blood cholesterol is higher among low educated, especially among men. During last ten years, the proportion of respondents who have never or more than 5 years ago their blood cholesterol measured, decreased only among those with university education or upper secondary education.

The percentage of respondents, who declare that they never or sometimes use seat belt, (when driving or as a passenger on the front seat) is almost the same among different educational groups of men, but among women it is lower among those who have university education. The differences in infrequent use of seat belt among different educational groups are marked among respondents from Tallinn but are almost non-existing among respondents from rural areas. Between the years 1990 and 2000, the use of seat belt increased among all educational groups, especially among respondents with university education.

6.5. Income

1. ***As compared to high income group, health related behaviour among low income group is less health enhancing.***

2. ***However, respondents from high income group use strong spirits more frequently and use seat belt less often than low income group.***

3. ***Overweight occurs more in lower income groups, especially among women, in age group 16 to 54 years old, and in rural populations.***

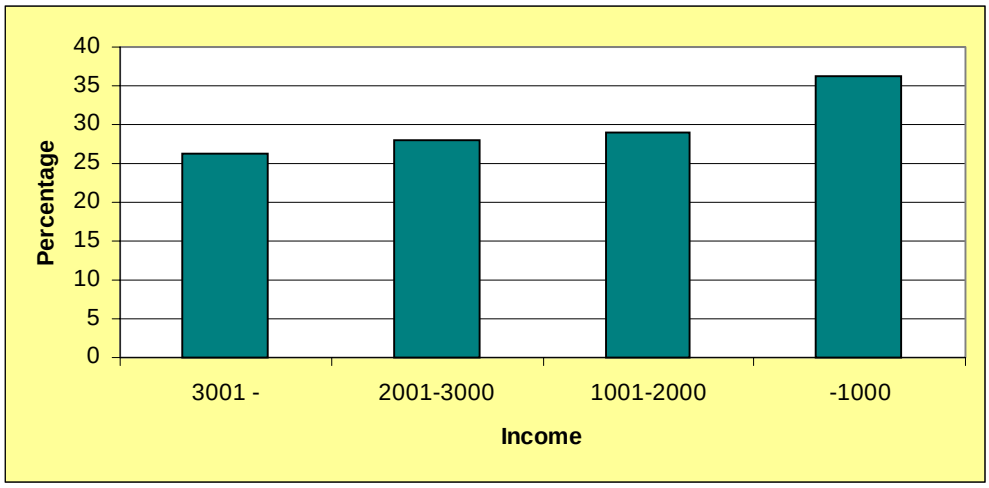
The proportion of respondents who report use of butter as a main fat on bread is higher among men from low income groups than among men with high income groups. Among women, on the other hand, it is lower among those in the low income group. Respondents from Tallinn and other urban areas from high income group tend to use butter on bread less frequently than those from low income group.

The frequency of consuming fresh vegetables and fruits less than two times a week is lower among high income group. Between the years 1990 and 2000, the infrequent consumption of fresh vegetables and fruits has decreased among all income groups.

The proportion of respondents who are doing with physical exercise during leisure time (at least 30 minutes) for less than once a week is higher among men with low income than those with high income. Among women, on the other hand, infrequent exercise is more often found among those with high income.

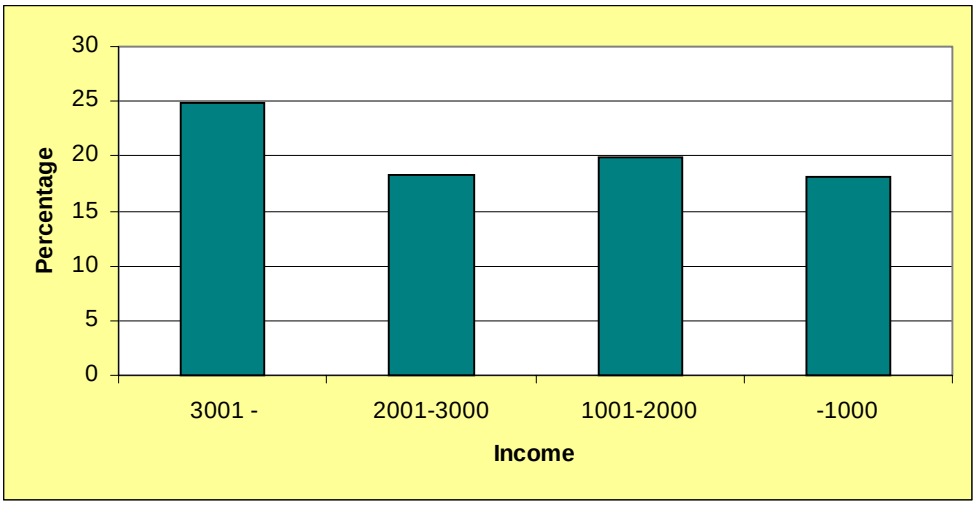
The proportion of respondents who smoke daily is lower among men from high income group. The same association is not observed for women.

Figure. The proportion of respondents who smoke daily, according to the income.
Source: technical document, chapter 12 , table E.1.



The proportion of respondents who report use of strong spirits once a week or more is higher among high income groups for both genders and for most age groups, except the older ones (55 to 69 years old).

Figure. The proportion of respondents who use strong spirits once or more a week, according to the income.
Source: technical document, chapter 12 , table F.1



Body Mass Index more than 25 (overweight) is more common among men from higher income group than lower income groups. Among women, on the other hand, overweight is more common among the lower income groups. Respondents living in rural area have the highest body mass index.

The proportion of respondents who never or more than 5 years ago have measured their blood cholesterol is higher among low income group. This is observed for all age groups and all areas of living.

Respondents from high income group report more frequently that they never or sometimes use seat belt (when driving or as a passenger in front seat) compared to respondents from low income groups.

6.6. Economic activity

1. ***As compared with economically active group, unemployed have generally less health enhancing behaviour, except in physical activity.***

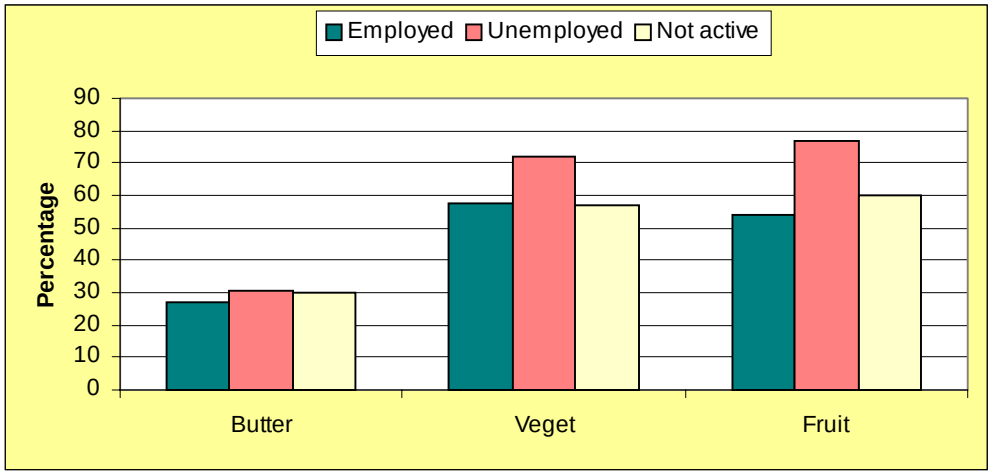
2. ***Unemployed men are less often overweight than employed. This association is inverse among women.***

3. ***Differences between unemployed and employed respondents in health related behaviour slightly increased for most types of behaviour between 1990 and 2000.***

The proportion of respondents who report use of butter as a main fat on bread is almost the same among different economic activity groups. Among men, it is more common among those employed, while among women it is more common among the unemployed. The use of butter on bread is higher among unemployed respondents from most age groups (16 to 54 years old) and among economically not active in older groups (40–69 years old). Use of butter as main fat on bread decreased considerably between the years 1990 and 2000 among both the employed, the unemployed and the economically not active group.

Infrequent consumption of fresh vegetables and fruits (less than three days a week) is reported more frequently by unemployed respondents than employed respondents. Between the years 1990 and 2000, the use of fresh vegetables and fruits less than three days a week decreased among employed and economically not active group, but increased among unemployed group.

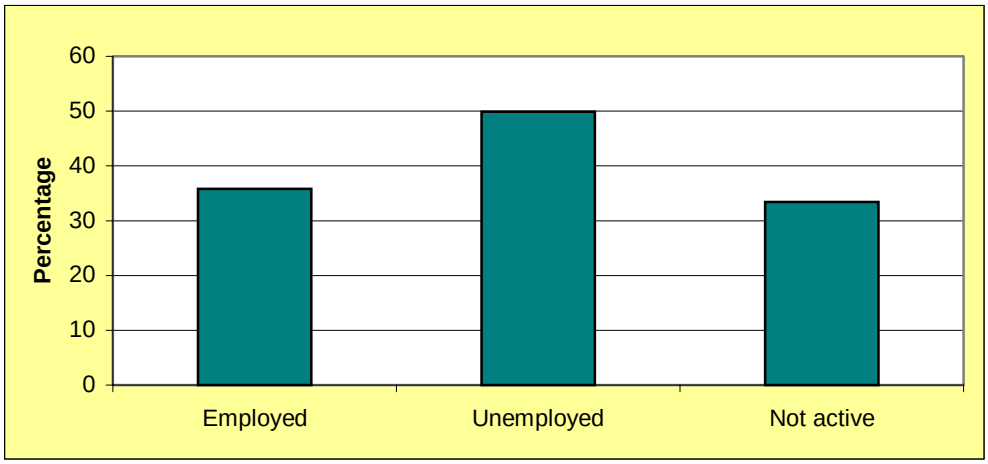
Figure. The proportion of respondents who consume butter as main fat on bread, fresh vegetables and fruits less than three days a week, according to the economic activity.
Source: technical document, chapter 12 , tables A.1, B.1 and C.1.



Physical exercise for less than once a week at leisure time is less common in the economically not active group, among men and women as well. Unemployed women report more often doing physical exercise for less than once a week than employed women. This association is inverse among men. Between the years 1990 and 2000, physical exercise became more common among unemployed respondents, and less common among employed respondents.

The proportion of respondents who report smoking daily is higher among unemployed respondents than among employed respondents. During the last ten years, daily smoking increased slightly among employed and unemployed respondents and decreased among economically not active group.

Figure. The proportion of respondents who smoke daily, according to the economic activity. Source: technical document, chapter 12 , tables E.1.



As compared to employed men, unemployed men report as often to use of strong spirits once or more a week. Men from economically not active group tend to use strong spirits considerably less frequently. Among women, there are no substantial differences in the use of strong spirits for once or more a week. Between the years 1990 and 2000, the use of strong spirits increased among both employed and unemployed respondents, but remained stable among respondents from economically not active group.

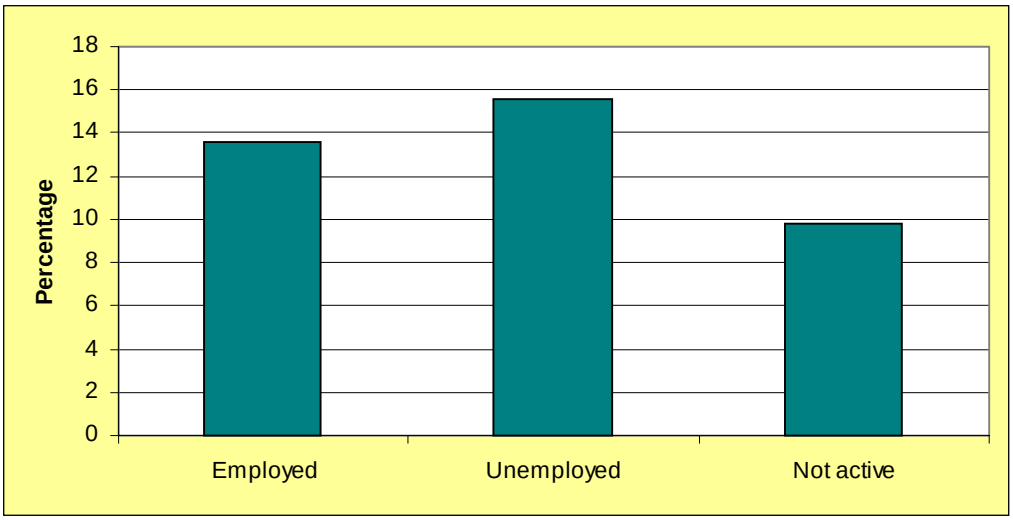
The proportion of respondents with a Body Mass Index more than 25 (overweight) is lower among unemployed men than employed men. Among women, overweight is more common among the unemployed. The proportion of respondents who are overweight decreased during last ten years among both the employed and unemployed.

Unemployed respondents report more frequently that they have never or more than five years ago measured their blood cholesterol compared to employed respondents. However, in Tallinn, employed respondents tend to measure their blood cholesterol less often than unemployed and economically not active respondents. In other urban areas and in rural

areas, infrequent measurement of blood cholesterol is more often reported by unemployed respondents.

The proportion of respondents who never or sometimes use seat belt (when driving, or as a passenger in front seat) is higher among unemployed men than employed men. An inverse association is observed among women. In urban areas, unemployed respondents tend to use seat belt more often, while the situation is the reverse in rural areas.

Figure. The proportion of respondents who never or sometimes use seatbelt while driving or as a passenger in front seat, according to the economic activity.
Source: technical document, chapter 12 , tables I.1.

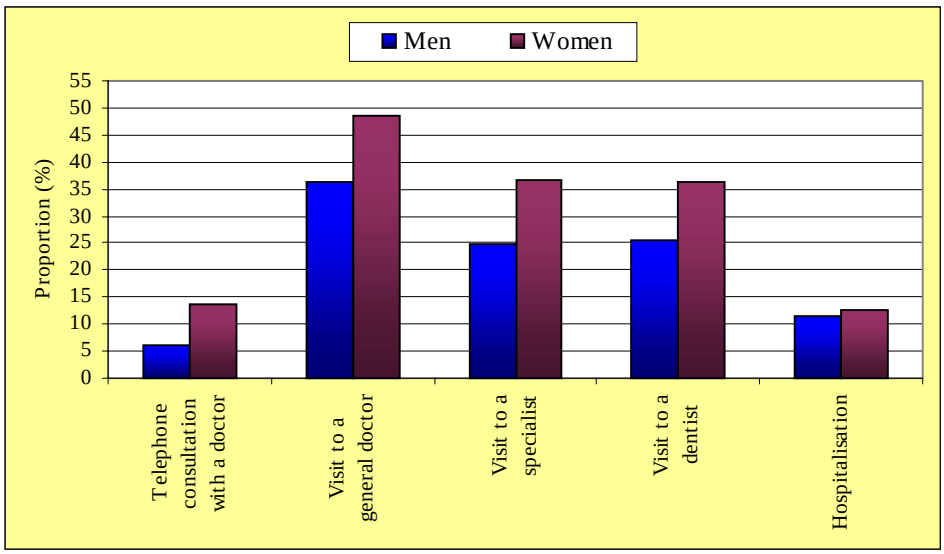


7. Key findings on health care utilisation

7.1. Gender

There are more women who have used health care services compared to men.

Figure. The proportion of respondents (age 25–74) in 1999, who have had telephone consultation with a doctor, visit to a doctor, visit to a specialist, visit to a dentist (all during last 6 months) or have been hospitalised during last 12 months, according to gender.
Source. Technical document, chapter 13, tables A.1, B.1, C.1, D.1, and E.1.

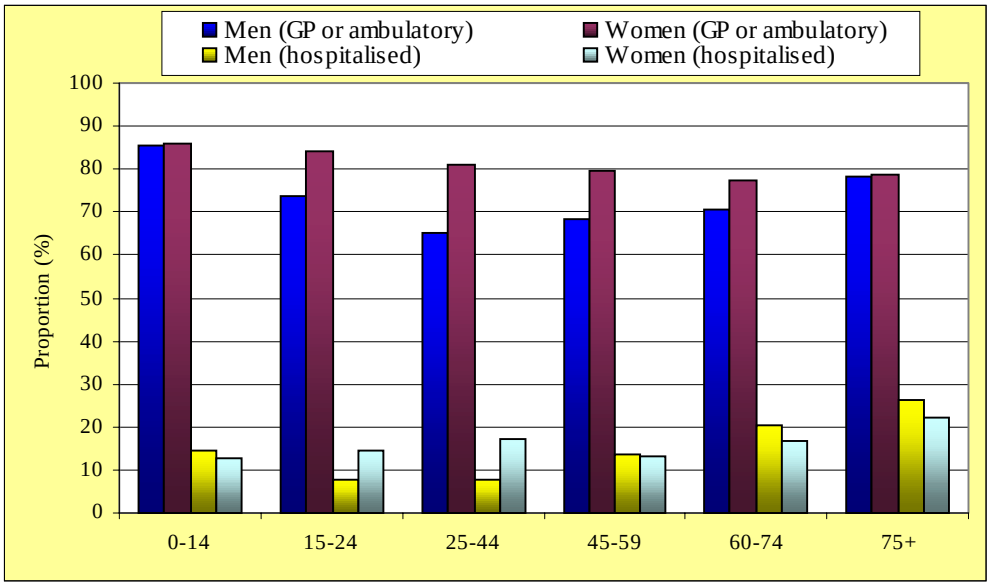


As compared to men, a larger proportion of women have used health care services. The gender differences are significant for most types of services except for hospitalisation, for which gender differences are small and not consistent. Data from interview surveys of both 1994 and 1999 (see technical document for details) showed that the gender differences in hospitalisation rates have remained about the same between these two years.

The same gender differences in the utilisation of health care services are observed in both rural and urban areas. It can be seen that the gap between gender in visits to a general doctor and a specialist are declining with age.

Gender differences in health service utilisation (general practitioner, hospitalisation, prescription drugs) are largest in middle age groups.

Figure. The proportion of insured persons who have used ambulatory care or a general practitioner during 2000, and who have been hospitalised during 2000, according to gender.
Source. Technical document, chapter 14, tables E.1 and G.1.



Under the health insurance scheme, a larger proportion of women compared to men have consulted their general doctor and used first stage medical care during 2000. The gender difference is small for children (0–14 years) and the elderly (60 years and over), but large for middle age groups, especially the 25 to 44 years old.

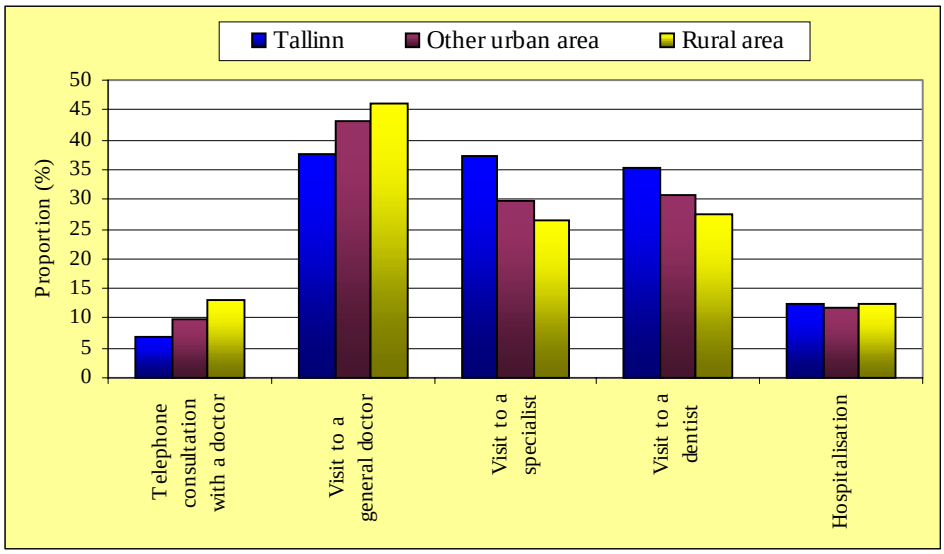
In general, the hospitalisation rate is higher for women than for men, especially in the age group 25 to 44 years. However, there exist higher hospitalisation rates among young men (0–14) and also men from middle age (45+). A similar age-gender pattern was observed among persons who were hospitalised in the year 2000 for at least 12 days.

Women generally use more prescription drugs than men (not shown in chart). There is no clear gender difference among children, but a large difference was observed in the age group 15 to 24 years. At higher ages, the gender differences remain but become smaller.

7.2. Place of residence

As compared to Tallinn, in rural areas there are more persons who have had telephone consultations or who have visited a general doctor, but fewer persons have visited specialists or dentists.

Figure. The proportions of respondents (age 25–74) in 1999, who have had telephone consultation with a doctor, visit to a doctor, visit to a specialist, visit to a dentist (all during last 6 months) or have been hospitalised during last 12 months, according to residence.
Source. Technical document, chapter 13, tables A.1, B.1, C.1, D.1, and E.1.

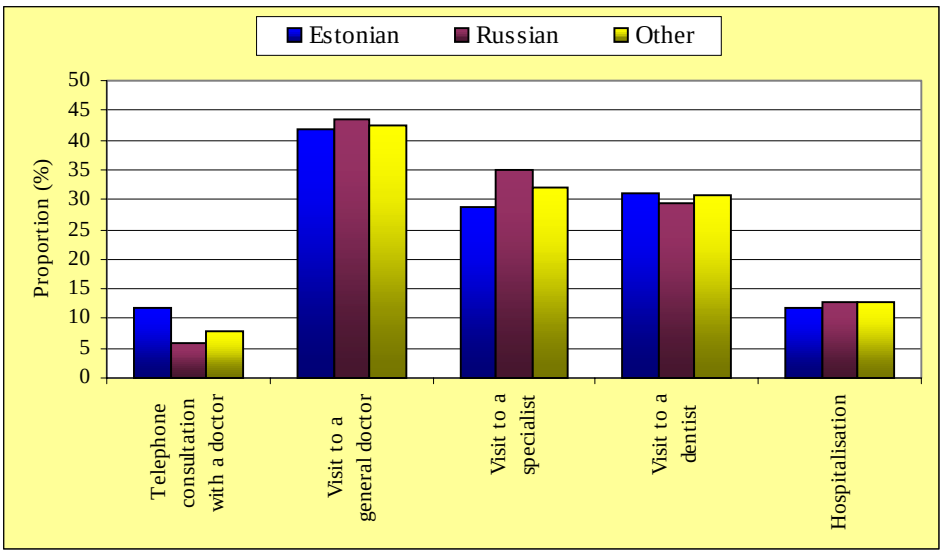


There are pronounced differences between Tallinn and rural areas in the use of most health care services. In general, there are more persons living in rural areas who have used telephone consultations with the doctor and visited first-stage health care services. On the other hand, those living in the capital more likely have visited the specialist or the dentist during the last six months. Data from interview surveys of both 1994 and 1999, showed that the rural/urban differences in hospitalisation rates have remained about the same between these two years.

7.3. Ethnicity

There are only slight differences in health care utilisation by ethnicity, with the exception of telephone consultations (more by Estonians) and specialist visits (more by Russians).

Figure. The proportion of respondents (age 25–74) in 1999, who have had telephone consultation with a doctor, visit to a doctor, visit to a specialist, visit to a dentist (all during last 6 months) or have been hospitalised during last 12 months, according to ethnicity.
Source. Technical document, chapter 13, tables A.1, B.1, C.1, D.1, and E.1.

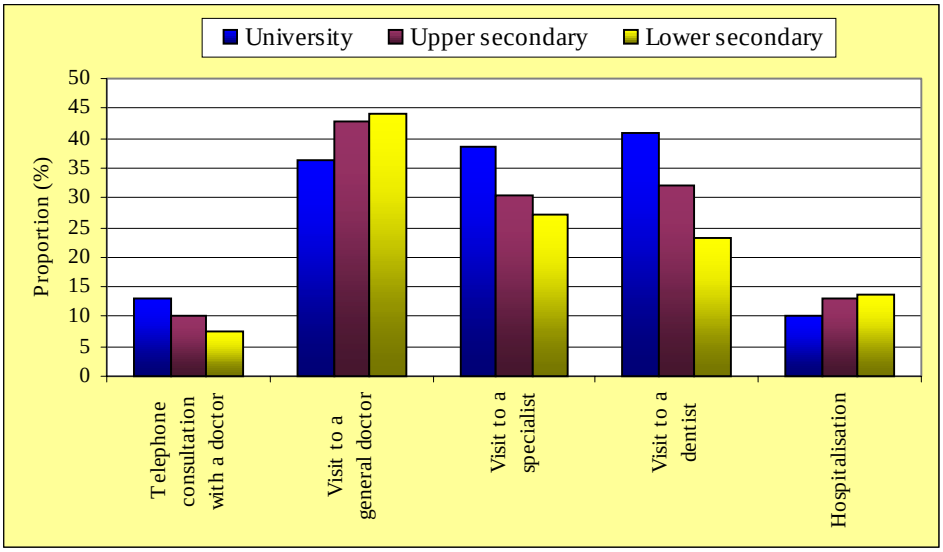


There are no major differences in health care utilisation between Estonians and Russians. There is higher utilisation rate in specialist visits among Russian men and women, especially in urban areas. The only indicator where we could observe lower utilisation rate among Russians (as compared to Estonians) is telephone consultations. Ethnicity groups classified as “other” are with their utilisation rate in-between Russians and Estonians (except for hospitalisation). Between 1999 and 1994, ethnic differences in hospitalisation have diminished.

7.4. Education

Persons with lower educational level have lower utilisation rates for telephone consultations, specialist visits, and dentist visits, at the same time they have higher utilisation rates in use of ambulatory care, and hospitalisation.

Figure. The proportion of respondents (age 25–74) in 1999, who have had telephone consultation with a doctor, visit to a doctor, visit to a specialist, visit to a dentist (all during last 6 months) or have been hospitalised during last 12 months, according to educational level.
Source. Technical document, chapter 13, tables A.1, B.1, C.1, D.1, and E.1.



Different educational groups use different kind of health care services. Lower educated people have larger proportion of persons who have contacted with their general doctor. This pattern is observed for both men and women, all age groups, and both in urban and rural areas.

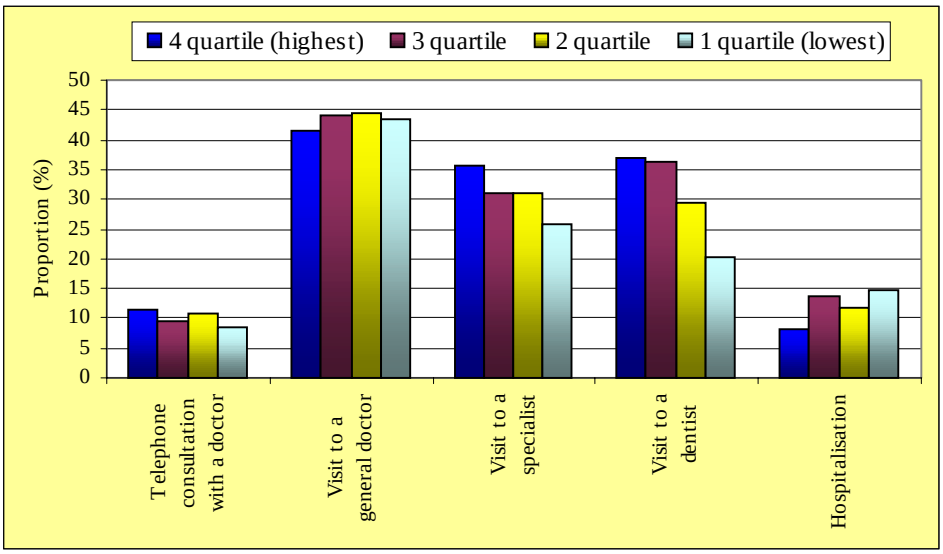
An opposite pattern, with higher utilisation by upper educational groups, is observed for telephone consultations, visits to a specialist and visits to a dentist. Especially large are the educational differences in visits to a dentist. With regards to visits to specialists, we should add that no clear educational differences were observed among 25–44 years old person, and among persons living in Tallinn.

Persons with lower educational levels more often report to have been hospitalised during the last year. Educational differences in hospitalisation were observed especially for women, those aged 25–44 years, and persons living in Tallinn.

7.5. Income

Compared to those with high income there are remarkably fewer persons in lower income group having visited a specialist or a dentist, and they have higher hospitalisation rate.

Figure. The proportion of respondents (age 25–74) in 1999, who have had telephone consultation with a doctor, visit to a doctor, visit to a specialist, visit to a dentist (all during last 6 months) or have been hospitalised during last 12 months, according to household adjusted income.
Source. Technical document, chapter 13, tables A.1, B.1, C.1, D.1, and E.1.



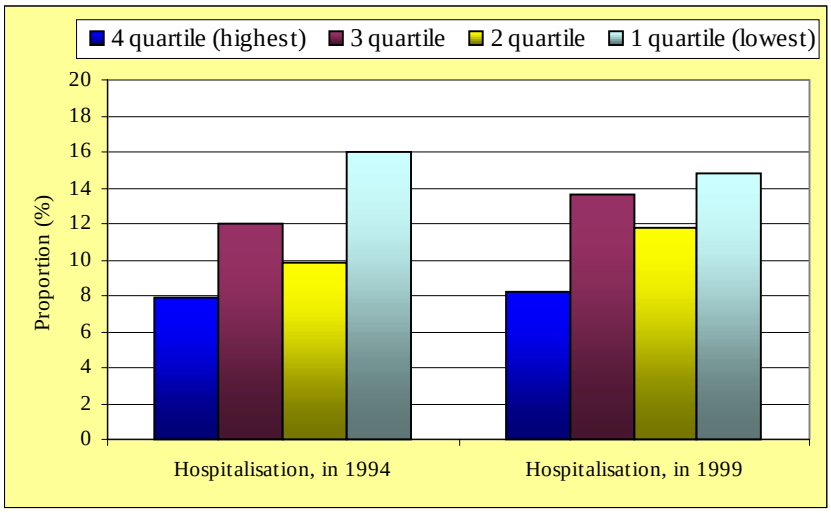
In general, there are no large income-related differences in telephone consultations with a doctor, and in visits to a general doctor. However, among the elderly and among those living in rural areas, the general doctor is more likely visited by those with low income.

More consistent are the income-related differences in hospitalisation rates. As compared to those with high income, men and women with lower income more likely become hospitalised during the last year. This association is observed in all age groups and in both rural and urban areas.

An opposite pattern, with lower utilisation rates in lower income groups, is observed for visits to a specialist and visits to a dentist. These inequalities are large. For example, those in the highest income group have almost twice as much persons who have had visit to a specialist and a dentist compared to those in the lowest income group.

Inequalities in hospitalisation, with more poor men and women hospitalised, have remained about stable between 1994 and 1999.

Figure. The proportion of respondents (age 25–74) in 1994 and 1999, who have been hospitalised during last 12 months, according to household adjusted income.
Source. Technical document, chapter 13, tables E.1 and F.1.

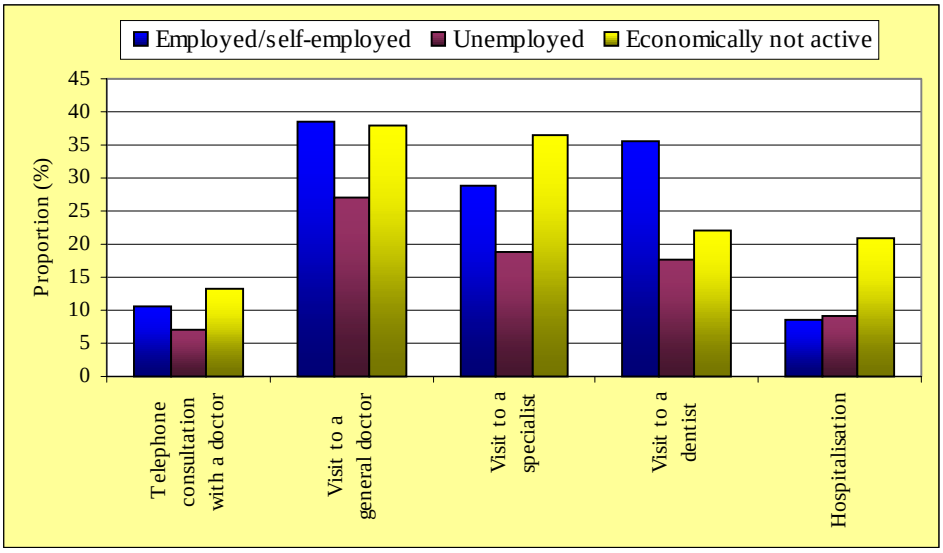


The income-related differences in hospitalisation rates have remained about similar between 1994 and 1999. In 1994, there was a twofold difference between the top and bottom income quartile in the chance of becoming hospitalised. An almost equally large difference is observed for 1999. The same stability over time was observed in terms of educational level, with the lower educated more often becoming hospitalised in both 1994 and 1999.

7.6. Economic activity

As compared to the employed, more unemployed persons have had telephone consultations with a doctor, visits to the first stage medical care, or visits to a specialist.

Figure. The proportion of respondents (age 25–59) in 1999, who have had telephone consultation with a doctor, visit to a doctor, visit to a specialist, visit to a dentist (all during last 6 months) or have been hospitalised during last 12 months, according to economic activity.
Source. Technical document, chapter 13, tables A.1, B.1, C.1, D.1, and E.1.



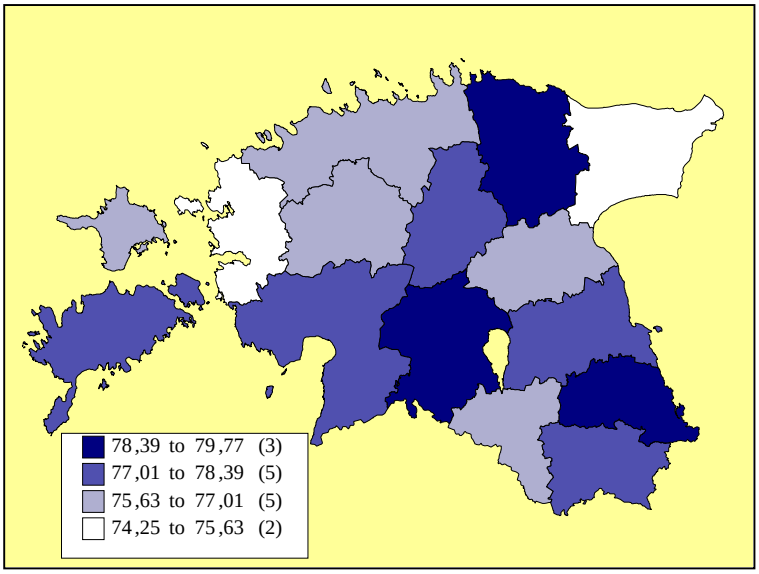
As compared to those who are (self) employed, among unemployed persons there are fewer persons who have had a telephone consultation, visit to a general doctor, visit to a specialist, or visit to a dentist. These differences are generally observed among both men and women, and in both urban and rural areas. However, visit to a specialist is related to employment only in urban areas and among persons aged 45 to 59.

Economically not active people (i.e. those who are outside the labour force such as housewives, students, work disabled and retired) have generally a similar pattern of health care utilisation as the employed. However, there is smaller number of not active people who have used dental care during the last 6 months. Also there are more economically not active persons who have been hospitalised during the last year as compared to employed and unemployed. The gap in hospitalisation rates was observed for both 1994 and 1999, with no clear change over time.

7.7. Regional differences

Differences between counties for first stage medical care (GP or ambulatory care) are fairly small.

Figure. Proportion of insured persons who have visited the GP or had ambulatory care during 2000, by counties.
Source. Technical document, chapter 14, table E.1.



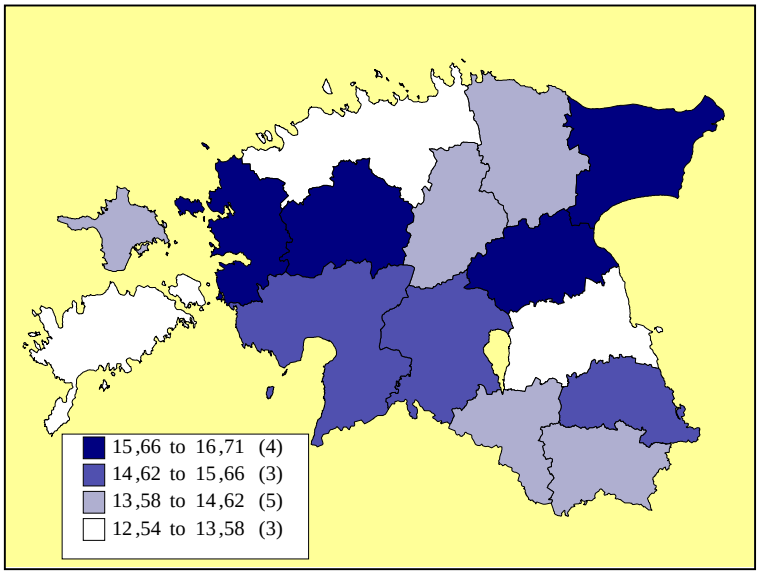
There are differences between countries in the proportion of persons who use first stage health care (including general practitioner and specialist day care). However, these differences are fairly small. For example, the highest utilisation rate is only 7 percent larger than the lowest observed rate.

The highest utilisation rates are observed for Lääne-Virumaa, Põlvamaa, and Viljandimaa. Utilisation of first stage care is lowest in Ida-Virumaa and Läänemaa. The same geographical patterns are observed for different age groups, and for both men and women.

In further analyses in which we concentrated on heavy users (defined as those who have had at least 6 contacts with a general practitioner and/or an ambulatory care unit) somewhat larger differences between counties were observed. The observed highest rate exceeded the lowest rate by 26 percent. The highest rates were observed in Lääne-Virumaa while the lowest were observed in Ida-Virumaa and Läänemaa.

Differences between counties in hospitalisation rates are large, and especially among persons who have been hospitalised at least 12 days.

Figure. Proportion of insured persons who have been hospitalised during 2000, by counties.
Source. Technical document, chapter 14, table G.1.

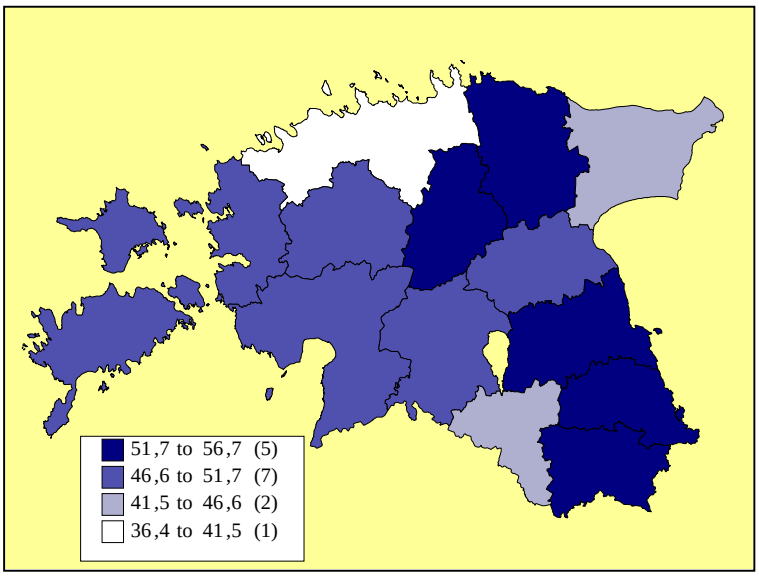


Relatively large regional differences in hospitalisation rates are observed among insured persons. The highest observed rate exceeded the lowest rate by about 30 percent. The highest rates are observed in Ida-Virumaa, Läänemaa, Raplamaa, and Jõgevamaa. The smallest hospitalisation rates are observed in Tartumaa, Harjumaa, and Saaremaa. In general, regional patterns are fairly consistent across age and gender groups. Regions with high overall rates also have higher rates for both men and women, and for most age groups.

Regional inequalities are even more pronounced in terms of persons who have been hospitalised at least 12 days during the year 2000. The highest utilisation rate is almost two fold higher than the lowest observed rate. High and low prevalence rates appear in the same counties as for hospitalisation at all. Differences between the seven insurance regions are smaller than at the county level.

Fairly large regional differences are observed in the use of prescription medicines covered by health insurance scheme in Estonia.

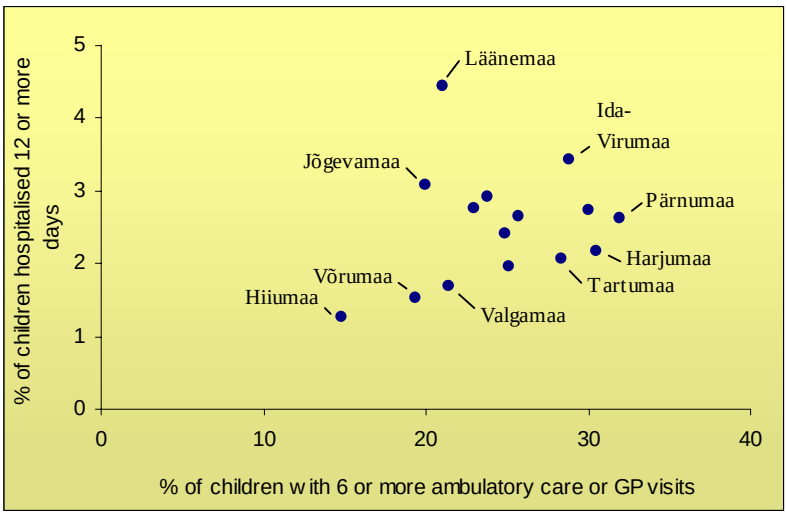
Figure. Proportion of insured persons who have used prescription drugs during 2000, by counties. Source. Technical document, chapter 14, table I.1.



There are more persons who have consumed prescription drugs covered by Estonian Health Insurance Fund in Lääne-Virumaa, Järvamaa, and Tartumaa. The lowest utilisation rates are observed in Harjumaa, Ida-Virumaa, and Valgamaa. The difference between highest and lowest utilisation rate is 30 percent. There are even two fold (i.e. 50 percent) regional differences concerning persons who have used at least 5 prescription drugs (for example chronically ill persons, women in reproductive age etc). Regional differences are larger among middle age groups than among the elderly.

There are a number of regions with higher utilisation rates for most health care services and for most gender and age groups.

Figure. Proportion of 0–14 year old insured persons who have made at least 6 GP or/and ambulatory care visits, or have been hospitalised at least 12 days during 2000, by counties.
Source. Technical document, chapter 14, table F.2, and H.2.



The graph illustrates with data on children that there are counties with high rates of first stage medical care visits, and also high hospitalisation rates. Example of such county is Ida-Virumaa. At the same time there are counties with low rates of utilisation of both types of health care services, for example Hiiumaa, Võrumaa, Valgamaa. This pattern is not only observed for children, but also for other age groups.

More generally, there are regions with relatively high rates for all health care service indicators (first stage health care visits, hospitalisation, and prescription drugs use). For example, Lääne-Virumaa and Pärnumaa have higher utilisation rates for all named indicators when compared to the overall average for Estonia. At the same time, there are counties with high rates for one health service but relatively low rates for other services. For example, more residents from Saaremaa and Tartumaa use first stage medical care and prescription medicines, but these counties have lower hospitalisation rates, when compared to the national average.

8. Resume of key findings

In this chapter, we will summarise the key findings reported in the Part Two. We will focus on a few general patterns that arise consistently from the analyses of both mortality, morbidity, health-behaviour and health-care utilisation. These patterns can be summarised in the four main points presented below.

1. Both morbidity, mortality, health-related behaviours and patterns of health care utilisation strongly vary between subgroups of the Estonian population.

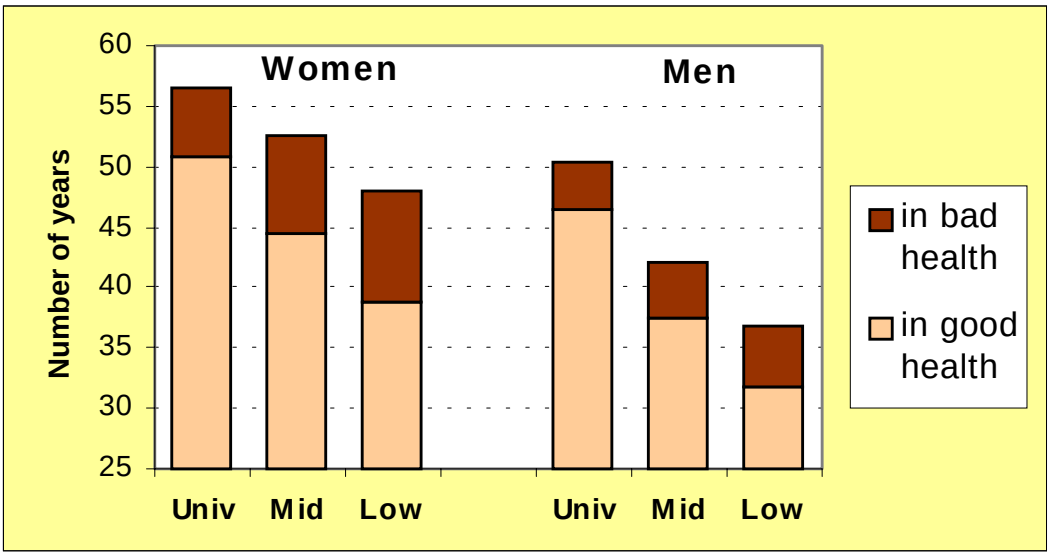
The overall impression from Part Two is that the differences observed are often large. This applies to both self-reported morbidity, cause-specific mortality, health-related behaviour and health care utilisation. In each of these domains, the levels or trends that are observed for specific social groups can strongly differ from the levels and trends in the Estonian population at large.

The magnitude of these differences is illustrated below with the use of "health expectancy" measures (Robine, Romieu and Cambois 1999; Sihvonen et al. 1998). These measures summarise the results for mortality and self-reported morbidity, by combining these two into a single measure with a concrete interpretation. This measure is presented in the graph below by gender and by education. The total bar expresses the total life expectancy at the age of 25 years. From that age on, low educated men can expect to live only 36.8 years. High educated men can expect to live 50.3 years on, which is 13.5 years more than low educated men. Among women, those with high education can expect to live 8.6 years longer than those with low education (56.5 versus 47.9 years).

Even larger is the difference in "expectancy of life in good health". This measure can be interpreted as the number of years of that a person can expect to live in 'average' or 'good' health after the 25th birthday. Among men, those with high education can live 14.7 years longer in good health than low educated men (46.5 versus 31.8 years). Among women, the difference is almost as large: women with high education can expect to live 12.1 years longer in good health than low educated women (50.9 versus 38.8 years).

While large inequalities are observed in relation to most social indicators individually, even larger are the differences between social groups when these groups are defined in terms of a combination of indicators. When, in the example above, a comparison would be made across both education and gender, we would find that high educated women can expect to live 19 years longer in good health than low educated men. Similarly, Part Two shows many instances where health problems and health risks are especially frequent in particular subgroups of the population defined by more than one indicators. Examples from chapter 4 include the high levels of depression among Russian women and the high prevalence of 'bad or average' health among elderly living in rural areas.

Figure Life expectancy and health expectancy at the 25th birthday of men and women at different educational levels.



2. People from lower socioeconomic groups live shorter, more often suffer from health problems, engage more often in health damaging behaviour, and have less favourable health care utilisation patterns.

Whenever applied, the three socioeconomic indicators (education, income or unemployment) were consistently related to virtually all health indicators, including all indicators of self-reported morbidity, most causes of death, most health-related behaviours, and the different health care services. In nearly all cases, those with a worse socio-economic position also scored worse on the respective health indicators.

The consistency of this relationship is evident when for example considering all health indicators related to circulatory disease. Those with low education (a) have higher risks of dying from ischaemic heart disease and from cerebrovascular disease, (b) are more exposed to the main risk factors for circulatory disease, including smoking, overweight, heavy drinking and physical inactivity, and (c) seem to use health services less adequately, as suggested by their lower use of cholesterol tests. A similar consistency can be found when looking across all health indicators that apply to injuries (mortality from specific injuries, self-report of injuries, and the use of seat belts).

As with any rule, also this rule has its exceptions. One main exception is that those with higher income do not consistently show more health enhancing behaviours. As compared to poor men, rich men drink more often (at least at older ages), are more often overweight, and use seat belts less often. Those with high education, on the other hand, do perform better on nearly all types of health-related behaviours.

Another exception is that those with low income and low education are more likely to visit the general practitioner and are more likely to be hospitalised. Their larger probability to visit general practitioners may seem favourable, but perhaps is a bad sign instead. First, it may simply reflect the fact that lower socioeconomic groups more often fall sick and therefore need to recur to medical services more often. In addition, the fact that lower socioeconomic groups are more likely to visit a general practitioner contrasts with their much lower probability to contact a specialist. This may reflect a different, and probably less effective, pattern of health seeking behaviour, in which lower socioeconomic groups stick longer to the general practitioner while higher socioeconomic groups are more successful in obtaining timely access to specialists. In addition, these patterns may ultimately reflect problems of accessibility to specialist and advanced health care services.

3. Large differences in some outcome indicators are also observed between men and women, between Russians and ethnic Estonians, and by place of residence

Even though we observed that socioeconomic disparities in health were large, they provide an incomplete picture of health variations within the Estonian population. Important variations were also observed in relation to gender, ethnicity and place of residence.

Gender differences were often substantial. As compared to women, men had higher mortality from most causes of death, they more often engaged in health damaging behaviours and they used health services generally less often. Women fared worse in only a few instances. For example, they reported more often to suffer from emotional distress and depression.

Ethnic differences were often fairly small, but large in other instances. In general, ethnic Estonians and Russians had similar behavioural patterns, and used health care services in about similar ways. Where differences were observed, the Russians were at a disadvantage. For example, Russians reported more often to suffer from depression, they consumed less fruits, and they used telephone consultations much less often (but do more often recur to specialists). Perhaps most importantly, Russians had higher mortality from nearly all causes of death. There is hardly any instance of ethnic Estonians faring worse than Russians.

Urban versus rural differences are usually small. Contrary to what might perhaps have been expected, there is not a consistent advantage of urban areas over rural areas. Residents of rural areas more often are overweight, more often report to suffer from physical health problems, and have a higher chance to die from circulatory diseases and respiratory diseases. Those living in urban areas, on the other hand, more often smoke cigarettes and drink strong spirits, and have a higher chance to die from cancer. Rural-urban differences in health care utilisation are fairly large. People in rural areas more often use telephone consultations or visit a general doctor, but less often visit specialists or dentists.

Regional differences were investigated especially for health care utilisation. In general, the differences were found to be small as compared to the differences in relation to other social indicators. None the less, the variations that were observed (e.g. in the utilisation of health care services for children) are important enough to warrant attention in further health care reform. In addition, we should note that health care utilisation disparities were found to be larger at the level of 15 counties than at the level of 7 insurance regions. This suggests that considerable inequalities may exist at even lower geographical levels, such as municipalities. These inequalities need special attention if future health care reforms aim to re-centralise hospital care into larger geographical areas.

4. During the 1990's, social inequalities in mortality and most types of health-related behaviour have widened.

Changes over time could be studied in detail for mortality and for health-related behaviours. In both cases, inequalities were found to have widened during the 1990s.

Between 1987-1990 and 1999-2000, ethnic differences in mortality increased, because mortality changes during the 1990s were much less favourable for the Russians than for the ethnic Estonians. Similarly, the mortality gap between those with university education and those with lower levels of education widened considerably. It may be noted that educational differences in mortality were already found to be large in the end of the 1980s (see figure 2 in chapter 2). Our results thus show that they have thus become exceptionally large.

In a similar way, differences in health-related behaviour generally increased, both between Russians and ethnic Estonians and between high and low educated persons. Widening inequalities were not observed consistently for all types of health behaviour (e.g. not for alcohol consumption) but the general impression is that the ethnic Estonians and highly educated people have benefited more from the often dramatic changes that have occurred since independence in the health behaviours of the Estonian population.

It may finally be noted that the widening in inequalities in mortality might in part be caused by widening inequalities in health-related behaviours. For example, increasing inequalities in circulatory diseases may in part be due to increasing inequalities in tobacco consumption, dietary habits and some other risk factors for cardiovascular disease. Even though some effect may be visible in the mortality data for 1999–2000, we would expect that most of the effect of behavioural changes in the 1990s would become manifest at later times, especially in the case of mortality from chronic diseases with slow progression. Thus, the widening of inequalities in smoking and some other risk factors created the potential for a further widening of inequalities in mortality during the first decades of the 21st century.

9. Explaining health inequalities

The objective of our study was strictly descriptive: to provide a comprehensive overview of social inequalities in health in Estonia. No attempts were made to explain these inequalities because explanations are complex and should be approached carefully by means of well-conducted in-depth research (Elstad 2000; Graham 2000; Vågerö and Illsley 1995).

None the less, the large inequalities demonstrated in this report prompt the question what factors and mechanisms are responsible. Answers to this question, however imperfect and provisional they may be, may help us to better formulate implications for policy (chapter 10) and recommendations for further research (chapter 11).

The objective of this chapter is therefore to give some possible explanations of the social inequalities in health that were observed in this study. More specifically, we present a few conceptual frameworks that may be used to identify and discuss alternative hypotheses. In addition, we will show how empirical evidence that is presented in Part Two of this report may be used to make a first, preliminary test of some hypotheses.

We will start this chapter with a discussion of the educational differences in all-cause mortality, and then move to educational differences in, respectively, smoking and health care utilisation. We recognise that in this way we cover only a minor part of all our descriptive findings. We hope however that these examples may guide those who want to discuss possible explanations of other inequalities.

9.1. Educational differences in mortality

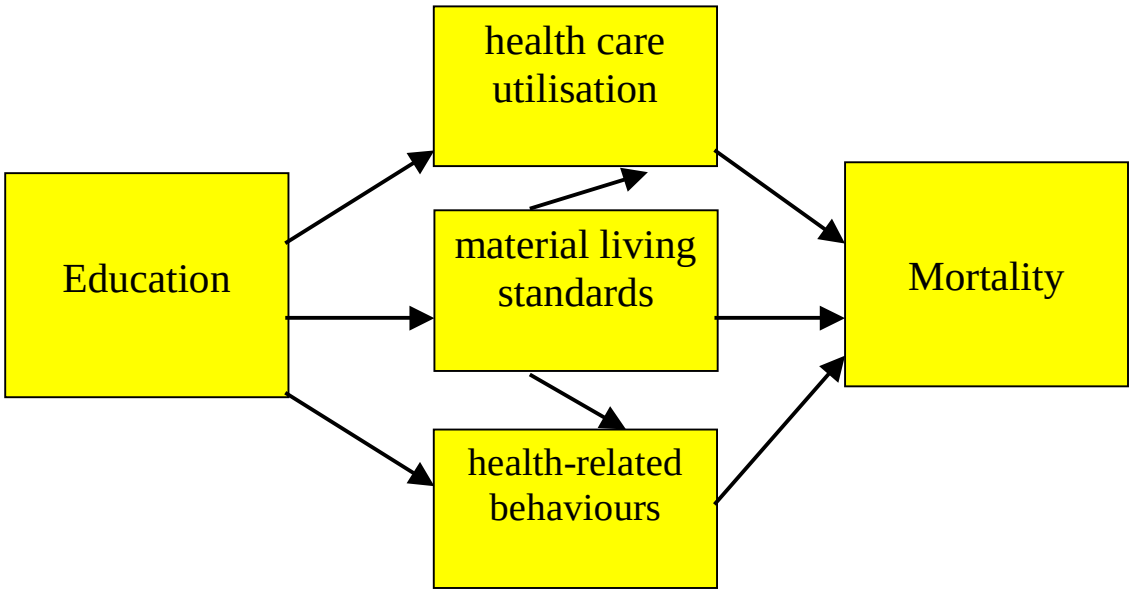
A conceptual framework

A conceptual framework for the explanation of educational inequalities in mortality is presented in the scheme below. The scheme embodies the principle that education does not influence mortality directly, but that it exerts its effect through more direct risk factors. These factors are ‘proximate’ or ‘downstream’ determinants, whereas education and other social variables are ‘distal’ or ‘upstream’ determinants (Elstad 2000; Graham 2000). In the scheme below, three factors are hypothesised to mediate the effect of education on mortality: (a) health-related behaviours such as smoking and diet, (b) access to, use of, and quality of health services and (b) material living standards, including working and housing conditions.

The arrows on the left in the figure indicate that exposure to these factors is likely to depend on a person’s educational level. The arrows on the right indicate that exposure to these factors in turn may influence a person’s risk for mortality. The arrows in the middle indicate that, in addition, the three proximate determinants may interact and reinforce

each other. For example, poor material living standards may influence some health-related behaviours (e.g. inadequate diet due to poverty) and access to health care services.

Note that the scheme is simplified in important ways. First, not included are a number of other proximate determinants that may contribute to the effect of education on mortality. For example, recent research stresses the potential importance of psychosocial stress, and living conditions in childhood (Elstad 2000; Graham 2000). Second, not represented in the graph is the possibility of 'reverse causality' or 'health selection'. Some social factors, especially income and unemployment, may be related to health not only because poverty or unemployment affect health, but also because poor health influences the risk of becoming poor or unemployed (Bartley 1994).



Evidence for the contribution of health-related behaviours

The key question to explanatory research is to what extent specific 'proximate' determinants have contributed to the observed mortality differences according to education. Here, we will focus on the role of health-related behaviours. From the information that is presented in Part Two, there is some evidence to suggest that the higher mortality of those with lower education can to an important extent be attributed to some behavioural factors.

One example is smoking. The analysis of smoking prevalence showed that, during the entire 1990's, men and women with lower education generally smoked more often than those with higher education. As smoking is an important cause of premature mortality (Peto et al. 1992; Peto et al. 1996), these differences are likely to have contributed to educational differences in mortality. But was this contribution large? The analysis of cause-specific mortality suggest it does. Deaths from lung cancer occur more often in

lower educational groups. Among men, this difference in lung cancer mortality accounts for 7.5 percent of the observed difference in all-cause mortality between those with lower secondary education and those with university education. The true impact of smoking is likely to be much larger, as smoking affects many other causes of death, including circulatory diseases and chronic respiratory diseases. Both causes of death showed large educational differences, especially among men.

A similar reasoning applies to excessive drinking. Data from the Finbalt surveys in the 1990s suggests that low educated men drunk strong spirits as often as those with high education. However, recent research on alcohol-related mortality in former Soviet republics has suggested that binge drinking (large quantities at one occasion) as a specific pattern of alcohol contribution has contributed to high mortality levels in these countries (Chenet et al. 2001; Chenet et al. 1998). The high mortality from alcohol poisoning among low educated men in Estonia indicates that binge drinking (which could not be measured accurately in the Finbalt surveys) contributes to the higher mortality among low educated. The higher mortality from alcohol poisoning among low educated men does not present the full impact of excessive drinking, as alcohol abuse is implied in several other causes of death, including circulatory diseases, accidents, homicide and suicide (Leon et al. 1997; Mäkelä, Valkonen and Martelin 1997). All these causes show steep socio-economic gradients in Estonia in 1999–2000.

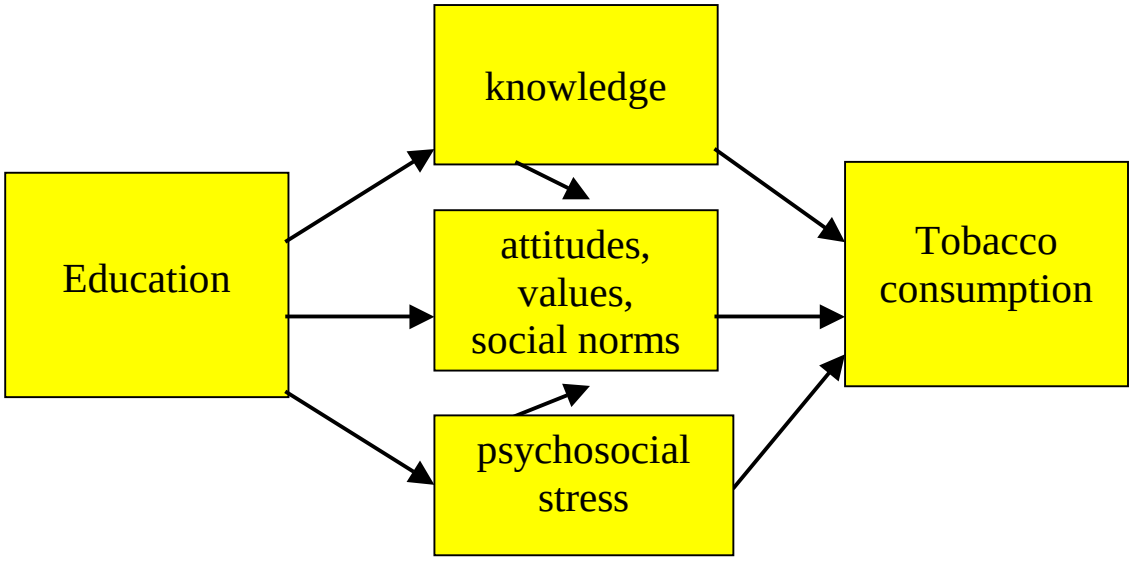
Thus, there is evidence to suggest that the higher mortality of low educated men in Estonia can in part be attributed to their higher consumption of tobacco and alcohol. Their precise contribution cannot yet be quantified on the basis of our descriptive evidence alone, but is likely to be substantial.

9.2. Educational differences in smoking

A conceptual framework

One of the questions raised by the preceding section is why smoking is more prevalent among men and women with lower educational levels. This question can be addressed by a conceptual framework similar to the one used above for explaining inequalities in mortality. The scheme below outlines some of the proximate determinants that may mediate the effect of education on smoking: (a) lack of knowledge on the health hazards of smoking, (b) attitudes, values and social norms that influence a persons smoking habits, and (c) psychosocial stress that may induce persons to start smoking or that inhibit quitting with smoking.

Naturally, more elaborated explanatory models could be developed. For example, models of behavioural change that have been applied in the field of health promotion and education (including factors like self efficacy) may be applied to explain why lower educated men and women smoke more. Such models would be valuable especially if inequalities in health are to be integrated in health promotion interventions.



Evidence on the role of psychosocial stress

The possible role of psychosocial factors has been often discussed in recent literature on social inequalities in health (Elstad 2000). Studies from England suggest that persons in disadvantaged social positions may find it more difficult to stop smoking, due to the higher levels of psychosocial stress they face in daily life, and the fewer resources they have to cope with stress (Graham 1993).

Our descriptive overview provides some evidence to support to the idea that higher psychosocial stress experienced by lower educated people has contributed to their higher rates of smoking. First, the higher levels of emotional distress and depression reported by men and women with lower education, confirm that they more often have to face stress in daily life. Second, it is remarkable that smoking levels quickly changed between 1990 and 1996, with a rapid decrease in the beginning of the 1990s, and an increase a few years later. This raise may reflect psychosocial factors related to Estonian independence, in which people first had hope but later faced uncertainties and stress. The fact that the later rise in smoking was strongest and most lasting among the lower educated groups, suggests that these groups were least equipped to cope with the problems caused by rapid social change.

We should add that psychosocial factors do not play an exclusive role, as they are embedded within a broader societal context. The increased levels of smoking during most of the 1990s, especially among the low educated, may also be connected to other factors such as the massive invasion of international tobacco companies, and the 24 hours sales of tobacco. In addition, social norms, values and knowledge have changed after independence, and high educated people could have had better access to new information and changed their behaviors accordingly. Thus, inequalities in smoking are likely to have

be influenced by a complex of factors, both at the societal and individual level, which can only be understood by further in-depth study.

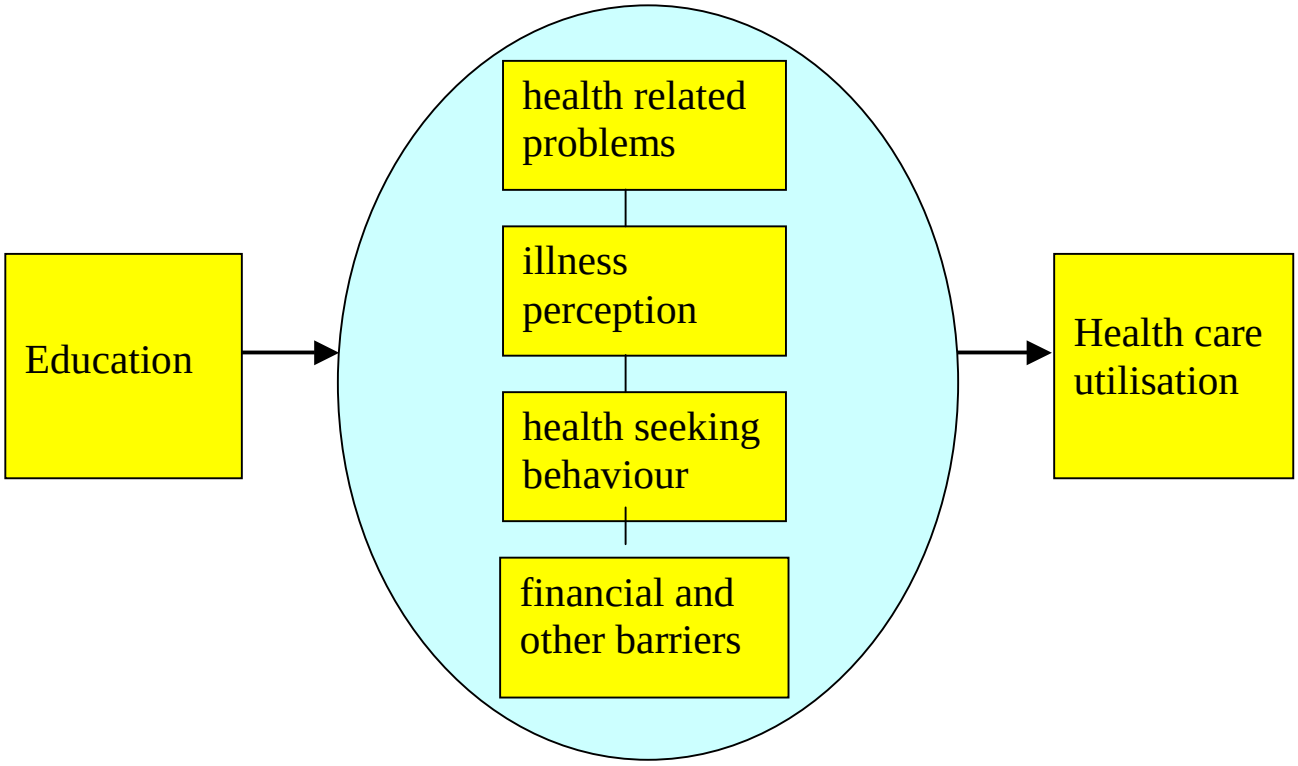
9.3 Educational differences in health care utilisation

A conceptual framework

Different patterns of contacting health professionals were observed for lower and higher educational groups. Of men and women with lower education, a larger proportion visited general practitioners or ambulatory care, but a smaller proportion visited specialists and dentists or used telephone consultations. How can these different utilisation patterns be explained? The conceptual framework presented below distinguishes a number of proximate determinants that may have contributed to these differences. As compared to higher educated people, those with low education may (a) face more health problems that require medical attention, (b) have a different perception of the health problems and the medical care that is needed, (c) employ different strategies for seeking medical care, and (d) more often face financial, cultural, geographical or other barriers to using health care services.

Again, more elaborated causal models could be developed. Such models may be derived from the different conceptual schemes that have been developed in the literature on determinants of health care utilisation.

Overview of different factors influencing educational differences in health care use



Evidence on the role of financial barriers

A question of particular importance to health care reform is whether lower socioeconomic groups have faced any financial barriers that may have prevented them from using health care services that they would otherwise have used. There are some indications that financial barriers may have contributed to inequalities in utilisation patterns.

First, if financial barriers play an important role, one would expect to find the largest differences in health care utilisation in relation to income and unemployment. This is indeed what is found. For example, unemployed (most of whom do not have health insurance and therefore have to pay all medical costs by themselves) show the lowest levels of utilisation of all kind of health services. Those with low income visit less often dentists and specialists, and have less telephone consultations – health care types where the costs to be paid by patient are the greatest.

Second, socioeconomic inequalities are especially large in the use of dental care. Visits to the dentist are not covered by the Health Insurance Fund in the majority of cases. Thus, financial barriers exist here and these may strongly affect utilisation patterns. Again, it is perhaps no coincidence that the lower visit rates (less than 20 percent) are observed for the lowest income group and the unemployed, instead of persons with low education.

We should emphasise, however, the inequalities according educational level are large as well, especially for specialist visits. This pattern reminds us that other factors may have contributed, and probably to a even larger extent, to the observed social differences in utilisation patterns. For example, the fact that higher educated people more often visit specialists is observed as well in countries with egalitarian health financing systems (Halldorsson, Kunst and Mackenbach 2002). This is likely to be due to a greater success of high educated people in negotiating for access to specialists.

10. Implications for policies

With this report, we aim to contribute to the development of equity-oriented policies in Estonia. Specific suggestions for action cannot yet be given. Before such actions can be defined, several steps should be taken, including (a) the normative evaluation of the social inequalities that are demonstrated in this report, (b) the identification of policies and interventions where particular attention may be given to specific social groups, (c) the evaluation of these policies and interventions in terms of their potential impact on the health situation of these groups, and (d) financial, organisational and other considerations that may affect the implementation of such policies and interventions.

We consider it beyond the scope of this report to give concrete advice on any of these areas. Instead, we would like to refer to policy-oriented documents that have been produced for similar purposes for the European Office of the WHO (Whitehead and Dahlgren 1991) and for the European Commission (Mackenbach and Bakker 2002), a the documents produced by committees installed by the governments of the United Kingdom (Acheson 1998), Sweden (Östlin and Diderichsen 2000) and the Netherlands (Health 2001b).

With the present report, we aimed to contribute to equity-oriented policies by providing an empirical basis for further discussion, especially in areas (a) and (b) above. In this chapter, we would like to make a few more observations that are based in part on the descriptive evidence presented in this report, and in part on insights from explanatory studies carried out in other European countries.

First, in spite of our main focus on social inequalities in health, we would like to remark that the overall health of the Estonian population at large is poor as compared to most western and northern European countries (Bobak and Marmot 1996; Carlson 1998; Marmot and Bobak 2000). We recognise that bridging this international gap is perhaps the key challenge to the health sector in Estonia. We think that equity-oriented policies can considerably help to achieve this more overall challenge.

Observation 1. Improving the health of the lower groups up to the level of the highest group would greatly improve the health situation of the Estonian population at large.

The table below presents estimates of the degree to which the prevalence of self-reported health problems would be reduced if all income groups would have the same level of health as those in the upper income quartile. This measure is called the “Population Attributable Risk” (Mackenbach and Kunst 1997). The results show that the overall prevalence of health problems would decrease substantially (often 40 percent or more) by eliminating income-related inequalities in health. Naturally, these estimates are hypothetical as a complete elimination of these inequalities is unrealistic. None the less,

they illustrate the large impact that social inequalities have on population health. In addition, they underline that the health of the Estonian population at large may greatly benefit when efforts are made to reach specific disadvantaged groups in particular.

Table Proportional reduction in the overall prevalence of health problems to be achieved by improving the health of all persons to the level of those with high household income.

Health indicator	Prevalence rate (per 100 respondents)		
	Observed for total population	Expected if everyone would have rate of upper income group	Percentage reduction
'Bad' general health	12.7	7.3	43
Any long standing problem	56.8	45.4	20
Depression	11.4	6.8	40
Emotional distress	13.6	7.8	43

Observation 2. There is some evidence to suggest that inequalities in the health care sector may have contributed to inequalities in mortality and morbidity

In this report, we showed important social variations in the utilisation of different health care services. Uncertain is to what extent people from different social groups also experienced differences in the quality of care received, and whether these differences could have contributed to inequalities in health. This possibility cannot be excluded. For example, important inequalities were observed in mortality from causes of death that are at least in part amenable to medical intervention, including breast cancer and ischaemic heart disease. For example, Finnish study showed that inequalities in the latter disease could in part be attributed to socially unequal application of new techniques of cardiac surgery (Keskimäki, Salinto and Aro 1995; Valkonen et al. 2000). It is therefore important to be alert for inequalities to arise within the health care system. Patient fees and co-payments in health sector should be considered carefully, as they may affect the less advantaged socio-economic groups in particular. This in particular applies to the different medicines and health care services where co-payments already exist or are soon to be expected after new health care reforms.

Despite the possible role of medical care, it is evident that most of the social inequalities in health cannot be remedied by health care services, and that they should be addressed by preventive and inter-sectoral policies.

Observation 3. The effects of social disadvantage on health cannot be remedied by interventions on specific risk factors only

An important implication of the evidence presented in this report is that inequalities in health may be addressed by interventions and policies that focus on specific risk factors, such as smoking and alcohol consumption. Even though these factors may indeed be important focal points for interventions, we should stress that such interventions should also take into account the social situation of the target populations. For example, a British study showed that poor women smoke more often in part because that is a way they can cope with the high levels of stress due to living in poverty (Graham 1993). If the same applies to Estonia, anti-smoking campaigns will probably sort limited effect among poor women if no attention is given to their (coping with) stressful living conditions. Improving living conditions and educational opportunities is therefore an important issue for public health. We recognise that social and economic policies may be difficult to influence from the health sector, but even small effects may considerably support preventive interventions made in other areas.

Observation 4. Although social inequalities in health cannot be eliminated, there is a potential for substantial reduction

Our data on changes in inequalities in mortality between 1989 and 2000 illustrate that these inequalities are a persistent phenomenon. The experience of both Estonia and other countries suggest that it would be illusionary to expect that these inequalities can ever be eliminated (Martikainen and Valkonen 1999). However, they might be reduced substantially. Just as inequalities in mortality increased during the 1990s, they might become smaller again in the future. Similarly, there is no reason to think why situation in Estonia cannot gradually move towards the situation in Finland and Norway, where inequalities in mortality are substantially smaller (see figure 2 in chapter 2). These insights are important when formulating quantitative targets for reducing social inequalities in health. These targets should be ambitious but realistic (Van Herten and Van de Water 2000). Ambitious targets may perhaps be formulated when targets are set for specific risk factors, as our results showed that inequalities in health-related behaviours may change strongly within a short term. On the other hand, targets need to be more modest when referring to inequalities in mortality and morbidity. The WHO target on a 25 percent reduction in 2020 (Organisation 1999) sets the upper limit to what may reasonably be expected. Although these targets may seem modest, it is important to recognise that even a small reduction in social inequalities in mortality may imply saving many lives.

11. Future research and monitoring

The objective of this chapter is to develop recommendations for further research and monitoring relevant to inequalities in health in Estonia. Recommendations will be given on four areas: (1) descriptive research, (2) explanatory research, (3) monitoring and policy evaluation and (4) improving data availability. Each of these areas are discussed in the sections below. Each section will come up with recommendation for actions on a short term, i.e. the next 1 or 2 years.

11.1. Further descriptive research

In the present study, significant steps were made towards mapping social inequalities in health in Estonia. Even though health inequalities are now documented for several of the key areas in the field of public health, some important areas are not yet covered. Further descriptive work is needed to demonstrate whether inequalities exist in these areas as well, and to document these inequalities in detail.

Areas of further research

1. Children and adolescents
Inequalities in health among children and adolescents are especially important for several reasons, among others because the situation at early life may strongly influence a person's health over the entire life course (Kuh and Ben-Shlomo 1997; Vågerö and Leon 1994). In the present study, inequalities at the younger ages were documented only partially. We were able to study mortality among children in relation to ethnicity and place of residence, and health behaviour of young adults in relationship to their education. Further study is needed to document possible inequalities in (a) morbidity among children (b) health behaviour among adolescents and (c) health care utilisation for infants, children and adolescents. Possibilities for further descriptive work are offered by for example recent health surveys among school-aged children.

2. Specific diseases
The analysis of mortality showed large variations between causes of death in their patterns by education, ethnicity and place of residence. Further research may aim to describe inequalities in specific diseases in more detail. For example, inequalities in infectious disease mortality were found to be relatively large and call for further analysis. Such analysis may aim to describe inequalities in disease incidence, prevalence and prognosis, as well as specific factors influencing the disease process. Diseases-specific registries may be utilised to this end.

3. Health care utilisation
We observed that the frequency of utilisation of health care services varied dramatically between subgroups of the Estonian population, and especially according to socio-economic characteristics (education, income, unemployment). A fuller picture would be

obtained by not only looking at utilisation rates, but by also looking at the quality of care received, satisfaction with care, and costs incurred. In-depth insights may be obtained especially by looking at health care utilisation and costs in relation to specific diseases and diagnoses. The Health Insurance Fund database is a data source that offers excellent opportunities for such analyses.

4. Geographic inequalities
Geographical differences are given much attention throughout this report. Differences between rural and urban areas have been studied for all outcome indicators, while special efforts were made to document differences in health care utilisation between regions or counties. However, the most important inequalities would probably be observed at a level that we did not yet consider: the level of small areas, including deprived neighbourhoods within cities, or backward rural areas. Data at this geographical level perhaps may reveal important inequalities, e.g. in health care utilisation, and in addition provide important information to local health sector policies.

Recommendations for actions on short term

We recommend that the present study is followed by a second descriptive study that (a) complements the present report by focussing on some of the additional areas mentioned above, (b) again utilises existing sources of information and (c) aim to provide, together with this report, an thorough documentation on inequalities in health, health risks and health care utilisation in Estonia at the turn of the 21st century.

11.2. Explanatory research

The often large inequalities that are documented in this report raise questions on underlying mechanisms, and on possibilities for interventions to reduce health inequalities. In chapters 9 and 10, we suggested potential explanations for the observed inequalities, and based on these explanations we formulated some implications for health sector policies. However, the explanations given were mostly hypothetical, and these hypotheses wait for testing in further empirical research. Below we outline some of the most important areas.

Areas of research

1. Poverty and health
The patterns observed in this study suggest that poverty is strongly associated with both health, health-related behaviour and patterns of health care utilisation. These associations suggest that poverty is a main determinant of health, and that interventions aimed to alleviate poverty may directly bring benefit the health of those concerned. However, there is yet much uncertainty about the causal effects of poverty on health (or *vice versa*) and the precise mechanisms that underlie any such effects (Elstad 2000). Further insights can be obtained in research that utilises more direct indicators of material living standards

(e.g. experiencing financial problems) and that aim to assess the relative importance of poverty as compared to for example education and working conditions. Several data sources, especially some interview surveys, can be used to further explore these links.

2. Inequalities in addictive behaviour
Large and widening inequalities were observed in both smoking and the consumption of strong spirits. Both types of addictive behaviour were more prevalent among lower socioeconomic groups and among Russians. The precise mechanisms underlying these inequalities involve both cultural or personal factors (attitudes, beliefs, locus of control, psychosocial stress) and the adverse living and working conditions faced by those in lower social groups. Further insights into these mechanisms can be obtained by in-depth studies (quantitative and/or qualitative) and are likely to be of great value to preventive and other policies aimed at tackling addictive behaviour.

3. Socio-economic inequalities in health care utilisation
We observed that the utilisation of most types of health care services strongly varies between socio-economic groups, with lower utilisation rates observed especially among the unemployed and the poor. This findings suggests important inequities in the accessibility or acceptability of health care services in Estonia. However, uncertain is whether these barriers are financial or of other nature (e.g. language problems or geographic distance). In addition, other problems may also play a role, such as inadequate health seeking behaviour. A main challenge to explanatory research is therefore to disentangle the roles played by different factors.

Recommendations for action on short term

As a general rule, explanatory research on the field of health inequalities is costly and time-consuming. In order to exploit available resources maximally over the forthcoming years, we recommend to commission one or more explorative studies that (a) determine the main questions to be addressed, (b) develop hypotheses utilising insights obtained by studies in other European countries, (c) explore the analytical possibilities offered by data sources in Estonia and (d) develop recommendations for future explanatory research.

11.3. Monitoring and policy evaluation

In the present study we described inequalities in health indicators for a recent period and, where possible, assessed changes in inequalities during the 1990s. When time passes, these descriptions will have to be updated and the latest trends will have to be re-assessed. Continued monitoring of inequalities in health, health risks and health services utilisation is needed especially when new programs and policies will be introduced and will have to be evaluated for their effect on disadvantaged population groups.

Areas of monitoring

1. Updating descriptions.
Descriptions of health inequalities, such as those performed in this report and recommended in section 11.1 for the next years, will need to be made at regular intervals, as information from past studies may become obsolete. The frequency of updating depends on the outcome indicator considered and whether or not substantial changes are expected. In general, inequalities in health outcomes can be monitored by updating the evidence about each ten years. However, as recent trends in some health-related behaviour illustrate, some changes may evolve quickly and therefore need to be monitored at shorter time intervals.

2. Assessing recent changes over time
An important purpose of monitoring is to determine whether inequalities in health and other outcomes tend to increase or decrease. In the present study, we have been able to assess changes in Estonia during the 1990s with respect to health-related behaviours and cause-specific mortality only. In the forthcoming years, changes can be monitored in much more detail, and include for example social inequalities in health care services utilisation. When inequalities are monitored for more indicators and for a longer span of time, this in addition provides the opportunity to assess interrelationships between trends. For example, such data may be used to determine whether the widening of social inequalities in smoking that occurred since about 1994 will be followed by a widening of inequalities in smoking-related mortality in first decades of 21st century. Such analyses will contribute towards a better understanding of recent trends, and help to determine what trends may be expected to occur in the near future.

3. Evaluating policies
Health sector reforms in Estonia may have large (positive or negative) effects on the health, health risks and service utilisation of disadvantaged groups. Therefore, the effects of specific policies or programs may need to be assessed not only for the Estonian population at large, but also for disadvantaged subgroups in particular. Differential effects of policies may be monitored within the framework of a more general system of monitoring of health inequalities. In addition, health impact assessments (Parry and Stevens 2001) may need to include information on socio-demographic characteristics of the target population. Evaluation of differential effects of policies are not only important from an equity perspective, but may also help to assess more accurately the effects of health policies at large. An example is offered by our analysis of regional differences health care utilisation, which showed suggested an impact of health care reforms on regional patterns of utilisation of primary care.

Recommendations for action on short term

We recommend that the subject of social inequality should be fully integrated in systems of health monitoring and of health impact assessment. Special efforts need to be made, preferably in a pilot study, to (a) identify outcome indicators and health policies for which inequalities need to be taken into account, (b) specify the population groups that

need to be distinguished and the social indicators that are to be used to this end, and (c) identify the data sources that can be utilised to evaluate the effects of policies on the selected population groups.

11.4. Improving data availability

Essential to future research and monitoring of health inequalities is that the availability of data is improved significantly and enduringly. Even though the existing data sources can be exploited in more depth that was possible within the current project, future research and monitoring efforts will soon be confronted by the limitations that the existing data sources present. Fortunately, the availability of data can be improved significantly. Even though the data situation of Estonia is not much different than in many other European countries, including most EU member states, the situation in countries like Sweden and Finland show that there is room for further improvement (Kunst et al. 2001). Given this situation, it is essential to develop two sources of information: a system of regular national interview surveys, and linkage between individual records from different data registries. Both areas will be discussed below.

Areas of improvement

1. National interview surveys
Health interview surveys offer a rich source of data for describing social inequalities in health, health risks and health care utilisation (Cavelaars et al. 1998; Lahelma et al. 2001; Lundberg, Diderichsen and Yngwe 2001; Mackenbach et al. 1997). In this report, three interview or postal surveys were utilised (the first National Health Interview Survey, Norbalt and Finbalt) and each survey was found to be able to enable detailed and plausible descriptions of health inequalities. The Finbalt survey in addition showed that interview surveys can be used to monitor changes over time when these surveys are repeated at regular intervals. Given this experience, as well as similar experiences in other European countries (Hupkens, van den Berg and van der Zee 1999), we strongly recommend to develop a system of regular health interview surveys. This system should secure that (a) surveys are held about each five years, (b) survey design and questionnaires are highly comparable over time and (c) sample sizes are large enough to analyse regional differences.

2. Data linkage
A perhaps even more important step forwards would be made with the linkage at the individual level between records from different data registries. The importance of data registries for the monitoring of population health and health inequalities is illustrated by our analysis of both the cause-of-death database and the Health Insurance Fund database. These data sources made it possible to give accurate and detailed descriptions of inequalities in mortality and health care utilisation respectively. Up to now, however, both data sources are seriously limited due to the lack of information, at the level of individual persons, of information on education, income and other socio-demographic

characteristics (see also our technical document, section 6.2). However, this information could in principle be made available by linking records of these data bases to individual records from the population census. Similarly, if population census records would be linked at the individual level to for example the cancer registry and birth registry, these registers could be used to describe in much detail inequalities in specific cancers (including their incidence, recovery and treatment) and birth (including information on pregnancy, outcomes and medical attention). Linkage between different registries is often possible in technical terms, but legal restrictions and concerns of privacy need to be dealt with carefully.

Recommendations for action on short term

We strong support initiatives aimed to develop a system of regular national health interview surveys. We in addition recommend that linkage between registries are actively explored and stimulated. To this end, a feasibility study may be set up with the aim to (a) list all potential benefits from data linkage, (b) explore the technical, financial and legal obstacles to data linkage and (c) develop a plan of action for overcoming these obstacles and achieve data linkage as soon as possible.

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