

Since the early 1990s, the Estonian health sector has been undergoing a number of reforms. This thesis focuses on the outcomes of the reforms from the population's perspective by analysing the access to the health services, the acceptability and satisfaction with these services as well as the impact of the reforms on the health of the population.

The empirical data in the thesis were gathered through reviews of official health statistics and population surveys in 1998, 2002 and 2005 based on face-to-face interviews using structured questionnaires.

The findings show that the development of the Estonian health system has been heterogeneous. In general, the main achievements of the reforms in the Estonian health sector are related to the quality – the accessibility and the responsiveness – of the health system. The main limitations of the Estonian health reforms are related to the health outcomes. The reforms implemented within the health care system, focusing on the financing and organisation of health services, have been rather successful. However, in the field of public health, where the implementation of changes requires long-term planning and intersectoral co-operation, the success in terms of improvements in the population's health has been rather modest. A successful health reform needs support from the society – the public, the politicians and the professionals. To implement a reform, there should be an understanding of how the planned changes will affect the different levels of the health system as well as the health outcomes. This study shows that it is possible to evaluate health reforms from the perspective of the population, trying to understand what is important for the people concerned.

Health reforms in Estonia

– acceptability, satisfaction and impact

KAJA PÕLLUSTE

Doctoral thesis at the Nordic School of Public Health,
Göteborg, Sweden, 2007

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NHV
Nordic School
of Public Health

Health reforms in Estonia – acceptability, satisfaction and impact
Doctoral thesis in public health

© Kaja Põlluste

The Nordic School of Public Health
Box 12133
402 42 Göteborg
Sweden
www.nhv.se

Print: Tartu University Press

ISBN 978–91–85721–00–9
ISSN 0283–1961

HEALTH REFORMS IN ESTONIA – ACCEPTABILITY, SATISFACTION AND IMPACT

Abstract

Since the early 1990s, the Estonian health sector has been undergoing a number of reforms. At the same time, a number of legislative acts have also been established, forming a new legal basis for the health system. The introduction of a social health insurance in 1992 was the first reform in the Estonian health sector reorganisation, followed by a primary health care (PHC) reform, a hospital reform and a number of public health reforms.

The **aim** of this thesis is to analyse these health sector reforms in Estonia, focusing on the outcomes of the health system from the population's perspective. Proceeding from this general aim, the **specific objectives** of the thesis are as follows:

- 1) To analyse the PHC reform in terms of the access to the health services and the acceptability and satisfaction with these services.
- 2) To analyse the health insurance reform in terms of the acceptability and satisfaction with the new system.
- 3) To analyse the public health reforms and their impact on the health of the population.

The empirical data were gathered with the following research **methods**: reviews of official health statistics and population surveys in 1998, 2002 and 2005 based on face-to-face interviews using structured questionnaires.

The **main results** can be summarised in relation to the objectives of the thesis:

- 1) The *primary health care reform* has been implemented and most of the objectives have been achieved. In general, people accept the changes in the PHC system and the satisfaction with the family doctors has increased. Access to the PHC services is good. Based on the results of a population study in 2002 and 2005, more than half of the respondents could see the family doctor on the same day they made an appointment. Almost a half of the respondents (49%) were satisfied with the access to the health services. Satisfaction with the PHC services and family doctors were found to have positive effects on satisfaction with access to health services. Although people with chronic conditions were less satisfied with the access to the health services they did not experience organisational barriers in their access to such services.
- 2) The *health insurance reform* has been implemented and a high level of financial protection has been maintained. The solidarity principle of the health insurance system guarantees access to health services for all the insured people. About half of the population is satisfied with the present system. Compared to 2002, the percentage of satisfied people has increased in 2005, while the percentage of very dissatisfied persons has decreased. The most important predictor of satisfaction with the health insurance was the satisfaction with the existing PHC system. The satisfaction with the health insurance was higher in 2002 as well as 2005 among those respondents who had visited a family doctor or a specialist or were admitted in a hospital during the last 12 months before the survey, but lower among those who had visited a dentist. A small majority preferred the solidarity principles and comprehensive financing of health service by health insurance. The attitudes regarding financing principles were related to the personal contacts with the health services. The respondents who had used the PHC or ambulance services preferred a

more comprehensive financing of health services, while those who had had contacts with a specialists or dentists would prefer less comprehensive financing if the waiting lists were short. More than three quarters of the respondents were informed about their rights concerning the access to the health services. Personal contacts with family doctors and specialists had positive impact on the level of awareness.

- 3) Some progress has been made in connection with the *public health reforms*. A number of national programs and projects to prevent the most essential health risks have been initiated. As a result, there is some evidence of a positive impact on the health of the population – positive trends in dietary habits and decreasing infant mortality, number of abortions, and incidences of sexually transmitted infections and tuberculosis. At the same time, however, the proportion of smokers and consumers of strong alcohol has not decreased. Moreover, there has been an explosive increase of new cases of HIV-infections in 2000, which is one of the most serious public health problems today. Greater progress has been achieved in the areas where health promotion and health education activities have been supported by political decisions to make a healthy choice for the population easier. However, a comprehensive national health policy and strategy is still lacking in Estonia. In public health, this is evidenced by a lack of long-term planning and understanding of the significance of intersectoral co-operation.

Discussion. Up to now, the major reforms in the Estonian health system have been implemented. However, the environment is changing and the health system has to respond to these changes. The next step should therefore be to reach a public agreement about the common values of the health system and setting long-term health policy goals. To improve the effectiveness of policy implementation and reform, the importance of systematic research and evaluation should also be stressed.

Key words: Estonia, health reforms, population health, access to health services, acceptability, satisfaction.

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ISBN 978–91–85721–00–9

ISSN 0283–1961

TERVISHOIUREFORMID EESTIS – VASTUVÕETAVUS, RAHULOLU JA MÕJU RAHVA TERVISELE

Sisukokkuvõte

Alates 1990ndate aastate algusest on Eesti tervishoiusektoris toimunud hulk reforme. Vastu on võetud hulk õigusakte, millega uus tervishoiusüsteem on saanud õigusliku aluse. Esimene tervishoiusektori reform algas 1992. aastal, kui Eestis mindi üle kohustuslikule ravikindlustusele, sellele järgnesid muutused tervishoiu korralduses, perearstireform, haiglareform ning rida muudatusi rahvatervis valdkonnas.

Töö **üldeesmärgiks** on analüüsida Eesti tervishoiureformide tulemuslikkust, kesken- dudes inimeste jaoks olulistele tulemustele. Töö **alaeesmärgid** on sõnastatud järgmiselt:

- 1) Analüüsida perearstisüsteemi vastuvõetavust elanikkonnale, tervishoiuteenuste kättesaadavust ja inimeste rahulolu osutatud teenustega;
- 2) Analüüsida ravikindlustuse vastuvõetavust ja inimeste rahulolu kohustusliku ravi- kindlustusega;
- 3) Analüüsida muutusi rahvatervise valdkonnas ja nende muutuste mõju rahva tervi- sele;

Tööks vajalikud andmed koguti riikliku tervisestatistika analüüsi ja elanikkonna küsitluste abil. Küsitlused toimusid 1998., 2002., ja 2005. aastal. Küsitlused toimusid kasutades struktureeritud küsimustikke kasutades personaalintervjuude meetodil.

Olulisemad tulemused:

- 1) *Perearstireform* on rakendunud ja püstitatud eesmärgid on suures osas saavutatud. Inimeste jaoks on muutused üldarstiabi korralduses enamasti olnud vastuvõetavad ja rahulolu perearstidega on aasta-aastalt suurenenud. Üldarstiabiteenused on hästi kättesaadavad. 2002. ja 2005. aasta küsitluste andmetel pääsesid rohkem kui pooled küsitletutest perearsti vastuvõtule samal päeval kui nad soovisid. Ligikaudu pooled (49%) küsitletutest olid tervishoiuteenuste kättesaadavusega rahul, seda mõjutas eeskätt rahulolu perearstide ja üldarstiabi korraldusega. Kuigi krooniliste haigustega inimesed olid tervishoiuteenuste kättesaadavusega vähem rahul kui teised, ei esi- nenud nende hinnangul organisatsioonilisi takistusi arstide poole pöördumisel.
- 2) Solidaarsuspõhimõtete rakendunud *ravikindlustussüsteem* tagab kõigile kindlus- tatutele tervishoiuteenuste kättesaadavuse. Ligikaudu pooled küsitletutest on olemas- oleva süsteemiga rahul. Võrreldes 2002. aastaga on 2005. aastal rahulolevate ini- meste osatähtsus suurenenud ning väga rahulolematute osatähtsus vähenenud. Rahulolu ravikindlustusega mõjutas kõige enam see, kuivõrd oldi rahul perearsti- süsteemiga. Nii 2002. kui ka 2005. aastal olid ravikindlustusega rahul enam need inimesed, kes viimase 12 kuu jooksul olid külastanud pere- või eriarsti, vähem rahul aga hambaarsti külastanud inimesed. Natuke rohkem kui pooled küsitletutest eelis- tasid olukorda, kus järjekord võib olla pikk, kuid ravikindlustuse poolt finantseeri- takse kõiki tervishoiuteenuseid. Eelistused olid seotud sellega, missugused olid olnud varasemad kokkupuuted tervishoiuteenuste osutamisega. Inimesed, kes olid käinud perearsti juures või kasutanud kiirabi, eelistasid enam solidaarsuspõhimõtete laialdast rakendamist. Eriarsti ja hambaarsti külastanud eelistasid pigem olukorda, kus ravikindlustuse eelarvest finantseeritakse ainult väike hulk teenuseid, kuid järjekorrad oleksid lühikesed. Rohkem kui kolm neljandikku küsitletutest olid teadlikud oma õigustest seoses tervishoiuteenuste kättesaadavusega, informeeritusele aitasid kaasa isiklikud kontaktid perearsti ja eriarstidega.

3) Mõningast edu on saavutatud ka *rahvatervise* valdkonnas. Alates 1990ndate aastate algusest on ellu kutsutud mitmesuguseid riiklikke programme ja projekte, mis on suunatud olulisemate terviseriskide ennetamisele. Selle tulemusena on ilmnunud mõningad positiivsed muutused – inimeste toimumisharjumused on muutunud tervislikumaks, imikusuremus ja abortide arv on vähenenud, samuti on vähenenud nakatumine tuberkuloosi ja sugulisel teel levivate haigustesse. Kuid samal ajal ei ole vähenenud suitsetajate ja kanget alkoholi tarbivate inimeste osatähtsus täiskasvanud elanikkonna hulgas. 2000. aastal suurenes plahvatuslikult uute HIV-nakkuste arv, mis on käesoleva ajani üheks olulisemaks rahvatervise probleemiks. Suuremat edu on saavutatud nendes valdkondades, kus tervise edendamist ja tervisekasvatust on toetanud poliitilised otsused, tehes tervislikuma valiku inimesele lihtsamaks. Pikaajalise planeerimise ja intersektoraalse koostöö olulisuse mõistmist rahva tervise parandamisel aitaks toetada rahvastiku tervisepoliitika ja -strateegia vastuvõtmine.

Kokkuvõte. Käesolevaks ajaks on suurem osa reforme eesti tervishoius teostunud. Kuid ümbritsev keskkond muutub pidevalt ja tervishoiusüsteem peab toimima kooskõlas nende muutustega. Oluline on saavutada kokkulepe, missugused väärtused on tervisepoliitika aluseks ja seada pikaajalised tervisepoliitika eesmärgid. Suurendamaks tervisehoiureformide tulemuslikkust on samuti oluline reformide süstemaatiline analüüs ja hindamine.

Võtmesõnad: Eesti, tervishoiureformid, rahva tervis, tervishoiuteenuste kättesaadavus, vastuvõetavus, rahulolu.

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ISBN 978–91–85721–00–9 ISSN 0283–1961

LIST OF ORIGINAL PUBLICATIONS

This thesis is based on the following seven papers, which will be referred to in the text by their Roman numerals I to VII:

- I** **Põlluste K**, Kalda R, Lember M. Primary health care system in transition: patients' experience. *Int J Qual Health Care* 2000; 12:503–9.
- II** Kalda R, **Põlluste K**, Lember M. Patient satisfaction with care is associated with personal choice of physician. *Health Policy* 2003; 64:55–62.
- III** **Põlluste K**, Kalda R, Lember M. Evaluation of Primary Health Care Reform in Estonia from Patients' Perspective: Acceptability and Satisfaction. *Croat Med J* 2004; 45: 582–7.
- IV** Kalda R, **Põlluste K**, Maaros H-I, Lember M. Patients' Opinions on Family Doctor Accessibility in Estonia. *Croat Med J* 2004; 45:578–81.
- V** **Põlluste K**, Männik G, Axelsson R. Public health reforms in Estonia: impact on the health of the population. *BMJ*, 2005; 331:210–3.
- VI** **Põlluste K**, Kalda R, Lember M. Satisfaction with the access to the health services of the people with chronic conditions in Estonia, *Health Policy*, 2006; doi: 10.1016/j.healthpol.2006.08.004.
- VII** **Põlluste K**, Männik G, Axelsson R. Satisfaction with social health insurance and awareness of rights among the Estonian population (submitted).

ABBREVIATIONS

CEE countries – Central and Eastern European countries

EHIF – Estonian Health Insurance Fund

FD – family doctor

HIA – Health Insurance Act

HSOA – Health Services Organisation Act

MoSA – Ministry of Social Affairs

PHA – Public Health Act

PHC – primary health care

WHO – World Health Organisation

WB – World Bank

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INTRODUCTION

In the late 1980s and early 1990s, all the Central and Eastern European (CEE) countries experienced great changes in their political and economic systems. Beside these changes, there were also great changes initiated in their health sectors. In Estonia, the planning of health reforms started already before the restoration of independence. As a legacy from the Soviet period, the Estonian health system faced a number of problems: an over-capacity of physicians, an excessive hospital network and a specialist-oriented primary care, people's dissatisfaction with the access to the health services, but also worsening population health indicators.

The first reforms in the health sector were introduced in order to move from the highly centralised Semashko system to a more decentralised health system based mainly on social health insurance. The introduction of a new concept of public health and the implementation of a primary health care (PHC) reform in the middle of the 1990s, as well as a restructuring the hospital system in the early 2000s, continued the transformation of the Estonian health system. The overall goals of these reforms were to increase the efficiency and effectiveness of the health system, but also to improve the health of the population and guarantee a better access to the health services.

Today, the major reforms in the Estonian health sector have all been implemented. The progress of the PHC reform, focusing on the introduction of family practice, has been studied previously (Lember 1998, Kalda 2001). However, the outcomes of the health system, that is how the reforms have responded to the needs of the population, are still insufficiently studied. Population surveys to find out people's opinion about the health services were introduced in the late 1990s. The results of these surveys, supported by national health statistics, are used in the present study in order to analyse the effects of the health sector reforms on the population's health, the access to the health services, as well as the satisfaction with and acceptability of the health services provided.

1 HEALTH REFORMS IN CENTRAL AND EASTERN EUROPEAN COUNTRIES

1.1 Reasons of health reforms in CEE countries

Many European countries have been reforming their health systems in recent years, looking for new policy instruments, and trying to find the most effective way of financing and organising the delivery of health services. A number of demographic and social factors have influenced the health policies behind the reforms, most of all the ageing of population and the corresponding decline in the proportion of the working population. This will increase the demand for health services, and at the same time limit the ability of the health services to respond to this demand. Advances in medical sciences and implementation of new technologies will also lead to additional demands and increasing costs. Important predictors of health reforms also include higher expectations of patients and the population at large (Saltman *et al* 1998).

The formulation of health policies is influenced by factors outside the health sector as well as pressures related to the existing health system and the population's health. According to Frenk (1994), it is possible to identify four groups of reasons, which may lead to health sector reform: economic, political, ideological, and epidemiological. Since the mid 1970s, most European countries have experienced increases in health care costs. Different measures have therefore been launched in response to cost pressures, and organisational arrangements that were originally conceived to improve equity, access and health status have increasingly been constrained by concerns for effective cost containment (Saltman & Figueras 1997).

The great changes in the political and economic systems of the Central and Eastern European countries in the late 1980s and the early 1990s led to reforms also in their national health systems. As pointed out in several studies, the reforms in the CEE countries have all drawn on the same basic reasons: the funding problems of the centralised health systems, the over-capacity of human resources, the physicians' dissatisfaction with their income, and the people's dissatisfaction with the access to the health services (Krizova & Šimek 2000). At the same time, health indicators have demonstrated a continuous worsening of the health status in the CEE countries, and the disparity in life expectancy and mortality between the countries in the Eastern and Western parts of Europe has been continuously growing. In response to this situation, in the early 1990s, the health policies in most of the CEE countries were targeted towards decentralisation, privatisation and moving away from state financed systems towards private or public health insurance systems (Sheahan 1995, Earl-Slater 1996, Bara & Heuvel 2002). The common key words in the health systems of the CEE countries have been implementation of primary health care reform and establishment of a health insurance system (Deppe & Oreskovic 1996, Bärnighausen & Sauerborn 2002, Švab *et al* 2004). All of these countries have

also started to restructure their hospital system in order to decrease the number of hospital beds (Healy & McKee 2002a).

1.2 Progress of the health reforms

The priorities of the health sector reforms in the CEE countries have been described as follows. Priority setting should be driven by new democratic values. New systems must be people-centred and oriented towards the needs of individual patients or specific groups of patients, and sensitive to inequalities, unemployment and social poverty. Reforms should be health focused, evidence-based and oriented towards primary health care (Oreskovic 1998). These priorities correspond to the common understanding of the main objectives and overall requirements of health systems: universal and equal access for all members of the society, effective care for better health outcomes, and responsiveness to patient concerns (Goddard & Smith 2001, Crombie & Davies 2002, Saltman *et al* 2002).

The right to health care or health protection is in most of these countries a constitutional right of every citizen, and amending the constitution has therefore been a first step in the reform of their health systems (Križova & Šimek 2000). Introduction of legislation on health insurance has provided a legal basis for changing the principles of financing health services, and a health financing reform was also one of the first basic reforms introduced in the early 1990s in all the CEE countries that had been parts of the former Soviet Union. Replacing the budget based financing with a social health insurance together with decentralisation, privatisation and organisational reforms were seen as possibilities to mobilise and allocate the existing resources equitably and efficiently to meet the growing need for health services (Preker *et al* 2002, Bärnighausen & Sauerborn 2002).

Social health insurance has two main characteristics: contributions are based on ability to pay, and the independent quasi-public or public sickness funds provide a separate and transparent system for the flow of funds from the contributors to the sickness funds and from there to the providers of the health services. Contributions are made by employers and employees, while people out of employment are supported by the government or by special funds. In countries where social health insurance has been introduced, it is a compulsory system for the whole population. In some Western European countries, for example Austria, Belgium and France, the population coverage by health insurance is 99–100% (Normand & Busse 2002).

In the early 1990s, most of the CEE and former Soviet Bloc countries started to build up health care financing systems that were characterised by high levels of financial and risk protection and equity. A decade later, however, three different developments can be observed (Preker *et al* 2002):

- One group of countries (e.g. Croatia, the Czech Republic, Hungary and Slovenia) have implemented early reforms consistently and maintained a high level of financial protection. These countries have moved to the so-called Bismarck model, where health care is financed mainly by payroll taxes.
- A second group of countries (e.g. Russia and Albania) have experienced deterioration in financial protection and equity. Reforms have been initiated more recently but have been less comprehensive. In financing health care, general taxation is dominating, and payroll taxes have been introduced only as a supplementary source. Some of these countries (e.g. Latvia and Poland) have opted for the Beveridge model, where health care is financed only by taxation and out-of-pocket payments. As argued by Pavlova *et al* (2000), in an economic recession the implementation of health insurance cannot be socially beneficial and may be infeasible due to insufficient funds.
- In a third group of countries (e.g. Georgia, Moldova, Kyrgyzstan and Azerbaijan), public financing has collapsed and out-of-pocket payments have become the dominant mode of health financing. In these countries, the financial protection against the cost of illness has severely decreased.

An important development in the CEE countries has been the implementation of PHC reforms, moving from a system of separate outpatient clinics for adults, children and women to a system of health centres, which serve the general population irrespective of age and sex. The ideology of these reforms comes from the Alma-Ata Declaration (WHO 1978), which emphasises the importance of comprehensive, universal, equitable and affordable health care services. However, the development of general practice has varied between the different countries (WHO 1999). For example, Švab *et al* (2004) have found that in 14 CEE countries family medicine is widely recognised as a specific discipline, and in 13 of them there are existing programmes of vocational training for family medicine.

Another important development in the health systems of the CEE countries has been the restructuring of hospitals. All of these countries have had an excessive hospital network, and the first step of the reform has been to reduce their capacity. However, the development of a modern co-ordinated hospital network, appropriate for the needs of the population, has proven difficult to achieve. The challenges of this development must be considered against the specific context within which the health sector reforms have been taking place. In most of the CEE countries there has been an over-reliance on market mechanisms to bring about change, an insufficient recognition of the wide range of stakeholders involved, a failure to ensure that incentives and policies are aligned, and a lack of appropriate human resources to implement the changes (Healy & McKee 2002a & 2002b).

1.3 Responses to health reforms

By the end of the 1990s, researchers started to analyse people's attitudes to the ongoing reforms in the CEE countries. These studies were mainly focused on the access to and satisfaction with the health services. Some studies considered equity issues as well. In general, positive evidence about the results of the health reforms was reported from those countries, which had implemented comprehensive reforms in the early 1990s. Patient satisfaction studies in Slovenia and Lithuania demonstrated that the PHC reforms in these countries had resulted in a higher satisfaction of the population, a major precondition for that being a good relationship between the patient and the doctor (Kersnik 2001, Zebiene *et al* 2004). At the same time, studies also showed that physicians' attitudes, skills and work performance can also be major sources of dissatisfaction with health services (Bankauskaite & Saarelma 2003).

As pointed out in several studies, the rapid health sector reforms in the CEE countries have also been accompanied by some drawbacks in the form of limited access and growing dissatisfaction among the population. Such examples can be found in Russia (Field 1999), but also in Croatia (Mastilica & Chen 1998) and in Romania (Bara *et al* 2003), where particularly older and lower socio-economic groups have evaluated the health care reforms in a negative way. There is also evidence of social inequalities in the utilisation of health care services in these countries (Habicht & Kunst 2005).

2 THE HEALTH SYSTEM IN ESTONIA

2.1 Social and economic background

2.1.1 Population

Estonia is the smallest of the Baltic countries, covering an area of 45 227 km². The population has been constantly increasing until 1990, both as a result of immigration and positive natural increase. Since 1990, the immigration has been decreasing and the emigration has been increasing. Likewise, the number of births has been diminishing and the number of deaths has been growing. In January 2006, the population of Estonia was 1 344 684 with 46% men and 54% women. About two thirds of the population are Estonians and one third is made up of Russians and other ethnic groups. The average population density is 30 inhabitants per km². The urban population accounts for 69% of the total population.

In recent years, an ageing of the population has been observed. The proportion of children (aged 0–14 years) has decreased (from 22.3% in 1990 to 16.3% in 2003) and the proportion of people aged 65+ has increased (from 11.6% in 1990 to 16% in 2003). Since 1991, the natural population increase (birth/mortality ratio) has been negative, but there has been an upward trend since 1994 due to an increasing number of births. In 2005, the birth and death rates per 1,000 inhabitants were 10.7 and 12.9 respectively (Statistical Office of Estonia 2006). These trends are illustrated in Figure 1.

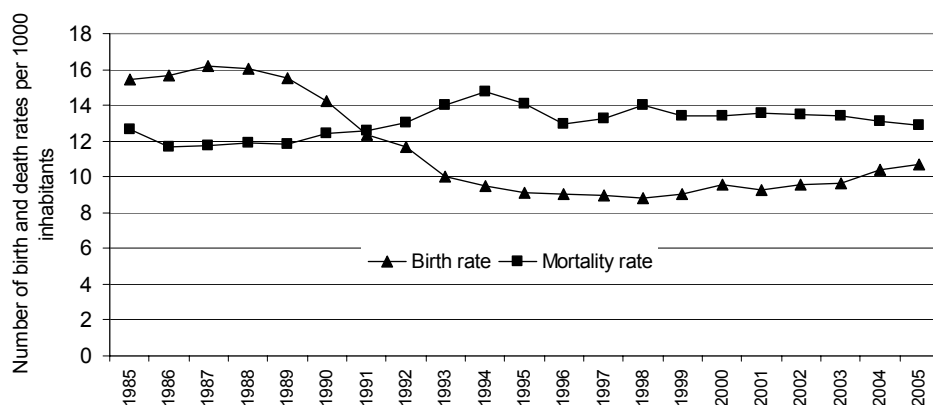


Figure 1. The dynamics of birth and death rates in Estonia in 1985–2005.

2.1.2 Political and administrative structure

Estonia is a parliamentary republic. The parliament (*Riigikogu*) consists of one chamber whose 101 members are elected every four years. The country is divided into 15 administrative regions (counties) that altogether contain 241 municipalities. Each county is run by a county government presided by a governor, who is subordinate to the Ministry of Internal Affairs. The counties are shown in Figure 2.

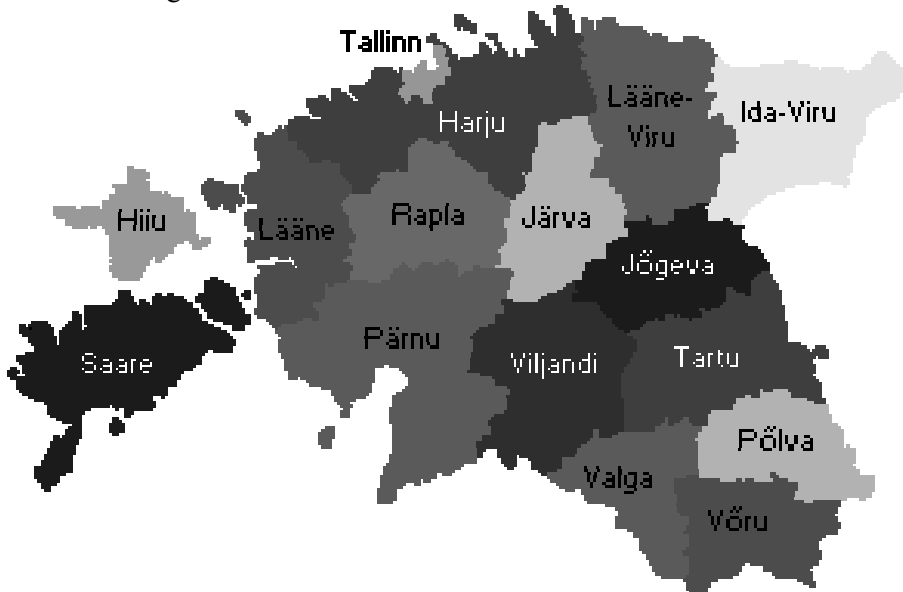


Figure 2. Administrative regions of the Republic of Estonia.

2.1.3 Economy, employment and social guarantees

Having restored its independence in 1991, Estonia has embarked on a number of economic and political reforms. In 1992, a new constitution was adopted, a new national currency (*kroon*) was introduced, and the first national parliament was elected. As the major political parties in Estonia are pursuing rightist political views, all the governments have also had this orientation. As a consequence, there have been economic reforms geared towards a market economy and rapid changes have taken place in the whole Estonian society since the early 1990s. Beside the economic reforms, there have also been reforms in the social and health sectors. Since the late 1990s, social values in Estonia have also been more pronounced.

Due to positive changes in the Estonian economy, which have led to creation of jobs and increases in wages and pensions, the percentage of people living

below the poverty line¹ has decreased. Compared to 36.1% in 1997, the percentage of households living below the poverty line decreased to 14.2% by the year 2004. The percentage of children living below the poverty line decreased from 47.1% in 1997 to 25.3% in 2003 (Statistical Office of Estonia 2006, MoSA 2005).

The rate of unemployment in Estonia was increasing from the early 1990s until 2000. Since 2001, the employment rate has been increasing, and the unemployment rate has been slowly decreasing down to 9.7% in 2004. However, the unemployment of young people (aged 15–24) has been increasing up to 21.7% in 2004. In 2002, an unemployment insurance was launched. This is a type of mandatory insurance, based on a principle of solidarity, whose accumulated premiums can be tapped should their payers lose their jobs through collective termination of employment contracts, or due to bankruptcy. A state pension is paid in cases of old age, incapacity for work and loss of provider. This is a social insurance benefit based on the solidarity principle and paid from the resources designated for the expenditures of state pension insurance in the state budget (MoSA 2005).

2.2 Historical perspective of the health care organisation

In the independent Estonian Republic during 1918–40, the health care system was based on a principle of decentralisation. The organisation and management of the health services, including public health and pharmaceutical services, was the responsibility of the Directorate of Health and Social Welfare (*Tervishoiu ja hoolekandevalitsus*), which belonged to the Ministry of Education and Social Affairs. The direct responsibility for the health care of population was delegated to the local municipalities.

The area of a local municipality was divided into health districts. Municipality and district doctors were in charge of prevention of disease as well as of treating socially disadvantaged people. However, outpatient medical services were mostly provided by private practitioners. There were three types of hospitals, which provided inpatient care: state-owned, municipal and private hospitals. Clinics for mothers and children, sanatoria and mental institutions were state-owned as well. To finance the health care, sickness funds were established in 1920. The sickness funds covered civil servants and employees and were organised on a regional basis (Kaiv 1931, Observatory 2000 & 2004).

During the Soviet period (1940–91) the Semashko system of health care replaced the previous system. The organisation of health care was a

¹ In calculating the absolute poverty level the following factors are considered: minimal cost of the food basket, empirically determined residence costs, essential expenditures for clothing, education and transportation. For example, in 1997 the household was considered to be below poverty line, if the income per household member was 1250 EEK or less (in 2003 1614 EEK or less).

responsibility of the state, the physicians were employed by the state, and the health services were funded from the state budget. The polyclinic system was introduced into PHC and much emphasis was given to specialisation of physicians. The physicians in primary care were called “district doctors” for adults and “district paediatricians” for children. The institutions providing PHC included village clinics (ambulatories) in rural areas and polyclinics for adults, children and adolescents, women’s clinics, psychiatric and dermato-venereological dispensaries in towns. Every citizen was entitled to direct access to clinical specialists (Lember 1998).

The number of physicians increased during the Soviet period and exceeded 40 per 10 000 inhabitants by the end of the 1980s (Statistical Office of Estonia 2005). An extensive hospital network was also developed during this period. The number of hospitals increased from 58 in 1940 to 125 in 1990. The average number of hospital beds in 1990 was 121.4 per 10 000 inhabitants, and 91.9 of those were acute care beds. Compared to countries like Finland and Sweden, the total number of hospital beds was not significantly higher, but these countries had considerably lower numbers of acute care beds, 43.4 and 41.4 respectively per 10 000 inhabitants (WHO 2005).

In general, during the Soviet period, the whole health system was disease and specialist oriented, while the main task of the district doctors consisted in timely diagnosing diseases, providing treatment for these diseases, and also referrals to specialists in the hospitals. However, in the early 1980s, the economic development plan of the USSR stipulated that district doctors should give more time to preventive work (Birkenfeldt 1985, Lember 1998).

2.3 The health status of the Estonian population in the early 1990s

Starting in the early 1990s to build a democratic society, Estonia like other CEE countries experienced a rapid worsening in the indicators of public health. The life expectancy started to decrease. The lowest level of the population’s health was reached by year 1994. Cardiovascular diseases, malignant neoplasms and accidents have been the most common causes of deaths. The mortality rates of diseases in the circulatory system started to increase in the beginning of 1990s, however, since the 1994 a slight decreasing trend has been occurring. The mortality rate of external causes decreased in 1994–1996 to the previous level and has not remarkably changed up to now. The mortality rate due to malignant neoplasms has been on the same level over the years. These trends are illustrated in Figure 3.

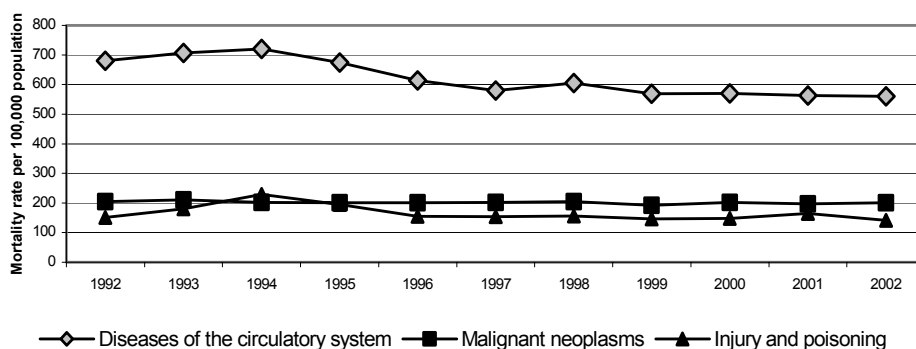


Figure 3. Standardised mortality rates of diseases in the circulatory system, malignant neoplasms and external causes in 1992–2002.

(Source: Statistical Office of Estonia 2005)

The premature death among men was considered as one of the most serious public health problems in the middle of the 1990s. Between 1988–94, the life expectancy of men decreased by 5.5 years (from 66.6 to 61.1), first and foremost due to the increased mortality of working age men. A great disparity between the average life expectancy of men and women (12 years in 1994) was also observed. In 1994, 56% of the men who died were younger than 65 years. Most of these premature deaths were caused by external factors, such as injuries and poisonings, which are especially noticeable in young age (up to the age of 35–40). The main cause of death was suicide (Põlluste 1998). Compared to Sweden, the injury death rate for men in Estonia was about six times higher. For some types of injuries, like alcohol intoxication and homicide, the death rates were ten times higher (Kaasik *et al* 1998).

Another serious public health problem since the beginning of 1990s was the continuous increase in new cases of tuberculosis, from 21.1 per 100,000 inhabitants in 1990 to 44.8 in 1998 (Põlluste 1998), as well as the spread of multi-drug-resistant tuberculosis (MDR-TB). Half of the MDR-TB patients were alcoholics. Also homeless and poor people were at high risk (Krüüner *et al* 2001b, Lindsay 2002). Other risk factors for tuberculosis were low educational level, low income, having been in prison, not having a place of residence, current unemployment, current smoking, shortage of food, and contact with tuberculosis patients (Tekkel *et al* 2002). Also health care workers were found to have an increased risk of tuberculosis. In 1994–98, for example, the incidence of tuberculosis among health care workers was 1.5 to three times higher than in the general population (Krüüner *et al* 2001a).

The situation in connection with reproductive health and sexual behaviour in the first half of the 1990s was characterised by a high number of abortions and a growth of new cases of sexually transmitted infections (STI). In 1990, 132 abortions per 100 births were registered and the rate of abortions increased to 169.5 per 100 births in 1993. The incidence of syphilis was 3.3 and that of

gonorrhoea 127.9 per 100,000 inhabitants in 1990. In 1995, the same indicators were 69.7 and 194.2 per 100,000 inhabitants respectively (Põlluste 1998).

Also the number of smokers and consumers of strong alcohol started to increase since 1990. In 1994, 52% of the men and 23% of the women aged 15–64 were daily smokers (Lipand *et al* 1995). A study conducted in 1995 in the Estonian capital Tallinn demonstrated that the prevalence of smoking was also quite high among school children – approximately one third of the 13–18 years boys and a quarter of the girls of the same age identified themselves as smokers (Pärna *et al* 2003). In 1994, the proportional share of weekly users of strong alcohol among men was 32% and among women 11% (Lipand *et al* 1995). Compared to the other Baltic countries, the weekly consumption of alcohol in Estonia was significantly higher among men as well as among women (McKee *et al* 2000).

2.4 Motives for reforms in the health sector

In general, the motivational forces for the health sector reforms in Estonia were the same as in other CEE countries. As a legacy from the Soviet period, Estonia had an over-capacity of human resources in the health sector, especially physicians, who at the same time were rather dissatisfied with their income. However, the social prestige of physicians was higher than in some of the other CEE countries, and the standard of the medical education met the existing needs and demands (Lember 1998).

Other important motives for the health sector reforms in Estonia were the funding problems of the centralised health system, which needed to be solved, and people's dissatisfaction with the access to health services, which had become more and more obvious. Moreover, despite the high number of physicians in the Estonian health care system, the indicators of the health of the population were worse than in the Western European countries.

2.5 Health sector reforms in Estonia since 1992

The planning of reforms in the health sector started already before the restoration of independence in the country. Since the beginning of the 1990s, the Estonian health system has undergone three major reforms: a health insurance reform, a primary health care reform, and a hospital reform. After the liberalisation of the political system in the early 1990s, the importance of a population based approach to public health and health promotion was also recognised, and the understanding and application of the concept of health promotion became more comprehensive (Saava & Maaroos 1994, ECHEP 1996, Saava 2000), which marked the beginning of a number of public health reforms.

The most comprehensive reform was the change of financing principles for the health services by introducing a social health insurance, which was accompanied by establishing a new system of sickness funds and defining a basic package of services covered by the health insurance. A main regulatory tool to implement these changes was the Health Insurance Act of 1991. This act led to a number of regulations that specified the roles and responsibilities of the sickness funds, the providers of health services and the patients.

The health insurance reform facilitated a decentralisation of the health system and the following PHC reform. With the Health Care Organisation Act of 1994, the principles of decentralisation were established and the responsibilities of the national government, the regions and the municipalities in the planning and organising of health services were defined. The ministerial regulations of 1997 established the legal status of family doctors (FD), and the financing principles and the package of services provided by the FDs.

The goals of the following hospital reform were defined in the Estonian Hospital Master Plan of 2000, and the main regulatory tool for the implementation of the reform was a governmental decree in 2003.

The implementation of the public health reforms started with the establishment of the new health care structure at the national and the regional level. The main goals were defined in different national health programmes and projects. The Public Health Act adopted in 1995 defined the financing principles and responsibilities of different stakeholders in this field.

In addition, a number of laws adopted since 1995 have defined the organisation of health services in specific fields and supported the ongoing reforms. The Medicinal Products Act of 1996 regulated the pharmaceutical market. The organisation of psychiatric services and rights of psychiatric patients were established by the Psychiatric Care Act in 1997. At the same year, the Protection of the Embryo and Artificial Fertilisation Act was adopted, and in 1998 the Termination of Pregnancy and Sterilisation Act. In 2002, the Transplantation of Organs and Tissues Act was accepted. The Communicable Diseases Prevention and Control Act of 2003 regulated the organisation of prevention and treatment of communicable diseases as well as the responsibilities of the state, the local governments, the organisations and individuals, including health care providers (Observatory 2004).

2.5.1 The health insurance reform

The Health Insurance Act, which was adopted in 1991 and took effect in January 1992, marked a change in the Estonian health financing system. This decision was based on a political consensus to establish an earmarked health insurance fund independent of the state budget. This independence was expected to give a better planning and forecasting of health care resources. The new financing system was supposed to make the structure of the health

expenditures more transparent and to increase the personal responsibility of the health service providers as well as the consumers.

Principles of financing and structure of the health insurance system

Since 1992, the financing of health services (except public health services like health promotion, immunisation, occupational health services) has been based mainly on health insurance, and the roles of the state and the local governments have been rather small. For example, in 2002, the total health expenditure in Estonia was 5958.8 million EEK (382 million EUR), of which 4642.3 million EEK (297.6 million EUR) or 78% was financed by the health insurance. In 2002, the total health expenditure was equivalent to 5.5% of GDP. Since the implementation of the health insurance reform, a 13% premium is paid by the employers to the health insurance fund. Until 1998, this premium was collected independently and handled as an additional part of the state budget. At the present, the premium is collected as a part of the social tax (altogether 33%, 13% for health insurance and 20% for retirement insurance) and included in the state budget, although the social tax is handled as an independent article of the state budget (EHIF 2005).

In an effort to decentralise the system, the administration of the health insurance was devolved to 15 county funds, six city funds and one fund for seamen resembling a self-budgeting insurance company. The employment (i.e. the number of taxpayers) was then approximately 770,000. For co-ordination on the national level, the Association of Sickness Funds was established. In 1994, the number of funds was reduced from 22 to 17 and a Central Sickness Fund was established in order to centralise the planning and redistribution of revenues between the regions and to provide territorial equity and control of financial resources. In 1994, a per capita distribution of health insurance resources was introduced as well. In 2001, according to the Health Insurance Fund Act (HIFA 2000), the former sickness funds were reorganised into a single independent public agency, the Estonian Health Insurance Fund (Palu & Kadakmaa 2001; Observatory 1996). The process of centralisation of the Estonian health insurance system is presented in Figure 4.

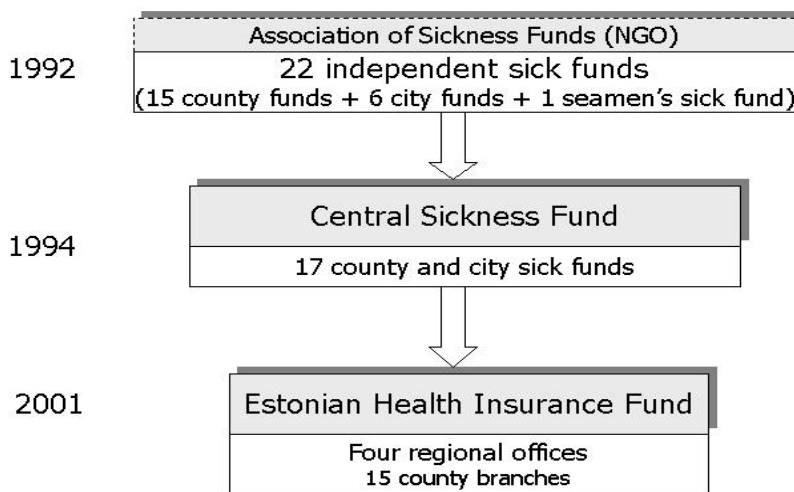


Figure 4. Process of centralisation of the Estonian health insurance system.

Coverage of health insurance and package of health insurance benefits

Since the implementation of the health insurance system, the proportion of insured people has been steadily about 94% of the Estonian population. According to the law, the following categories of the population are covered by health insurance: employees and self-employed persons paying contributions to the health insurance by an earmarked payroll tax (46% of all the insured people in 2003); specific groups of the population covered by contributions from the state budget, e.g. registered unemployed persons and persons participating in compulsory military service (4% of all the insured people); and people eligible for coverage without making any contributions, e.g. children, retired people, students, non-working expecting mothers (50% of all the insured people).

People who are not covered by the health insurance have to pay for the health services themselves. Until 2002, the local governments were obliged to pay for the health services of their uninsured inhabitants, but since 2002 only emergency care for uninsured persons is guaranteed and it is paid from the state budget.

When comparing the Estonian health insurance system with the systems in for example Hungary, the Czech Republic and Slovenia, two differences become obvious. First, unlike Estonia, the population coverage in those countries is universal, and second, the health insurance contributions in those countries are shared between employers and employees. Also the state's contribution in health insurance is considerable in those countries. For example, in Hungary capital costs are financed by local and general taxes, and in the Czech Republic 56% of population is insured by the state (Gaal 2004, Hlavacka 2004, Rokosova *et al* 2005).

The Estonian Health Insurance Fund (EHIF) is responsible for negotiating contracts with the health care providers and paying for the health services, but

also for reimbursing the pharmaceutical expenditures and paying for sick leave and maternity benefits. Approximately 2/3 of the annual health insurance budget is spent on health services, 13–15% on reimbursing pharmaceutical expenditures, and 16–17% on sick leave and maternity benefits (EHIF 2002, 2003). Until 2002, the package of health services covered by the health insurance included most services offered by in- and out-patient clinics, including dental care for all the insured people. The importance of out-of-pocket payments for medical services was initially very small and a token fee for ambulatory visits was introduced in 1995. In reality, however, out-of-pocket payments have increased, especially in dental care. Some services, like cosmetic surgery or in-vitro fertilization, are not covered by health insurance and must be paid for by the users themselves (Observatory 2000).

A new Health Insurance Act was introduced in October 2002. In this law, the package of health services covered by the health insurance as well as the rates of coverage were more clearly defined. For example, dental treatment for persons under 19 is totally covered by the health insurance, but the adults pay for their treatment and dentures themselves. Every provider of health services is also obliged to maintain a waiting list. An insured person has the right to obtain health services outside the waiting list only on the condition that this does not jeopardise the opportunities of persons already on the list (HIA 2002). According to the contracts concluded between the family doctors and the EHIF, the FDs shall be available in one working day for patients with acute diseases and in three working days for patients with chronic diseases. The scheduled appointment times for specialised outpatient and inpatient care are respectively four weeks and six months.

2.5.2 The primary health care reform

The reorganisation of the PHC system started in the early 1990s. Primary care physicians saw an opportunity to establish family medicine as a discipline and a medical specialty in Estonia and the government supported this change (Lember 2002). In order to investigate the public opinion about the outpatient medical care and the future expectations on health care, a population survey was conducted in Tartu in late 1993 (Takker *et al* 1995). The majority of the respondents felt that the existing PHC system with polyclinics should be improved, and there were great expectations on the family doctors. Long waiting times in the polyclinics, absence of appointment systems, unsatisfactory conditions and location of the clinics, lack of omniscient medical specialists, and inadequate attitudes by the medical personnel were the most frequently mentioned reasons for the dissatisfaction with the system.

Basic principles of the PHC reform

The goals of the PHC reform were formulated in 1997. The MoSA decided to create an effective PHC system to be implemented by 2003 that should be available in residential areas to ensure continuity of care and be staffed with well-trained and skilled family doctors, who are committed and willing to take responsibility as independent practitioners (Vask 1997). The reform work started in 1998, after regulations on the organisation of PHC had been issued and endorsed by the Minister of Social Affairs. The basic tasks of the reform were formulated as follows (Lember 2002):

- To create a list system so that the population could register with a primary care doctor.
- To introduce a partial gate-keeping system.
- To introduce a combined payment system for the FDs.
- To give the FDs the status of independent contractors.

For the population, the most important changes were the gate-keeping function of the family doctors, but also the introduction of a patient list system. Every citizen was expected to choose their FD by registering on a patient list (Lember 1998). They could register personally at the doctor's office, at the registration desk of the outpatient clinic, or be registered by a family member. Citizens who did not register with family doctors, could enter their names on a patient list according to their place of residence, or to any patient list still incomplete.

With the reorganisation of the PHC, the work of the FDs became more comprehensive. Their workload also increased: in 2002, almost half of the total outpatient visits were made to FDs (Maaroos & Meiesaar 2004). The size of the patient lists has stabilised, but it can still vary between different counties and between the countryside and the towns because of variations in the density of the population in different areas. The FDs are using both solo and group practices. Structural improvements, for example in the quality of practice equipment, have also raised the quality of the FDs' work and its outcome (Kalda 2001).

The combined financing system of the FDs has provided a financial sustainability for the resources of the PHC. Since 1998, a capitation fee has been the main component of the payment system for the FDs, and this fee has been paid in advance according to the patient list. The share of capitation fees within the FDs budget has been rather stable, accounting for 73%. The shares of the other components, basic practice payment and fee for services (procedures and analysis paid separately by EHIF), have been 11–12% and 15–16% respectively. The share of all the PHC expenses within the health insurance has increased from 10.1% in 2000 to 13.2% in 2002. The share of the PHC expenses within the total health care expenditures was 5.5% in 2000 (Meiesaar & Lember 2004).

The legal status of the FDs was defined by law in 2002 (HSOA 2001). According to this law, all family doctors are private practitioners, but the county

governors are overseeing the provision of PHC in their respective counties. The FDs are independent contractors with the Health Insurance Fund. They provide comprehensive care irrespective of the patients' age, gender and health problems. Out-of-hours service is not stipulated in the FDs' contract, it is provided by medical emergency service.

Development of human resources

In 1991, the University of Tartu started re-training of doctors for family medicine, and the first specialist diplomas were awarded in 1993. The training of family doctors was conducted in two ways: three years in-service retraining courses for existing primary care physicians (paediatricians and physicians of internal medicine), or three years full-time residence courses for physicians who have graduated from the medical faculty and completed their internship (Maaroos 2004).

Between 1991–2004 altogether 979 doctors became re-qualified as family doctors and joined the ranks of FDs to meet the needs of the Estonian population: one FD per 1,600±400 inhabitants (Maaroos & Meiesaar 2004). With their training in primary care medicine, the family doctors in Estonia perform the same medical treatment functions as general practitioners do in the Western countries (Lember 1998).

2.5.3 The reorganisation of the hospital network

The hospital reform in Estonia was initiated in 2000 and it was focused on a reorganisation of the hospital network. Like many other CEE countries, Estonia has had significant overcapacity of hospital beds (Healy & McKee 2002a). In many countries the current trend is towards setting up larger hospitals in order to reduce the average cost, and the patient outcomes are also believed to be better in larger hospitals (Posnett 2002). All of these aspects have been considered when planning the restructuring of Estonian hospital network.

The hospital reform was based on the Estonian Hospital Master Plan (MoSA 2000b), prepared by Swedish consultants in 2000. The main objective of the hospital reform was to improve the technical efficiency of the hospital network. This plan proposed that the number of acute in-patient beds should be reduced by two thirds and the number of acute hospitals decreased. By the end of 1999, the total number of hospitals in Estonia was 78, and 29 (37%) of them were quite small, with 50 beds or less. The total number of hospital beds in 1999 was 7.2 per 1000 inhabitants, and the number of acute care beds was 5.8/1000. According to the master plan, the number of acute care hospitals should be reduced to 13 and the number of beds to 2.2/1000 by year 2015. The main criteria used for planning the hospital capacity were sufficient catchment areas to support a service volume necessary for quality and efficiency, and geographical access determined by no longer than 60 minutes car drive to the hosp

ital (Palu & Kadakmaa 2001). When reducing the number of acute care beds, the number of long-term care beds should be increased. The estimated need for long-term or nursing care beds is 11.4 per 1,000 people at the age of 65+ (Howe & Koppel 2001).

The Hospital Master Plan in its initial form was not well received, neither by the providers of health services nor by the municipalities. Therefore, after numerous discussions and consultations, the Ministry of Social Affairs prepared a new version of the plan, the Hospital Network Development Plan, which was approved by the government in 2003. The plan specified a list of acute care hospitals, which will have long-term contracts with the EHIF (Observatory 2004). As a result, the number of hospitals was decreased to 50 by the end of 2004. Some smaller hospitals were either closed down or restructured to serve as long-term or nursing care hospitals. Some smaller specialised hospitals were also merged into larger regional or central hospitals.

Considering the size and the services provided, the hospitals in Estonia today can be divided into seven types: regional, central, general, local, special, rehabilitation and nursing care hospitals. Regional, central, general and local hospitals provide active treatment and each of them covers a certain catchment area or region. Owing to their location – within 70 kilometres or 60 minutes car drive – those hospitals give acute medical services to all in need. Nursing care hospitals are located in all counties and in major towns, where people can get long-term care and treatment for chronic conditions. In addition, there are some specialised rehabilitation hospitals and smaller hospitals, which provide in-patient services in one or two fields, e.g. psychiatry, elective surgery, obstetrics and gynaecology (MoSA 2004).

2.5.4 The public health reforms

The reforms in the field of public health have included a number of different activities. The reforms started with the creation of an institutional structure, indicating the financing mechanisms and defining the responsibilities of different stakeholders. After that, the development and implementation of public health programmes and projects generated a need for local networks of public health specialists and an appropriate training of those people.

Development of a modern public health structure

In 1993, the Ministry of Social Affairs (MoSA) was formed by merging the formerly separate Ministries of Health, Social Welfare and Labour, and in this process the Department of Public Health was established. This department was seen as a source of modern public health in Estonia. New courses in public health were also introduced into the curricula of undergraduate and graduate educational programmes for medical doctors and nurses at the University of Tartu. At the same time, continuous training in the field of public health was

started for the teaching staff of this university (Saava 2000, Köhler & Eklund 2002).

In 1993, the Estonian Centre of Health Education and Promotion (ECHEP) was established as an independent structure within the MoSA. In 1995, the ECHEP introduced posts for health promotion specialists at the county governments, thus creating a foundation for a community-based public health organisation. Until it was incorporated with the National Institute of Health Development (NIHD) in 2003, the ECHEP was responsible for the co-ordination of most public health programmes and projects on the national level, but also for the training of public health specialists in the counties (ECHEP 1996).

Progress of the public health reforms

In 1995, the Public Health Department of the MoSA formulated the philosophy of the Estonian public health policy, which was also approved by the government. This document defined the main factors influencing health and the necessary courses of actions to be taken. Unfortunately, because of subsequent changes in the government, a plan of action was delayed (ECHEP 1996). In the same year, however, the Public Health Act (PHA) was adopted. The PHA and the Health Care Organisation Act from 1994 established a public health network composed of three services: the health protection service, including environmental health and communicable disease control and surveillance; the health promotion and health education services, including health education as well as co-ordination of some national health programs; and the occupational health service (Observatory 1996).

A major landmark in the Estonian public health reforms was the Estonian Health Project, which started in 1995 and was implemented during a four year period. This project was financed by the World Bank (WB) to support the health reform efforts initiated by the government. Its purpose was to improve the health of the Estonian population by health promotion and disease prevention programmes to increase the awareness of healthy lifestyles, by strengthening modern public health training, and by supporting the ongoing health financing reform (WB 1995). As a prerequisite for the project, the MoSA had to agree to carry out nationwide programmes in the fields of preventing cardiovascular diseases and injuries, and the fields of family planning and anti-smoking (ECHEP 1996).

Since 1995, a number of national as well as local health promotion projects have been financed by the health insurance. Every year 0.5–1% of the health insurance budget has been spent on funding health promotion projects in support of local initiatives, and national campaigns in five priority areas: anti-smoking, cardiovascular and heart disease prevention, injury control, women's health, and family planning. An advisory committee at the EHIF is evaluating applications for projects in these areas. From 2005, the funding of health promotion projects is subject to public tendering. However, the health promotion budget has not increased since 2001 (Observatory 2004).

The major national projects have been related to the above-mentioned priority areas, and some of them started already before 1995. The Heart Health Project started in 1993, and its main objective was to prevent early morbidity and mortality from cardiovascular diseases by informing and educating the population and developing a health supporting environment. The Anti-Smoking Project was initiated in 1996, and it was focusing on decreasing smoking among adults, helping them to quit the habit of smoking, and on preventing young people from starting to smoke. The Injury Prevention Project started in 1993 and was focusing on traffic safety, with the objective to decrease the number of casualties from traffic accidents. The Family Planning Project started in 1995, focusing on young people with the objective to improve the population's sexual and reproductive health (ECHEP 1996).

The first national programme, financed by the state budget and supported also by the Open Estonian Foundation and the WHO, was initiated in 1992. It was the National Preventive Programme for HIV/AIDS, with the objective to constrain the spread of HIV. Counselling, information and training were the main methods of the programme. In addition, three national health programmes were initiated in the middle of 1990's. The National Programme for Drug and Alcohol Prevention was initiated in 1997 and focusing on reducing the abuse of substances and risks related to drug and alcohol abuse in the community. The programme had two goals, to slow down the growth of drug abuse within the range of 20% by the year 2007, and to reduce hospitalisation due to alcohol psychosis with 10% by the year 2007. The main objective of the National Children's and Adolescents' Health Programme from 1996 was to improve children's health and quality of life by injury prevention, promotion of mental health, and improvement of the school environment and nutrition. The National Programme for Prevention and Cure of Tuberculosis started in 1998 and aimed at reducing the incidence of tuberculosis down to 30 new cases per 100,000 inhabitants by the year 2005, as well as protecting the population from tuberculosis infection and preventing the development of drug resistance (ECHEP 1996).

In 1996, a strategic plan for immunisation coverage was also initiated, and a national policy of mental health was prepared in 2002 and enacted in 2003. The prevention of smoking was supported by the Tobacco Act, which took effect in 2001. By this act, numerous requirements and restrictions were imposed, e.g. requirements for setting up smoking areas, prohibition of smoking in public facilities (like schools and health care institutions), prohibition of selling tobacco products to minors, etc.

2.6 Present organisation of the health system in Estonia

The Ministry of Social Affairs (MoSA) is responsible for health care and public health in Estonia. An exception is health care for prisoners, which is a responsibility of the Ministry of Justice. In addition to health care, the MoSA is also responsible for social and labour policy, and each of those three areas is directed by a Deputy Secretary General. On the level of the MoSA, three departments are responsible for the development of health policy:

- The Department of Public Health is responsible for health promotion and disease prevention, environmental health and communicable disease control.
- The Department of Health Care is responsible for health care services including primary care, hospital care, emergency care and medicinal products.
- The Department of Health Information and Analysis is responsible for collecting, analysing and providing necessary health information.

Four state agencies under the MoSA are dealing with the implementation and surveillance of public health policy:

- The Health Care Board is responsible for licensing of health care providers and registering of health professionals², controlling the quality of health care provision, and funding and organising ambulance (emergency) services.
- The State Agency of Medicines is responsible for registration and quality control of drugs, as well as ensuring the safety of blood and tissue transplants. This agency is also dealing with registration of medical technology.
- The Health Protection Inspectorate is responsible for surveillance and control of communicable diseases and environmental health hazards, implementation of the national immunisation program, and the development of an environmental health information system.
- The National Institute of Health Development (NIHD), which was established in 2003 by merging three smaller governmental institutions, is responsible for the co-ordination of national public health programs and most of the national health promotion projects, but also for applied research and analysis in public health, continuous professional training in public health, and public health monitoring and reporting.

The Department of Working Life Development, which is directed by the Deputy Secretary General on labour policy, is dealing with occupational health and

² According to Health Services Organisation Act, health professionals in Estonia are physicians, dentists, nurses and midwives.

safety issues. The Labour Inspectorate, another state agency under the MoSA, is responsible for the surveillance and control of occupational health and safety.

The organisational structure of the health system in Estonia on the national and county level is summarised and illustrated in Figure 5.

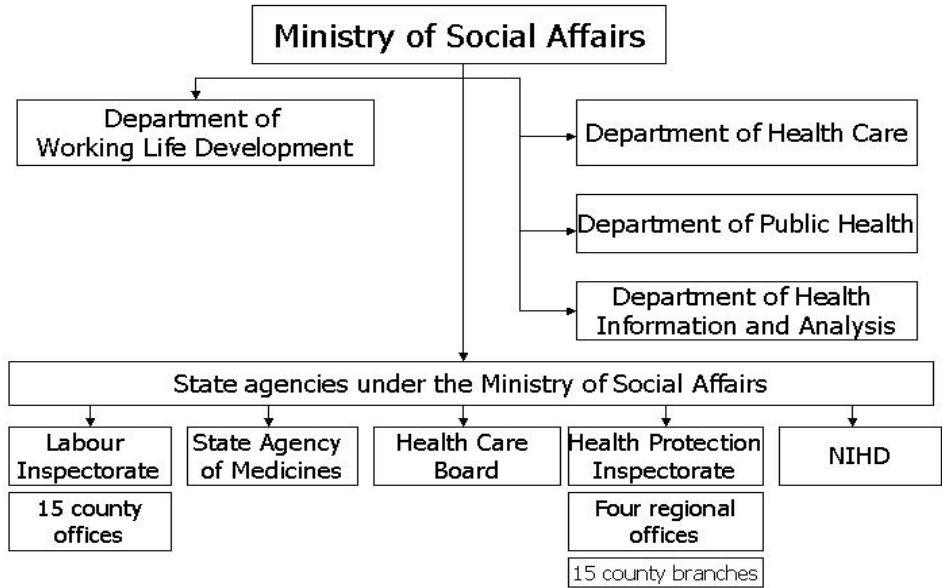


Figure 5. Organisation of the Estonian health system.

In the early 1990s, the administration of the health services was decentralised and the responsibility for planning and organising primary and secondary care was delegated from the MoSA to the municipalities. According to the Health Care Organisation Law of 1994, the ownership of the health care institutions was partly transferred from the state to the municipalities, and so was also the responsibility for funding maintenance and capital investment in those health care institutions. In the mid 1990s, however, a privatisation of health institutions was started, although there was no law to regulate it. In this period, licensing of health service providers and private practitioners was introduced.

In 2002, the Health Services Organisation Act (HSOA 2001) established the legal status of the hospitals on the one hand, and the responsibility for organising the PHC services and the development plan for the hospital network on the other. According to this law, a hospital is an outpatient and in-patient health services provider owned by a company or a foundation, which means that it is acting under business law like a private institution. This means that the commitments of the state and the municipalities are very limited.

At the present, the main responsibility for the development and implementation of health policy and for the supervision of quality and access to health services lies on the MoSA and its agencies. The role of the county

governments in organising health care is rather limited. Only some aspects of the organisation of PHC services are responsibilities of the county governors: the assignment of service areas for family doctors within the county, the announcement of family doctor vacancies, and the approval their appointments. Since 2002, the local (municipal) governments do not have any legal responsibility for funding or organising health care (HSOA 2001, Observatory 2004).

In spite of the ongoing privatisation, health care in Estonia is financed mainly by social health insurance and by public taxes. In 2002, 66% of the health care expenditures were financed by the health insurance, 10% by public taxes (state and municipal budget), and 24% by the private sector (20% by out-of-pocket payments, 1% by private health insurance, and 3% by employers).

The range of benefits covered by health insurance is rather broad. Approximately 82% of the health insurance benefits cover the provision of preventive and curative health services, drugs and medical devices. Some of those benefits are subject to cost sharing, as regulated by law (HIA 2002), for example outpatient prescription drugs, out- and inpatient specialised care (co-payment up to 50 EEK per visit and up to 25 EEK per day in hospital), and some health services like abortion (co-payment 30%), IVF treatment (co-payment up to 30%), rehabilitation (co-payment 20% per day).

Ambulance services, emergency health services for uninsured persons, capital investments and preventive services (health promotion and health protection) are covered by the state budget. Although the municipalities are not obliged to cover the costs of health services, some of them support the family medicine centres and some public health activities. The provision of occupational health services is mainly covered by the employers (HSOA 2001, HIA 2002, Observatory 2004).

2.7 Availability and use of health services

The number of health care personnel, particularly the number of nursing personnel, has been decreasing since 1992. This development is shown in Figure 6. However, the number of FDs increased in 1998–2004 from 22 to 60.7 per 100,000 inhabitants. Also, the number of dentists has increased from 52/100,000 in 1992 to 86.5/100,000 in 2004.

The average number of outpatient visits per person dropped from 7.1 in 1990 to 4.8 in 1992. After 1992 it has slowly started to increase and reached the level of 6.2 visits per person in 2004. Since 1998, after the implementation of the PHC reform, the proportion of visits to the FDs has been increasing year by year. The average number of visits per person to FDs was 0.96 and increased up to 2.92 in 2004. The number of visits to the dentist was 1.4 per one person in 1992 and has slowly decreased to 1.23 per person in 2004 (MoSA, 2000a, 2003, 2006).

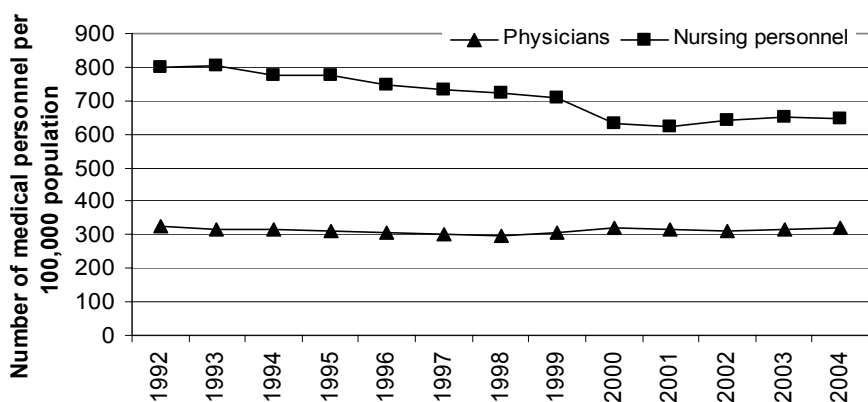


Figure 6. Number of physicians and nursing personnel per 100,000 population 1992–2004

(Sources: MoSA 2000a, 2003, 2006).

In 1992, there were 118 hospitals in Estonia and in 2004 the number of hospitals had decreased to 51. The number of hospital beds also decreased from 968.2 per 100,000 inhabitants in 1992 to 577.6/100,000 in 2004. At the same time, however, the number of hospital admissions per 1,000 persons was increasing. This development is shown in Figure 7.

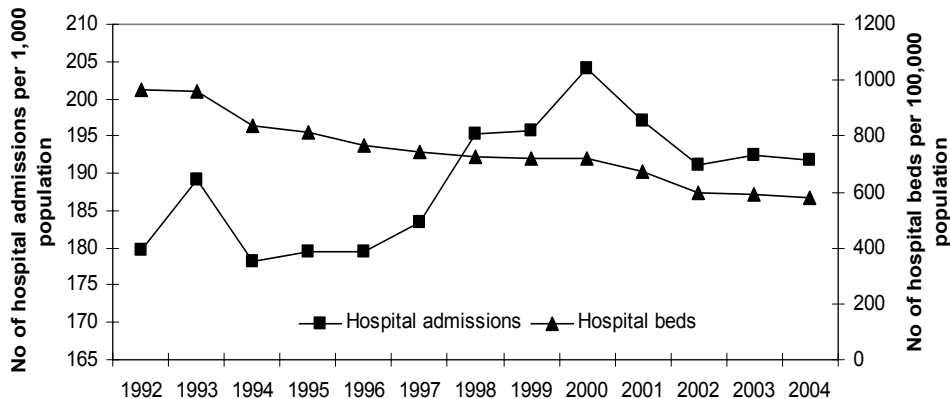


Figure 7. Trends of hospital admissions and number of hospital beds 1992–2004

(Sources: MoSA 2000a, 2003, 2006).

With the decreasing number of hospital beds and the increasing number of hospital admissions, the average length of stay (ALOS) in the hospitals dropped more than twice, from 17.4 days in 1990 to 6.9 days in 2004 (MoSA 2000a, 2003, 2006).

3 THEORETICAL BACKGROUND

3.1 Health system and health sector reform

Health sector reform can be defined as a sustained process of fundamental change in policy and institutional arrangements, guided by the government and designed to improve the functioning and performance of the health system and ultimately the health status of the population (WHO 1995). To understand the context for reform, a number of political, ideological, social, historical, cultural and economic factors should be considered. Existing health and health sector problems, like changes in population health as well as organisational and structural challenges are also important to consider in the planning of health sector reform. To implement a health sector reform, the priorities have to be defined, the policies confirmed, and the institutions through which those policies are implemented may have to be changed (Janovsky & Kassels 1995).

Any health sector reform operates at four main policy levels: the systemic, the programmatic, the organisational, and the instrumental levels (Frenk 1994).

- At the *systemic* level, the policy should specify the basic structure of the health system, including the institutional arrangements for regulation, financing and delivery of health services. This policy level deals with the roles and responsibilities of the actors in the health system, like the distribution of resources, the functions of the state and the local governments, and the interaction with other sectors. The main objective of reform efforts at this level is equity.
- At the *programmatic* level, the policy should define the content of the planned interventions. This policy level specifies the priorities of the health system by defining a universal package of cost-effective interventions. The main objective of reform efforts on this level is efficiency of allocation.
- At the *organisational* level, the policy should deal with the actual production of services by focusing on issues of quality assurance and technical efficiency. For that purpose, the reform efforts on this level should deal with reorganisation of the network of providers of health services according to actual needs.
- At the *instrumental* level, finally, the policy should provide institutional intelligence for improving system performance through information, research, technological innovation and human resource development.

These four policy levels are interrelated and a comprehensive reform strategy must therefore cover all the levels through clearly formulated strategies, based on experiences and theories, and implemented with the support of a specialised agency with consensus-building capacity (Frenk 1994).

To implement policy change, however, some regulatory tools are also needed. These tools, which make changes in the health sector possible, can be described as policy goals and managerial mechanisms:

- The *policy goals* are usually social and economic goals expressed in the national constitution, in key legislative acts and in the overall organisation of health care. Considering the policy levels of health sector reform, these goals are directed first of all to the systemic and programmatic levels.
- The *managerial mechanisms* are concerned with the attainment of the policy objectives, like regulations on quality and effectiveness, patient access, provider behaviour, physicians etc. These mechanisms operate mostly to achieve the objectives on the organisational and instrumental policy levels.

For any policy change to be successful, the policy goals and the management mechanisms must be designed to fit together (Saltman *et al* 2002).

In order to understand health reform attempts better, it is also important to understand the concept of a health system. According to the WHO (2000), a *health system* can be described as a set of relationships among five major groups of actors: the health care providers, the population, the state as a collective mediator, the organisations that generate resources, and other sectors that produce services with health effects. Thus, health sector reforms can be regarded as a set of policies and processes with an impact on the health system.

The common understanding of the main objectives and overall requirements of health systems are universal and equal access for all members of the society, effective care for better health outcomes, efficient use of resources, high-quality services, and responsiveness to patient concerns (Crombie & Davies 2002, Saltman *et al* 2002).

3.2 Quality of health system and health outcomes

The quality of a health system can be defined in many different ways. In general, quality is defined as “the degree to which a set of inherent characteristics fulfils requirements” (ISO 9000:2000). Considering the objectives of health systems, the evaluation of quality should first of all refer to the outcomes, but also to the processes and the structure, which make the expected outcomes achievable. Thus, the quality of health services has been described in terms of appropriateness, equity, accessibility, effectiveness, acceptability, and efficiency (Shaw 1986). Likewise, the quality of health care has been described in terms of effectiveness, efficiency, optimality, acceptability, legitimacy, and equity (Donabedian 1992).

According to Øvretveit (1990), the quality of health services means “fully meeting the needs of those who need the service most, at the lowest cost to the organisation, within limits and directives set by higher authorities”. Although there is no common definition of the quality of a health system, there is a general agreement that it should be assessed from the viewpoints of major stakeholders of health care, and against agreed criteria, which reflect the underlying values of the society (Shaw & Kalo 2002).

According to a group of experts connected to the WHO, the quality of health systems can be defined as the level of attainment of their intrinsic goals for health improvement, and their responsiveness to the legitimate expectations of their populations (Evans *et al* 2001). This definition is reflecting a shift in the evaluation of a health system from the quality of the structure (availability of human, financial, and technical resources) to the quality of the processes (how the resources are applied) and their outcomes – the results that are achieved (Shaw & Kalo 2002).

The evaluation of outcomes of a health system will show how the overall goals of the health reforms have been attained. In an analytical framework developed by the WHO (2000) for assessment of the performance of a health system three main goals of such a system are specified: improving the health of population, improving the responsiveness to the population, and ensuring that the financial burden of health care is fairly distributed. These goals lead to five indicators of health system outcomes: the level and distribution of health, the level and distribution of responsiveness, and the fairness in household financial contributions. The level of health and responsiveness is related to the quality of the health system, while the distribution of health, responsiveness and financial burden is related to its equity (Murray & Evans 2003).

In this thesis, the health reforms in Estonia will be analysed by focusing on the outcomes of the health system as indicated by the level of population health, and the quality of the health system in terms of the accessibility of the health services and their responsiveness to the needs of the population.

When the health services are accessible it means that they are not compromised by an undue limit of time or distance (Shaw 1986). For the patients, the possibility to obtain care easily and conveniently is likely to be an important mark of quality. The accessibility of the health services also contributes to the equity in the distribution of care, which is a key requirement for its social acceptability (Donabedian 1992).

The responsiveness of the health services will be analysed in terms of their acceptability and satisfaction. The acceptability of the health services means their level of acceptance to the users of the services, while the satisfaction with the health services means their conformity with the expectations and wishes of the users (Donabedian 1992).

4 AIM AND SPECIFIC OBJECTIVES

The *aim* and general purpose of this thesis is to analyse the recent health sector reforms in Estonia with a focus on the outcomes of health system from the population's perspective.

Proceeding from this aim, the *specific objectives* of the thesis are the following:

- 1) To analyse the PHC reform in terms of the access to the health services and the acceptability and satisfaction with these services.
- 2) To analyse the health insurance reform in terms of the acceptability and satisfaction with the new system.
- 3) To analyse the public health reforms and their impact on the health of the population.

Some aspects of the health sector reforms have been studied previously. For example, Habicht *et al* (2005) have analysed the reforms from an equity perspective, and a number of studies in the field of population health have also been conducted (McKee *et al.* 2000, Kruuner *et al.* 2001a, 2001b, Tekkel *et al.* 2002, Leinsalu *et al.* 2003, Pärna 2005, Värnik *et al.* 2005). As the progress of the reforms with regard to the trends in the level of the population's health and the quality of the health system has not been studied, this thesis will focus on these aspects.

The PHC reform is the most extensive health system reform in Estonia. The implementation of the PHC reform and some quality aspects of family practice have been covered in previous dissertations (Lember 1998, Kalda 2001). However, until now, an evaluation of the PHC reform from the patients' perspective has not been done. The existence of baseline data since 1998 and follow-up data since 2002 makes it possible to evaluate the PHC reform from the patients' perspective, which will be the most extensive part of this thesis.

Although the health insurance reform was introduced more than 10 years ago, there is very little evidence of whether the Estonian people are satisfied with the current health insurance system and the solidarity principles it is based on. Therefore, this thesis will focus also on the evaluation of the health insurance reform from the perspective of access to the health services and people's attitudes to the solidarity based health insurance system.

5 METHODS AND DATA

To achieve the aim and the specific objectives of this thesis, empirical data were collected by using the following research methods: reviews of official health statistics and population surveys in 1998 and 2002 based on face-to-face interviews using structured questionnaires. Table 1 presents an overview of the methods used, linked to the objectives of the thesis.

Table 1. Research objectives and methods of data collection.

Research objectives	Papers	Methods of data collection
Evaluation of the PHC reform from the patients' perspective: accessibility, acceptability and satisfaction.	I, II, III, IV, VI	• Population surveys: interviews with structured questionnaires. • Reviews of official health statistics.
Analysis of the progress of the health insurance reform in relation to acceptability and satisfaction.	VII	• Population survey: interviews with structured questionnaires.
Analysis of the progress of the public health reforms and their impact on the health of the population.	V	• Reviews of official health statistics.

5.1 Reviews of official health statistics

Reviews of official health statistics were made in order to analyse the progress of the health sector reforms. The time span for the analysis was from 1992 up to the latest available year (2002, for some indicators 2004). 1992 was selected as a baseline year, since that year marked the starting point for the reforms in health system.

When collecting this statistical information, two principles were followed:

- The information should be reliable and easily accessible, with no special studies needed for data collection.
- The indicators should be comprehensive enough to describe the progress of the reforms from the quality point of view – the level of population health and the accessibility of the health services.

To describe *the level of population health* the following indicators were selected: life expectancy (males and females), infant mortality, number of abortions per 100 live births, mortality rates (cardiovascular diseases, cancer, accidents), incidence of tuberculosis per 100,000 inhabitants, incidence of HIV infections per 100,000 inhabitants, incidences of sexually transmitted infections (STI) – syphilis and gonorrhoea per 100,000 inhabitants. The prevalence of the following individual risk factors among the population was considered as well:

dietary habits (use of vegetable oil or animal fat for cooking, use of fresh vegetables), proportion of smokers and consumers of strong alcohol. The data were obtained from official reports of the Ministry of Social Affairs (MoSA), the Statistical Office of Estonia, and also from the reports of the population health surveys 1990–2002 (Lipand *et al* 1992, 1993, 1995, Kasmel *et al*, 1997, 1999, 2001, 2003).

To analyse the use of the health services, the trend of outpatient visits (including the visits to FDs) was used.

5.2 Population surveys

Population surveys in 1998, 2002 and 2005 were conducted in order to analyse the responsiveness of the health sector reforms, that is the acceptability of the reforms for the population and their satisfaction with the health services provided. A random sample of Estonian residents was personally interviewed by using structured questionnaires.

5.2.1 Sample

For all the surveys, the sample was formed by self-weighting: a proportional model of the total population aged 15–74 was used, where all the respondents represented equally sized groups. A two-staged stratification was made in order to form the sample. First, the population was divided into six strata on the basis of their localisation, while the size of the sample in each stratum was based on a proportional division of the population. After that, a two-staged selection was made in each stratum. The primary sampling units were settlements (cities, towns, urban settlements, and villages). The sampling points (63 in total) were chosen at random according to the size of the settlement (the number of residents, who qualified for the survey's age group) on proportional probability bases.

In each primary sampling unit, the secondary sampling units – individuals – were chosen. In urban settlements, the choice was made by using randomly selected addresses from the national population register. In each of the houses or apartments of the sample, the youngest man among the family members aged 15–74 being at home was interviewed (or the youngest woman if no male family members were living there or were not at home). In rural settlements, the systematic sampling of individuals was based on the population register of the local municipality. A socio-demographic structure of the sample (age, gender, nationality, and place of residence), which was formed during the interviewing process, was compared to the total population and weighted if necessary. 997 interviews were conducted in 1998, 999 interviews in 2002, and 1446 interviews in 2005. All samples were representative of the Estonian population aged 15–74.

Table 2 gives a detailed description of the sampling procedure in 2002 as an example, while Table 3 gives an overview of the samples in 1998, 2002 and 2005. Table 4 presents the characteristics of the respondents by gender, age and place of residence in 1998, 2002 and 2005.

Table 2. The model of the sampling points, actual and weighted sample in 2002.

	Total number of population		Model	Actual sample		Weight	Weighted distribution (study sample)	
	Absolute number	%		Number	%		Number	%
	1046921	100	63	999	100		999	100
Region								
Tallinn	318439	30	19	296	30	1.0270	304	30
North Estonia	151692	14	9	144	14	1.0000	144	14
West Estonia	122896	12	7	112	11	1.0536	118	12
Central region of Estonia	141324	13	9	144	14	0.9375	135	13
South Estonia	120884	13	7	112	11	1.0357	116	12
East Estonia	191686	18	12	191	19	0.9529	182	18
Type of settlement								
Capital	318439	30		296	30	1.0270	304	30
City	204954	20		208	21	0.9375	195	20
Town	213252	20		191	19	1.0681	204	20
Village	310276	30		304	30	0.9737	296	30
Gender								
Male	486255	46		481	48	0.9647	464	46
Female	560666	54		518	52	1.0328	535	54
Age								
15–24	200174	19		151	15	1.2649	191	19
25–34	184222	18		162	16	1.0864	176	18
35–49	289612	28		216	22	1.2778	276	28
50–64	242256	23		264	26	0.8788	232	23
65–74	130657	12		206	21	0.6019	124	12
Nationality								
Estonians	690130	66		684	68	0.9635	659	66
Non-Estonians	356791	34		315	32	1.0794	340	34

Table 3. Sampling procedures in 1998, 2002 and 2005.

	1998	2002	2005
Number of people interviewed (sample size n)	997	999	1446
Number of people unavailable for interviews during two visits	446	603	923
Number of people staying beyond those interviewed (due to age)	166	88	288
Number of people declining interview	286	455	879
Total number of contacts	1895	2145	3536

Table 4. Characteristics of respondents by gender, age and place of residence in 1998, 2002, and 2005.

	Sample 1998 n (%)	Total population (January 1, 1998)*, n (%)	Sample 2002 n (%)	Total population (January 1, 2001)*, n (%)	Sample 2005 n (%)	Total population (January 1, 2005)*, n (%)
Gender						
Male	470 (47)	515 436 (47)	464 (46)	486 255 (46)	674 (47)	489603 (47)
Female	527 (53)	587 350 (53)	535 (54)	560 666 (54)	772 (53)	559883 (53)
Age (years)						
15–24	191 (19)	207 751 (19)	191 (19)	200 174 (19)	282 (20)	209916 (20)
25–34	184 (18)	204 541 (18)	176 (18)	184 222 (18)	256 (18)	187652 (18)
35–49	285 (29)	312 276 (29)	276 (28)	289 612 (28)	393 (27)	279990 (27)
50–64	221 (22)	244 575 (22)	232 (23)	242 256 (23)	333 (23)	239113 (23)
65–74	116 (12)	133 647 (12)	124 (12)	130 657 (12)	182 (12)	132815 (12)
Place of residence						
Capital	310 (31)	325591 (30)	304 (30)	318 439 (30)	438 (30)	317151 (30)
Urban area	411 (41)	452773 (41)	399 (40)	418 206 (40)	578 (40)	418644 (40)
Rural area	275 (28)	324422 (29)	296 (30)	310 276 (30)	430 (30)	313691 (30)

* Source: *Statistical Office of Estonia*

5.2.2 Questionnaire and outcome measures

The population survey in 1998 was initiated by the MoSA with the purpose to find out how the Estonian people evaluated the recent changes in the primary health care (PHC), how they perceived the acceptability of the new PHC system (including the accessibility, patient-practitioner relations, amenities, and patient preferences), and to assess the satisfaction with the PHC physicians. The questionnaire was worked out by the research group at the University of Tartu. It included demographic data (gender, age, nationality, education, income, place of residence), self-assessment of health status and various aspects related to the PHC: size of the PHC institution, method of registering on the patient list,

preferences of doctors (FD or specialists), access to care (waiting time), perception of the changes in the PHC, and overall satisfaction with family doctor (FD).

In order to evaluate the accessibility of the FDs, the respondents were asked how many times they had visited their FD or other specialists during the previous 12 months. Their satisfaction with the FDs were evaluated by ten questions focusing on patient-practitioner relationships and amenities: the competence of physician perceived by the respondent, the effectiveness of prescribed therapy, the understanding of the patients' problems, the comprehensibility of explanations given by the physician, the use of modern equipment, the punctuality of the physician, the cleanliness and comfort of the clinic, the waiting time in the PHC centre or clinic, the ease of access by appointment, and the location of the PHC centre or clinic.

In the population survey of 2002, some additional aspects of the acceptability of and satisfaction with the PHC system were added: the preferences of doctors (FDs or specialists), comparison of the existing PHC system with the previous system based on district physicians, and the acceptance of the FD as the first doctor seen in any case of health problems. The respondents were also asked whether they had possibility to contact their FD by phone when necessary, and finally they were asked to assess whether their decision to ask for a home visit would be affected by the fee taken out for home visits.

In 2002, the population survey was conducted in collaboration with the Estonian Health Insurance Fund, and in addition to the responsiveness of the PHC system, people's opinions about the organisation of the specialised outpatient and hospital care as well as health insurance were studied. With this survey, the acceptability of and satisfaction with the health insurance and hospital care were analysed. The set of data used for this study included respondents' evaluation of the accessibility of health services and various aspects related to health insurance system: access to specialised out-patient care (waiting time), satisfaction with the treatment in the hospital, information about the hospital reform, satisfaction with the range of the health services financed by health insurance, and opinion of the solidarity principles in the health insurance system.

In 2005, a number of items describing people's awareness about their rights in relation to the access to the health services were also used.

The questionnaires used in the interviews of the population surveys in 1998, 2002 and 2005 are included in Appendix 2 of this thesis.

5.2.3 Data processing and statistical methods

The respondents were grouped according to their health status, age, gender, place of residence (capital, urban and rural population), registration on the patient list, education and monthly income. The differences between these groups were tested using chi-square tests. Also, the trends of various indicators were analysed by comparing the follow-up data. To estimate the relations between variables, the Spearman correlation coefficient was used. Predictors of satisfaction with the access to the health services, satisfaction with the FD as well as satisfaction with the health insurance system, were identified by regression analysis. For the statistical analysis, the SPSS (Statistical Package for the Social Sciences) 10.0 for Windows was used.

Validity and reliability of the measuring instruments

Validity concerns the extent to which an instrument actually measures what it is supposed to measure. The instrument must contain all the items of all the factors that are important for the trait under study. Content validity means that there are appropriate formats used to measure those factors. Beside content validity, the measuring instruments should have both criterion and construct validity. Criterion validity is defined as the outcome of a comparison of results from the instrument under examination with those from a validated scale measuring the same construct, while construct validity refers to the extent to which the results obtained using a measure concur with the results from the underlying theoretical construct. Construct validity can be tested by comparing the satisfaction rates in different groups, who would be likely to produce strongly differing results in terms of the observable (convergent validity), or by the way the satisfaction rate correlates with other variables to which it should be related (discriminant validity) (Sitzia 1999, Streiner & Norman 1995, Last 1995).

To improve the content validity of the measuring instruments used, the items for the questionnaires were based on the quality and patient satisfaction concepts. As the population survey was used to evaluate the PHC reform, special attention was paid to the concept of quality and patient satisfaction in general practice (Brooks & Borgardts 1994, Jung 1999). It was important that people could distinguish between their own health care and what goes on in the health system as a whole (Blendon *et al* 2001). The questionnaire used in the population surveys included both items that enabled the respondents to evaluate their personal satisfaction with the doctors and the services provided as well as their satisfaction with the health system as a whole. The differences in satisfaction and acceptability levels between the socio-economic groups of the respondents (age, place of residence, level of the income and education) supported the construct validity of the measuring instrument. In addition, the correlations between the satisfaction rates and various aspects describing the provision of services in the PHC supported the construct validity.

To evaluate the reliability of the measuring instrument, two approaches can be used. Stability refers to the reproducibility of an instrument, in terms of administration by different interviewers or by the same interviewer on different occasions. Internal consistency describes estimates of reliability based on the average among items in the questionnaire. This is mostly measured by using Cronbach's coefficient α (Sitzia 1999), which was also used for testing the reliability of the survey instrument in this study.. For the questionnaires used in the population surveys in 1998, 2002 and 2005, Cronbach's reliability scores were 0.80, 0.71 and 0.72 respectively.

6 RESULTS

Based on the different data collected, the progress of health sector reforms in Estonia have been analysed by focusing on the outcomes of the health system, as indicated by the level of population health, and the quality of the health system: the accessibility of the health services and their responsiveness to the population (the acceptability and the satisfaction with the health system, the health services and the providers of services).

This chapter will summarise the main results of the studies. Details of the results from these studies are presented in the papers included in this thesis. The progress of the primary health care reform is analysed and described in papers I–IV, focusing on the acceptability of and satisfaction with the changes as well as the accessibility of the PHC services. Paper VI is focused on the use of health services and their accessibility for a special group of the population – people with chronic conditions. Paper VII presents an analysis of the progress of the health insurance reform, focusing on the acceptability of and satisfaction with the health insurance system as well as the awareness of rights concerning the accessibility of the health services. Paper V summarises the progress of the public health reforms linked to the trends in the health of the population.

6.1 Trends in the health status of the Estonian population (Paper V)

As mentioned before, the life expectancy of both males and females in the Estonian population was decreasing in the early 1990's, and reached its lowest level in 1994. Since 1995, however, the life expectancy has been increasing, reaching 65.2 for males and 77.0 for females in 2002. These longitudinal trends are shown in Figure 8

The infant mortality rate per 1,000 live births has decreased considerably during the last 10 years, from 15.8 in 1992 to 5.7 in 2002. In the same way, the rate of abortions has also decreased. In 1992, the rate of abortions per 100 live births was 157.7 and in 2002 the rate of abortions was 101.3.

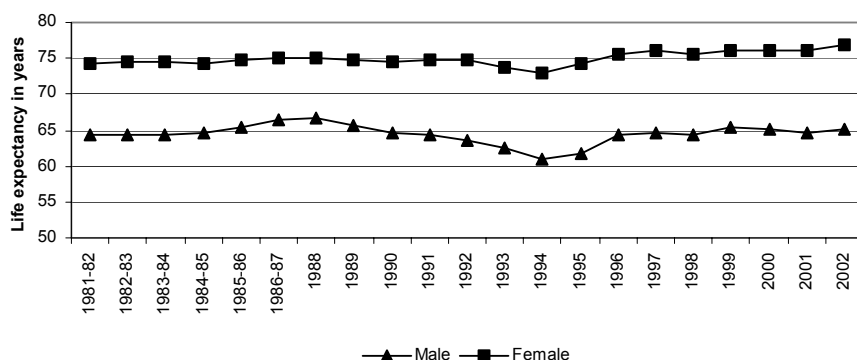


Figure 8. Life expectancy at birth in Estonia 1981–2002.

During the early 1990's and until 2000, there was an increasing number of new cases of tuberculosis, but since 2001 the number of new cases has been decreasing. At the same time, the years 2000 and 2001 have marked an explosive increase of new cases of HIV infection (HPI 2005). Both of these trends are shown in Figure 9.

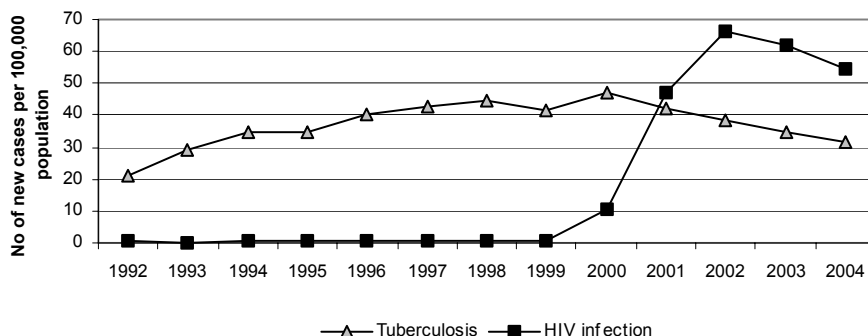


Figure 9. Number of new cases of tuberculosis and HIV infection in Estonia in 1992–2004.

There has been a rapid growth of new cases of sexually transmitted infections (STI) in the early 1990s. The incidence of syphilis was 3.3 per 100,000 inhabitants in 1990 and increased up to 69.7/100,000 in 1996. Since 1997, however, the incidence of syphilis has been decreasing down to 13.6/100,000 in 2004. The incidence of gonorrhoea was 127.9/100,000 in 1990 and reached its highest level 233.1/100,000 in 1993. Since 1994, the incidence of gonorrhoea has been decreasing, and in 2004 the number of new cases was 38.3/100,000.

The level of individual risk factors is characterised by the dietary habits, physical activity, consumption of tobacco products and strong alcohol. The most remarkable changes in the dietary habits among the Estonian population have been in the intake of food fats: the use of vegetable oil has increased, whereas the use of animal fat has decreased. In 1990, 22% of the Estonian adult population used vegetable oil and 20% used animal fat for cooking, while in 2002 vegetable oil was used by 89% and animal fat only by 4% of the population. Another positive change in the dietary habits is an increased consumption of fresh vegetables. In 1990, 28% of the Estonian adult population was eating fresh vegetables at least three times per week, but in 2002 this proportion had increased to 50%.

The proportion of daily smokers, both male and female, was rapidly growing during the 1990s until 1994, but it has not shown a clear tendency to decrease since then. A similar trend could be observed concerning the consumption of alcohol. These trends are presented in Table 5.

Table 5. Proportional share of smokers and alcohol users in the adult population 1990–2002.

	1990	1992	1994	1996	1998	2000	2002
Proportional share of daily smokers							
Male	45,2	51,4	52,1	47,5	42,3	44,1	45,0
Female	15,1	21,7	23,5	21,7	19,6	19,9	17,9
Total	28,2	35,9	35,8	33,2	29,4	29,4	28,9
Proportional share of weekly users of strong alcohol							
Male	22,7	19,7	32,5	34,6	29,6	30,7	25,6
Female	3,4	6,5	10,5	9,2	8,7	9,2	5,4
Total	11,9	12,8	20,0	20,6	18,2	18,0	13,7

6.2 The quality of health system

6.2.1 Accessibility of the health services (Papers I, IV, VI and VII)

Based on the results of population survey in 2002 (Paper IV), the average number of visits to the FDs was 2.48 per person. The average number of visits was significantly higher among people with low income (3.96 visits), people with elementary or basic level of education (3.59), and people of rural origin (3.02) ($p<0.001$). The results of the study conducted in 2005 (Paper VI) demonstrated that people with chronic conditions use health services more compared to other population. During the last 12 months before the survey 82% of people with chronic conditions had visited the FD and 65% the specialist, and of other respondents 53% and 31%, respectively ($p<0.0001$). The reported average number of visits during the last 12 months to the family doctor was 4.5 and to the specialist 3.7 for the chronically ill people, and 2.8 and 2.6, respectively, for other respondents ($p<0.0001$).

According to the population survey in 1998 (Paper I), the waiting time for an appointment to see a family doctor was rather short. The FDs usually admitted 59% of the respondents on the same day that they requested, 14% of the respondents were admitted during 1–2 days, 2% of the respondents during 3–4 days, and 23% of the respondents did not know the length of the waiting time. As can be seen in Figure 10, the waiting time for the majority of patients was no longer than two days both in 2002 (Paper IV) and in 2005 (Paper VI).

In 1998, there were no significant differences between the regions of Estonia, but in 2002 the waiting time was significantly different in different regions. On the average, 60% of the respondents of the population survey in 2002 were admitted on the same day as requested, but in the capital Tallinn only 44% of the respondents were admitted on the same day, and 30% had to wait 3–7 days to be admitted compared to the average 18%. In 2002, 72% of the respondents in the population survey said that if there was a need, they would

have the possibility of contacting their FD by telephone. People from the rural areas and also people from smaller cities had significantly more such possibilities when compared with people from the capital city (75%, 78%, and 58% respectively, $p < 0.001$).

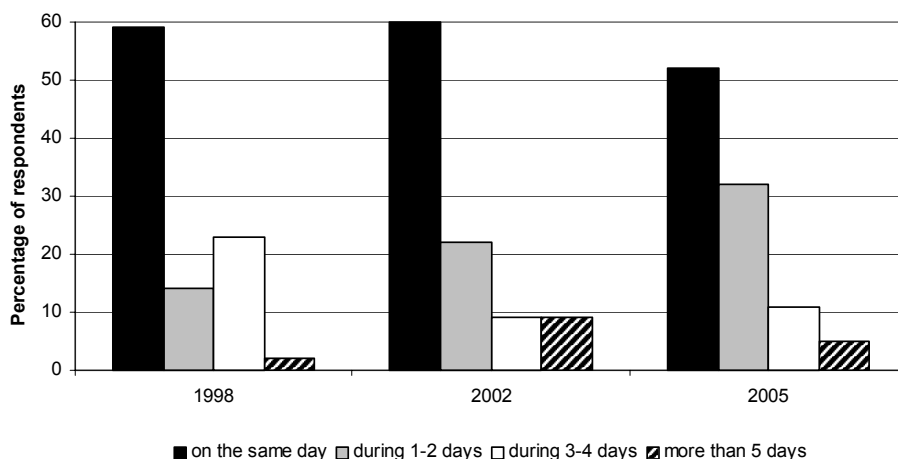


Figure 10. Waiting time for appointment to a family doctor in 1998 (Paper I), 2002 (Paper IV) and 2005 (Paper VI).

According to the population survey in 2002 (Paper IV), 63% of the respondents who visited a specialist doctor were admitted within one week after making the appointment. Only 4% of the respondents had to wait more than four weeks for the admission.

When comparing the waiting times to see the FD or the specialist in 2005, any statistically significant difference in the waiting time for people with chronic conditions compared to other respondents was not found. The majority (84%) of all respondents who visited the FD were admitted within 1–2 days. To see the specialist, two-thirds of all the respondents were admitted within 1–2 weeks. However, 14% of chronically ill and 5% of healthy respondents reported experiencing problems seeing the specialist, and most of them (89% and 78%, respectively) referred to the long waiting time.

The satisfaction with the access to the health services was studied in 2005 (Paper VI). Respondents with chronic conditions were less satisfied with access to health services than those who did not report having a chronic illness. However, having the chronic illness did not have an independent effect on satisfaction with access to health services. Five factors were found to predict the satisfaction with access to health services, as shown in Table 6. Satisfaction with the health insurance system and the PHC system, as well as an older age of the respondents, had positive effects on satisfaction, but at the same time a bigger number of visits to the specialist and experiencing problems seeing the specialist had negative effects on satisfaction with health services. Additionally,

three factors were included in the model with borderline significance: satisfaction with the specialist, satisfaction with the family doctor and gender (male respondents were less satisfied).

Table 6. Predictors of the satisfaction with the access to the health services, all the respondents (Paper VI).

Predictors	B	OR (95%CI)	<i>p-value</i>
Satisfaction with the existing health insurance system	0.82	2.27 (1.56–3.32)	0.000
Problems experienced to see the specialist	–1.21	0.30 (0.14–0.63)	0.002
Satisfaction with the PHC system	0.52	1.67 (1.08–2.63)	0.021
Age of the respondents	–0.26	0.77 (0.61–0.97)	0.026
Frequency of the visits to the specialist	0.23	1.26 (1.03–1.55)	0.028
Gender	–0.52	0.60 (0.35–1.02)	0.059
Satisfaction with the specialist	0.41	1.50 (0.99–2.28)	0.056
Satisfaction with the family doctor	0.43	1.54 (1.00–2.38)	0.052

The awareness of the patients' rights to get health services was studied in 2005. Most of the respondents were rather well informed about their rights. When comparing the level of awareness by socio-demographic variables, there were not any significant differences. However, as can be seen in Table 7, having personal contacts with FDs and specialists had some positive impact on the level of awareness.

Table 7. Percentage of the respondents informed about their rights to health services depending on their contacts with a family doctor or specialist (Paper VII).

Having the contacts with the providers of health services during the last 12 months before the survey	Personal contact with the provider of health services during 12 months before the survey	
	yes	no
Family doctor		
In case of acute disease the family doctor must admit the patient within one working day ($p<0.05$)	88.8	84.9
Every person has right to change his/ her family doctor ($p<0.01$)	97.4	94.5
There is fee for visit to see the specialist ($p<0.01$)	78.3	71.2
There is fee for day during the stay in hospital ($p=0.078$)	74.2	69.9
Every health professional has to provide emergency help to all patients, incl. non-insured persons ($p=0.729$)	94.3	93.8
Ambulance service provides the health services to all people (incl. uninsured persons) ($p=0.350$)	93.8	95.1
Specialist		
In case of acute disease the family doctor must admit the patient within one working day ($p<0.05$)	89.9	85.4
Every person has right to change his/ her family doctor ($p<0.05$)	97.8	95.3
There is fee for visit to see the specialist ($p<0.0001$)	80.5	72.1
There is fee for day during the stay in hospital ($p<0.05$)	75.9	70.3
Every health professional has to provide emergency help to all patients, incl. non-insured persons ($p=0.909$)	94.0	94.2
Ambulance service provides the health services to all people (incl. uninsured persons) ($p=0.642$)	94.0	94.6

6.2.2 Acceptability of the health reforms (Papers I–III and VII)

Acceptability of changes in the primary health care system (Papers I– III)

According to the results of the population survey in 1998, 68% of the respondents were registered on the patient lists. Ten months after the formal implementation of PHC reform, 45% of those interviewed did not perceive any changes with the transition to a PHC system based on family doctors. Nearly one quarter (23%) of the respondents thought that the situation in the PHC had improved, but one tenth of the respondents thought that the situation had become worse, and 22% of the respondents did not have any personal opinion (Paper I). The changes were often perceived by those persons who were

registered on the patient lists: 27% of them thought that the situation was improved compared to 18% of those who were not registered on the patient list ($p < 0.0001$) (Paper II). In 2002, more than half of the respondents thought that the existing PHC system was functioning better than the previous one. The views of the respondents in the population survey of 2002 are shown in Table 8.

Table 8. Distribution of the respondents' views on the comparison of the present and the previous PHC system five years after the implementation of PHC reform (Paper III).

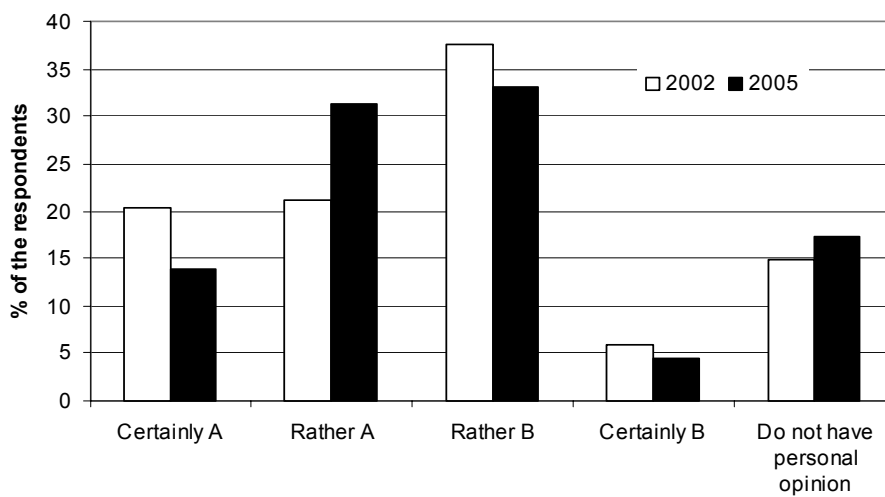
	Comparison of the existing PHC system with the previous system based on district physicians					
	FDs deal with a bigger number of health problems		Diagnostic and test opportunities of FDs have improved		Treatment methods of FDs have become modernised	
	n	%	n	%	n	%
Totally agree	180	18	170	17	262	26
Generally agree	451	45	386	39	419	42
Generally do not agree	132	13	181	18	108	11
Do not agree at all	68	7	86	9	52	5
Do not have a definite opinion	168	17	175	17	157	16

In the population survey of 1998 (Paper I), almost one half of respondents (49%) with health problems and complaints preferred to visit the family doctor, 38% of respondents would like to consult a specialist first, and 12% of the respondents did not have any opinion. Rural people mostly (65%) preferred to visit a FD first, while in the capital only 32% of respondents would prefer to consult a FD first. The choice of doctors was influenced by whether the respondent had registered on a patient list or not. 62% of the respondents who had registered on a patient list preferred to visit a FD first, while 30% of them would like to consult a specialist first. Respondents who had not registered on a patient list more often preferred to see a specialist directly (56%), and only 22% of them preferred to visit a FD first. These differences were statistically significant ($p < 0.0001$).

In the population survey of 2002 (Paper III), 35% of the respondents would like to see their FD first and if necessary get a referral to or a recommendation to see a specialist from their FD. 20% of the respondents would like to consult a specialist first, and 45% of the interviewed persons preferred to decide in each case either to see the FD or the specialist first. A referral to a specialist by the FD was more preferred by the rural people, but also by older respondents and by respondents with less education and lower income as well as by people who were more satisfied with their FD.

Acceptance of the solidarity principle of the health insurance system (Paper VII)

In 2005, the proportion of those respondents who preferred a situation where health insurance would finance all the health services, even if there would be long waiting lists (*Option A*) was a little bit higher compared to the year 2002. The relative importance of the respondents who would prefer shorter waiting lists even if only a part of the services would be financed by health insurance (*Option B*) decreased from 43% in 2002 to 38% in 2005. These results are shown in Figure 11.



Option A: all health services financed by health insurance, even if there are long waiting lists.

Option B: short waiting lists, but only a part of health services financed by health insurance.

Figure 11. Preferences concerning financing principles of health services (Paper VII).

In 2002, shorter waiting lists were preferred by younger respondents ($p=0.09$, $p<0.02$), but also by respondents with higher education ($p=0.13$, $p<0.0001$) and higher income level ($p=0.14$, $p<0.0001$). Those who evaluated their health status lower preferred a more comprehensive financing of health services regardless of longer waiting lists ($p=0.16$, $p<0.0001$). In 2005, no statistically significant correlation between the preferences concerning the financing principles and the respondent's socio-demographic characteristics were found.

In 2005, the respondents' views on the financing principles were related to their personal contacts with the health services. Respondents who had visited a dentist or specialist doctor during the previous 12 months preferred more likely the option B. However, people who visited a FD or called an ambulance preferred more often the option A. In 2002, the difference was found only in comparison of opinions of those people who had a contact with a dentist, and those who had not. Of those respondents, who had visited a dentist, 50% preferred the option B and 38% the option A. The respondents who did not have

a contact with a dentists, more often preferred the option A (43%), the option B was preferred by 41% of those respondents ($p<0.05$).

6.2.3 Satisfaction with the health services and the providers (Papers I–III, VI, VII)

Satisfaction with the PHC system, family doctor and specialists

Compared to the population survey of 1998, the satisfaction with the FD increased in the survey of 2002 and remained almost on the same level in 2005. At the same time, as shown in Table 9, the proportion of people who were not satisfied increased. In 2005, the people with chronic conditions were also found to be more satisfied with their FDs than other population.

Table 9. Level of satisfaction with the family doctors in 1998 (Papers I and II), 2002 (Paper III) and 2005 (Paper VI), in %.

Level of satisfaction	Year				
	1998 (n=996)			2002 (n=585) ¹	2005 (n=891) ¹
	Total (n=996)	Registered on patient list (n=675)	Not registered on patient list (n=321)		
Very satisfied	27	32	16	37	33
Quite satisfied	41	45	34	50	55
Not satisfied	7	6	7	12	8
Do not have personal opinion	25	17	43	1	4

¹Number of respondents who had the contact with their FD during the previous 12 months.

In 1998, the respondents who had registered on a patient list were more satisfied with their doctor, as well as several aspects of amenities and patient-practitioner relationships, than the respondents who had not registered on a list. The satisfaction with the family doctor was predicted by the patients' evaluation of their physician's competency, the comprehensibility of doctor's explanations, and the comfort of the clinic. The patients' evaluation of their FDs' competency was also in 2002 one of the predictors of the overall satisfaction with the FD. In addition, the satisfaction with the FD in 2002 was also predicted by the FD's understanding of the patient's problem, the punctuality of the FD, and the location of the PHC centre or clinic.

Based on the results of the survey of 1998, the right of the patients to choose their own family doctor and the availability of sufficient information about the changes in PHC system also had a positive influence on the level of satisfaction. The respondents who were more satisfied with their FDs thought that the whole

PHC system was functioning better than the previous system. In 2005, almost three quarters of the respondents were satisfied with the existing PHC system. Also, the satisfaction with the specialist doctors was high – 39% of the respondents were most and 51% rather satisfied with the specialists they have visited.

Satisfaction with the current health insurance system (Paper VII)

The proportion of respondents who were satisfied with the range of services financed by the health insurance was almost the same in 2002 and 2005. The relative importance of very dissatisfied persons decreased from 17% in 2002 to 9% in 2005, and the proportion of respondents who did not have a personal opinion about the health insurance system increased from 16% to 23%. These results are shown in Figure 12.

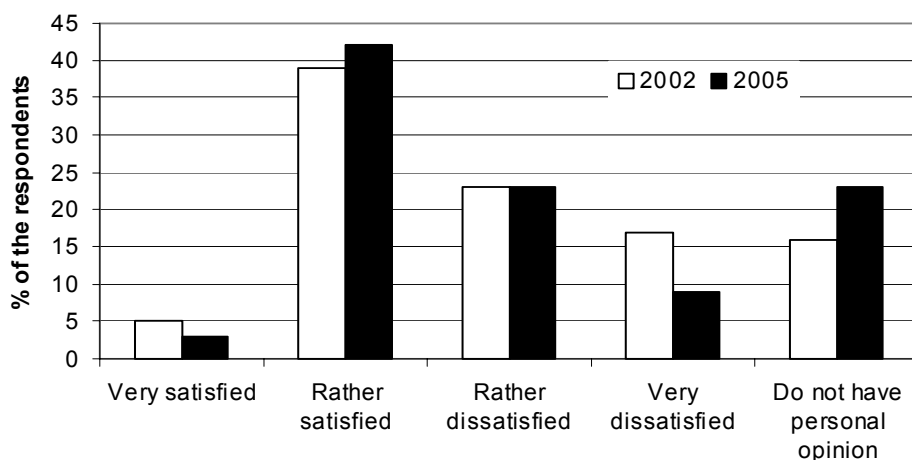


Figure 12. Satisfaction with the health insurance in 2002 and 2005.

The satisfaction or dissatisfaction with the health insurance was more often expressed by those respondents who had had contact with the providers of various health services during last 12 months before the survey. The satisfaction with the health insurance was higher in 2002 as well as 2005 among those respondents who visited a FD or specialist or were admitted in a hospital during the last 12 months before the survey, but lower among those who visited the dentist or called the ambulance. Both in 2002 and 2005 the satisfaction with the health insurance system was higher among those people who were more satisfied with the organisation of the PHC system ($p=0.33$, $p<0.0001$ and $p=0.25$, $p<0.0001$).

The most important predictor of the satisfaction with the health insurance in both years was the satisfaction with the PHC system. The higher level of the education was found to be a predictor of lower satisfaction, too. In 2002, Estonian-speaking respondents were less satisfied than others. In 2005, older

respondents as well as respondents with the higher income level were found to be less satisfied. Also, personal contacts with the dental health services had negative impact on the satisfaction with the health insurance. These results are shown in Table 10.

Table 10. Predictors of satisfaction with the health insurance in 2002 and 2005 (Paper VII).

	B	S.E.	Sig	EXP (B)	95.0% C.I. for EXP(B)	
					Lower	Upper
Model I (2002)						
Satisfaction with the primary health care system	0.842	0.117	0.000	2.322	1.846	2.921
Education	0.585	0.143	0.000	1.795	1.357	2.375
Native language	-0.565	0.199	0.005	0.568	0.385	0.839
Model II (2005)						
Satisfaction with the primary health care system	0.581	0.107	0.000	1.787	1.448	2.205
Age	0.012	0.005	0.010	1.013	1.003	1.022
Education	0.282	0.122	0.021	1.326	1.043	1.685
Visiting the dentist during last 12 months	0.325	0.148	0.028	1.384	1.036	1.848
Income	-0.126	0.64	0.048	0.881	0.777	0.999

Several sources of information about the health insurance were reported by the respondents. The FD as a source of information was reported most often, by 47% of the respondents, while the Internet was reported by 25%. Television and newspapers as sources of information were reported by 22% and 20% of the respondents.

7 DISCUSSION

Health sector reforms can be regarded as a set of policies and processes, which have impact on the health system, its institutions and the people who need and use the health services. Every single reform of the health system has its goals, e.g. equity, economic efficiency or social cohesion, and will be implemented by regulating quality, effectiveness, patient access or provider behaviour (Saltman *et al* 2002). Still, the main goal of every health system is to improve the population's health and this goal could be achieved as a result of the synergism of different actions.

Also from the patient's point of view, health care is not a goal. The patient wants health and the health care is used as an instrument to reach this goal (Mooney & Leeder 1997). The services provided by the health system are intended to promote health, prevent disease, provide medical treatment or rehabilitate individuals to maximum social functioning (Roemer 1997). When individuals interact with the health system, it influences their well-being through improvements in health. People's well-being and satisfaction with the health system are also related to the way they are treated, how easily they get the health services needed, and the environment where they are treated (Murray & Evans 2003).

But a health system should not be regarded as only a summation of activities that produce health. Although, the provision of the health services, including the access to the services and the satisfaction with them may influence the health status of the population, it is also influenced by various factors of the physical and social environment as well as personal habits, lifestyle and genetic background (Roemer 1997). On the other side, health needs are commonly understood as a need for care, and people are satisfied if their needs are met. But in the wider context of public health, need may be more inclusive (Mooney & Leeder 1997).

In this thesis, the analysis of the progress of health reforms in Estonia has been outcome focused. The analysis has been inspired by an analytical framework proposed by WHO (Murray & Evans 2003). This framework defines three intrinsic goals which the health system contributes: health, responsiveness and financial contribution. In this thesis two of these three goals – health and responsiveness – have been studied. In addition, most of the studies (Papers I–IV, VI, VII) have been focused on the quality of health system as indicated by the accessibility of the health services and its responsiveness to the needs of the population, in terms of the acceptability of and the satisfaction with these services.

The study presented in paper V focuses on the health outcomes and describes the trends in population health against the background of the public health reforms in Estonia. The health status of the population, including its determinants and the ways to improve it, is a complex and broad topic that cannot be analysed in detail in this thesis. However, the trends in population health are

related to the needs for health services and may indirectly affect the satisfaction with the provided health services as well.

7.1 The health of the population

Every health reform should be focused on better health outcomes for the population (Oreskovic 1998, Goddard & Smith 2001, Saltman *et al* 2002). However, the moving forces of reforms are very often economic and political, especially in the field of public health, where the success of the reforms depends very much on the co-operation of different sectors of the society. The decisions are made on the political level, and the implementation of these depends to a great extent on the understanding of the policy objectives. A lack of inter-sectoral co-operation is a serious problem when considering the bad health status of the population and the need to mobilise all the possible health resources (Axelsson & Bihari Axelsson 2005). On the other hand, the health of the population is also related to the economic and political processes in the society (Liu *et al* 1998, Värnik *et al* 2005), and the economic transition in Estonia may also have affected the health of the population.

Life expectancy in Estonia, both for males and females, started to decrease in the early 1990's and reached its lowest level in 1994. In the same year, the mortality due to diseases of circulatory system and external causes also increased. These changes are probably not related so much to the health system, but more to the transition period and the socio-economic difficulties in the Estonian society as well as in other CEE countries (Križova & Šimek 2000). These changes mostly affect the health of those social groups who have experienced the most rapid economic transition, those who are less educated and have a lack of social support (Kaasik *et al* 1998, McKee *et al* 2000, McKee & Shkolnikov 2001, Leinsalu *et al* 2003, Värnik *et al* 2005). However, the health projects have usually focused on raising the awareness of the population and changing their attitudes towards healthier choices without considering socio-economic risk factors, like unemployment or poverty in specific target groups.

The year 1995 was an important landmark for health promotion, and a number of health promotion activities were initiated. As a result of the reforms described, there is some evidence of a positive impact on the health of the population, at the same time as some of the health indicators have not improved or even become worse. The health promoting programmes and projects have mostly focused on raising people's awareness and changing their attitudes towards healthier choices. In the beginning of the 21st century, the first results of health promotion can already be seen.

There has been more progress in improving the health of the population when the surrounding environment has been more supportive. Therefore, health promotion and health education as tools for changing the population's attitudes

and health behaviour have to be supported by political decisions to make healthy choices easier for the population. For example, a rapid decline in mortality due to coronary heart disease in Poland is believed to be primarily due to changes in economic policy. A reduction of subsidies for animal fats led to improvements in the population's diet (Zatonski & Willett 2005). Also, strong policies against known risk factors (e.g. food) should be combined with individual care to control the risk factors (Paccaud 2006). As argued by Ebrahim and Smith (2001), a population based prevention of cardiovascular diseases, if restricted to health education focused on stopping smoking, reducing dietary fat intake, or taking regular exercise, might be of limited effectiveness. But these measures with additional control of blood pressure with anti-hypertensive drugs and cholesterol lowering with statins may reduce the risk of cardiovascular disease (Ebrahim & Smith 2001).

The effectiveness of cardiovascular and heart disease prevention in Estonia can be seen especially in the positive trends in the population's dietary habits, which may lead to a future decrease in mortality due to cardiovascular diseases. But it is also important to note, that the positive trends in dietary habits have occurred after the monetary reform in 1992, when the range of foodstuffs in shops increased dramatically and people got a real chance to make healthier choices. Positive outcomes have been achieved also in the field of sexual behaviour, reproductive health and family planning. The number of abortions and incidences of STI is believed to have decreased due to a raised awareness of the population, but also due to an improved availability of contraceptives and condoms. The remarkable decrease in infant mortality might be partly the result of health promotion and the changing attitudes of people, but it is also related to the implementation of modern medical technology in children's hospitals.

Regardless of the intensive health promoting activities, no remarkable progress has been made in the reduction of alcohol consumption and tobacco smoking. This is an illustrative example of how ineffective health promotion can be if it is not supported by other social and economic policies. The alcohol and tobacco policy in Estonia has been rather liberal, and alcohol as well as tobacco products are inexpensive and easily accessible. There is also a pressure from multinational tobacco companies, looking for new markets in the countries of the previous Soviet Union, and tobacco industry investments should not be underestimated (McKee *et al* 1998; Gilmore *et al* 2004). For example, Gilmore and McKee (2005) have found that the liberalisation of industrial investments has had a significant impact on cigarette consumption. Between 1991 and 2000, the cigarette production increased by 96% in countries where the tobacco industry made investments and by 11% in countries where it did not make any investments. Over the same period, cigarette consumption increased by 40% and the increase was concentrated in countries receiving investments.

It seems that the health programmes and projects need clearly formulated objectives and a well-defined strategy in order to achieve expected results. A good example is the National Programme for Prevention and Cure of Tubercu-

losis, which has almost achieved one of its objectives to decrease the number of new cases to 30 per 100,000 inhabitants. At the same time, however, there have been no positive effects of the HIV prevention programme. There has been very little co-operation between the different sectors involved, and the objectives and the strategy of the programme were formulated in a rather declarative way.

At the present, in Estonia like in other European countries more attention is paid on the inequalities in health. In this thesis, the analysis has been focused on common health trends, but, as shown in recent study, Estonia has a similar socio-demographic pattern of health as most European countries, i.e. older and less educated people have worse health (Helasoja *et al* 2006). Differences in mortality and morbidity by social class have been found among most of the member states of the European Union (Abel-Smith *et al* 1997). So, in addition to the implementation of various health promoting activities, one of the most important task for the policy makers should be to reduce the inequalities in health.

7.2 The quality of the health system

In this thesis, the quality of the health system has been defined in terms of the accessibility of the health services and their responsiveness to the needs of the population, including the acceptability of and the satisfaction with these services. According to Donabedian (1992), the degree of acceptability depends among other things also on the accessibility of the health services, but in this thesis the accessibility has been discussed separately.

The degree of satisfaction with the health services and the health system as a whole depends on how the patients' expectations are met in the service delivery process, and it is usually defined by the gap between the expectations and experiences (Øvretveit 1990, Harteloh & Verheggen 1994). However, the level of expectations may vary depending on the age, social status, residence, previous experiences, etc. Therefore, people may also perceive changes in the health services and the health system differently.

7.2.1 Accessibility of the health services

The accessibility of the health services depends partly on the way the health services are financed. In 1992, the Estonian health system moved to a Bismarck model of the financing of health services, and unlike a number of CEE and former Soviet countries a high level of financial protection has been maintained (Preker *et al* 2002). The solidarity principle of the social health insurance guarantees access to the health services for all the insured people. At the same time, the coverage is not universal like in some other countries, e.g. Hungary or Slovenia (Gaal 2004, Hlavacka 2004). The contribution of the state is rather low

as well. In Estonia only 4% of the insured people are insured by state and 50% of all the insured people are eligible for coverage without making any contribution. In the Czech Republic, for example, 56% of the population is insured by the state (Rokosova *et al* 2005).

Today, the health insurance system in Estonia has a number of responsibilities, and the financial resources collected by earmarked tax may not be sufficient for financing all the health care expenditures, like the payment of sick benefits to the insured persons, or the financing the capital investments of the providers. For that reason, the pressure on the health insurance budget has increased and it may also affect the accessibility of the health services.

Another important precondition for the accessibility of the health services is that there is an adequate number of health service providers. In the early 1990s, it was clear that the number of hospital beds as well as the number of physicians was too high, and decreasing these numbers has not affected the numbers of outpatient visits or hospital admissions. As revealed by the population survey and shown by official statistics, the number of outpatient visits to family doctors has been increasing year by year, whereas the number of outpatient visits to specialists has been decreasing. It shows that the workload and responsibility of the FDs is also increasing. FDs solve more and more health problems without referral to specialists. The fact that the number of visits to FDs is higher among patients with lower education and income and among rural people is favourable in general, as it reflects the good access to FDs also for people of lower social class. Those patients may face more health problems that require medical attention and the primary health care is accessible for them. Also, for the people with chronic conditions the access to the PHC services as well as the specialised medical care was the same compared to other people.

In recent years, the use of telephone services for health care advice has become more and more popular. It is shown that telephone consultations are increasingly accepted as alternatives to face-to-face contacts and it makes the family practice more accessible (Toon 2002, Brown & Armstrong 1995). In the survey conducted in 2002, 72% of the patients said that they have good possibilities to contact their FD by telephone. The number is comparable with another study (Kersnik 2000). There exist some problems with telephone access in the capital, however, where most of the FDs work continuously in larger centres or polyclinics. Studies have shown that in larger settings the care is much more fragmented and dispersed throughout the organisation and usually the patients do not have direct access to doctor (Barr 1995).

In general, the accessibility of the PHC and specialised outpatient services in Estonia is quite good. According to the population surveys in 1998 and 2002, the temporary access to family medical care can be considered good. About 60 per cent of people can visit their family practitioner the same day if they want to. The number of patients who have had to wait for more than five days was increasing during five years, but the survey data did not give any information on whether they had to wait because the physician could not see them earlier or

because the available time did not suit these patients. The results of the study conducted in 2005 confirmed that access to PHC services was as good as before, and there was no difference in waiting times for people with chronic conditions or other members of the population. Also, the waiting time to see a specialist was the same for both groups of respondents, but compared to other respondents people with chronic conditions still argued more often that they had difficulties seeing the specialist. Nevertheless, compared to the other countries, like United Kingdom, New Zealand, the USA, Australia and Canada, in Estonia the share of those having difficulties seeing a specialist was much lower (Blendon *et al* 2004).

Although the people with chronic conditions do not have any organisational barriers to get the health services, they still were less satisfied with the access to the health services. However, chronically ill people as frequent users of health services perceive the shortages of the health system more obviously than the rest of the population. Satisfaction with access to health services seems to correlate first of all to subjective matters: general satisfaction with the different aspects of the health system, previous experience and the self-determined need to see the doctor. It is possible that people who use health services more often also have a higher probability of experiencing several problems, e.g. a longer waiting time. Other researchers have found similar results, too (Iezzoni *et al* 2002, Bentur *et al* 2004). Also, different matters related to chronic illness like additional costs due to illness, limitations in everyday life, not accepting the presence of the illness, etc., may affect expectations for health services and satisfaction with the health system.

It is important to mention that the factors related to the PHC services (e.g. satisfaction with the PHC services and the FD and the frequency of visits to FDs) were found to have positive effects on satisfaction with access to health services. Being satisfied with the existing health system, people found it to be likelier in accordance to their need and they were more satisfied with access to health services, too.

It is also important to mention that for those people who are not covered by health insurance (5% of the population or approximately 70 000 people), the access to health services could be very limited, first of all due to financial reasons. As demonstrated in a previous study, the proportion of uninsured was especially large among unemployed people and also among those who belonged to the lowest income quartile. The uninsured people may use the outpatient health services less, but the hospitalisation rate might be higher among them, as the emergency care is provided free of charge for uninsured people (Habicht & Kunst 2005).

7.2.2 Acceptability and satisfaction with the health services

The acceptability of the ongoing reforms to the population and their satisfaction with the health system has been studied mainly in connection with the PHC reform and the health insurance reform. As a result of these studies, the degree of acceptability of and satisfaction with the health reforms might depend on several factors: the stage of implementation of the reform, the personal background of the respondents, the personal contact with the doctor, but also the existing information about the current changes.

In the early stages of implementation of the reforms, people have little personal experience and the evaluation of the changes is influenced by the expectations as well as the general public opinion. For example, in 1998, a few months after the implementation of the PHC reform, almost half of the population investigated did not perceive any changes, whereas nearly one quarter of the people thought that the situation had improved. Five years later, more than half of the population found that the existing PHC system was functioning better than the previous one. Thus, in the early stages of any reform, it is important to provide relevant information about the forthcoming changes in order to dissipate doubts and to form more positive attitudes and reasonable expectations among the population. Better information about the ongoing reforms may contribute to higher satisfaction with the physician as well as with the health system as a whole. People who were more informed about the changes in the PHC were also more satisfied with their family doctors.

On the other side, rapid changes in health care can bring dissatisfaction (Mastilica & Chen 1998, Field 1999, Bara *et al* 2003). Such evidence was found as well when the satisfaction with the health insurance system was studied. The study performed in 2002, directly after the new health insurance act was implemented, demonstrated that the level of dissatisfaction was more emphasised directly after the implementation of the changes than three years later.

Analysing the evaluation of the health system, it becomes clear that the Estonian patients are very satisfied with their physicians. At the same time, the evaluation of the health care financing system and the access to the health services were evaluated lower. The satisfaction with the health services as well as with the whole system is related to several factors like age, level of education and income, and place of residence. It has to be pointed out, however, that the overall satisfaction with the different aspects of the health services was mainly influenced by the experiences of the primary health care. The satisfaction with both the family doctor and the PHC system as whole were found to be important positive predictors of the satisfaction with the access to the health services. Also personal contacts with the FD and positive opinions about PHC system predicted a more positive evaluation of the current health care financing system. These findings demonstrate that highly qualified FDs and a well functioning

primary health care system are important for the satisfaction with the health system as a whole.

Satisfaction with the family doctors and acceptance of the PHC reform

Since the PHC reform was implemented, the satisfaction with the family doctors has increased. At the same time, however, the proportion of dissatisfied persons has increased as well. During five years almost all the people have had contacts with their FDs and they have probably formed their opinion about the FDs more clearly. The satisfaction with the FDs was mainly predicted by the competence of the physician as perceived by the patients on the one hand, and by the response to the patients' needs expressed by the understanding of the patients' problems on the other. The location of the PHC centre and the doctor's respect for the patient expressed by the punctuality of the FD are also important factors. Similar results were also obtained in the EUROPEP study in 1995 (Grol *et al* 1999).

In the beginning of the PHC reform, one important predictor of the patient satisfaction with the FDs was registration on a patient list. Persons who had chosen their own doctor were more likely to visit the FDs first rather than a specialist for their health problems. They were also more satisfied with their FDs and with several aspects of the PHC. These findings are supported by another study (Kersnik 2001). To be included in a patient list improves the patient-doctor communication and the continuity of care. It also facilitates a more active participation of the patient in the treatment process and increases the patient's satisfaction with the care provided (Øvretveit 1990, Strafield 1994, Freeman & Hjortdal 1997).

In general, Estonian people seem to accept the family doctor as the first doctor to be seen for any health problems. The acceptance of the PHC system based on the FDs was expressed in the higher evaluation of the work of FDs compared to the previous system. More than half of the respondents thought that the FDs deal with a bigger number of health problems, have better diagnostics opportunities and use more modern treatment methods than the previous district doctors. This can be regarded as a positive evaluation of the changes in the PHC system and it was first of all related to the satisfaction with the FDs.

In the beginning of the PHC reform, almost half of the respondents confirmed that they would prefer to visit the FD first with their health problems. This viewpoint was strongly expressed especially by the rural population. Inhabitants of the capital city mostly preferred to visit a specialist first. Similar findings were also observed in some previous studies, where patients who were living in larger urban areas preferred to consult specialists first (Kulu-Glasgow *et al* 1998, Tabenkin *et al* 1998). One reason why inhabitants of the capital preferred to visit specialists can be the lower number of trained FDs in the capital in 1998 compared to other regions in Estonia. This reason for preferring specialists has been reported in another study (Tabenkin *et al* 1998). Another

reason can be the fact that access to specialised medical care has always been easier in the capital than in the rural areas. This explanation seems to be more adequate, as in 2002 the same tendency in people's preferences was found.

It seems that younger, more educated people with higher income who are living in the urban areas prefer more freedom to decide on their own whether to see a FD or a specialist first. These results are also in agreement with results published earlier (Tabenkin *et al* 1998, Kulu-Glasgow *et al* 1998). At the same time, in the early phase of the PHC reform, younger people demonstrated more positive attitudes to the PHC: they often found that the situation in the PHC had improved, and they were more satisfied with their PHC physician. Some other researchers have also found younger people more positive to ongoing reforms (Bara *et al* 2003, Mastilica & Chen 1998).

Satisfaction with the health insurance system and acceptance of the current financing principles of health services

The basic principles of the new financing system were agreed already in 1992, when the health insurance system was introduced in Estonia. Ten years later, in 2002, the new health insurance act stated more clearly some aspects of mandatory social health insurance, including the co-payment for insured people. Directly after the implementation of these changes almost half of the Estonian adult population was satisfied with the benefits of the existing health insurance system. Three years later, the proportion of satisfied respondents remained on the same level, but the proportion of persons who were dissatisfied had decreased and much more people took a neutral stance. The explanation could be that the first study was carried out a month after the new Health Insurance Act was enacted, and before that a number of public discussions were held about the changes planned in health insurance. Probably these discussions in media raised the public interest toward the health insurance and its benefits, and people were therefore more active to express their opinions.

Often enough, people's opinions about health care and health care reforms are related to their socio-economic background, as previous studies have shown (Mastilica & Chen 1998, Mastilica & Babic-Bosanac 2002, Bara *et al* 2003, Balabanova & McKee 2004). However, in studies conducted in 2002 and 2005 in Estonia, only a few background factors like age and level of education were found to be related to the satisfaction with the health insurance. At the same time, the level of satisfaction with the health insurance was strongly influenced by the opinion about the organisation of the PHC system. It seems also that one factor which may have an influence on the satisfaction with health insurance is the level of co-payment for the health services. As the co-payment for the PHC services, specialised out- and in-patient care has been very small or nonexistent, the satisfaction with the doctors rather high and the access rather good, the people who have used these services were also more satisfied with the existing health insurance.

The preferences regarding the financing options were related to socio-demographic factors in 2002, but to personal contacts with the health services in 2005. The results of the survey in 2002 were expected, since other researchers had come to similar results. Younger, healthier, more educated and wealthier people would prefer a more limited health insurance financing of health services (Mastilica & Babic-Bosanac 2002, Balabanova & McKee 2004). However, three years later, these relations between socio-economic background factors and preferences were not found. Instead, the attitudes regarding financing principles were related to the personal contacts with the health services.

7.3 Methodological considerations

7.3.1 Data collection methods

To analyse the progress of health sector reforms, including the trends of population health indicators and the accessibility of the health services, official health statistics have been used. That kind of data can provide information about the use of health care resources and the frequency of different diseases, information about service provision, and about distribution of human resources. Official statistics can also help to identify problems in the health system (Janovsky & Kassels 1995, Crombie & Davies 2002).

In order to collect data about the responsiveness of the health services in connection with the reforms three population surveys were conducted. Surveys are methodologically acceptable to investigate what is happening at a certain point or period of time, and to evaluate the patients' acceptance of an intervention, to explain whether all groups in society have an equal and satisfactory access to the health services, but also to investigate different aspects of service delivery as well as the attitudes and beliefs of the health care providers and the patients (Gray 2001, Crombie & Davies 2002). The method of data collection applied in the population studies was face-to-face interviews based on pre-categorized questionnaires. For the non-Estonian respondents, the questionnaires were translated into Russian language.

7.3.2 Validity and reliability

Validity and reliability of the official health statistics

As described previously, the official health statistics provide information on the use of the health system resources and the frequency of different health problems. For health system research, the data should be collected and analysed in a standardised way using classification systems that allow comparison over time and across different institutions, regions and countries. The development of standards for obtaining data and denoting different aspects of performance is an

integral part of this kind of research (Janovsky & Kassels 1995). Much of the official statistics are primarily collected for administrative purposes, however, and their accuracy has therefore been regularly questioned. The concerns include the completeness of registration and the accuracy of coding. In particular, the allocation of diagnoses can be difficult, so estimates of disease frequency from mortality and cancer incidence data should be treated with some caution (Crombie & Davies 2002).

In Estonia, the procedure for and forms of reporting official health statistics is established by the Ministry of Social Affairs. The statistical reporting is based on individual reports from different areas of health care. Basic reports are compiled at the level of the health care provider – institution or private practitioner. These reports include data about the following areas: health care institutions, health care personnel, use of health services, hospital bed utilization, and cause of hospital discharges. The collection of data on incidences is based on the patients' visits to the health care institutions.

The present organisation of health statistics in Estonia does not provide for registering cases of diseases on the individual level. The situation where a patient can contact many different health care institutions regarding the same disease may affect the registration of new cases and thus the incidence statistics. Only data about cancer, tuberculosis and selected infectious diseases (including HIV infections and sexually transmitted diseases) are collected on the basis of individual. The mortality statistics is based on individual medical death certificates (including the medical perinatal death certificates) and the data are collected by the Statistical Office of Estonia. Data about abortions are collected by the Register of Births and the Pregnancy Termination Database. The coding of the health related data is based on the International Statistical Classification of Diseases and Related Health Problems (MoSA 2003, Statistical Office of Estonia 2005).

To avoid misinterpretation of the morbidity data in the current studies, only the data about the incidences of tuberculosis, HIV infections and selected STI have been used. It is an incomplete reflection of the health status of the population, but as these data are collected on the basis of individuals, they are more reliable than the morbidity data of non-communicable diseases. The complexity and limitation of the use of morbidity data has also been emphasised in international comparisons, mainly because of the lack of consistent definitions (Abel-Smith *et al* 1997). On the other side, the trends of incidences of tuberculosis and HIV infections focus on the essential public health problems in Estonia since the middle of the 1990s, as they were in the member states of European Union in the early 1980s (Abel-Smith *et al* 1997).

The validity and reliability of the population surveys

The validity and reliability of the measuring instruments are key questions for the interpretation of the survey results. To improve the content validity of the measuring instruments used in the population surveys, the items for the questionnaires were based on the concept of quality and patient satisfaction, and special attention was paid to the concept of quality and patient satisfaction in general practice (Brooks & Borgardts 1994, Jung 1999). It was also important that people could distinguish between their own health care and what goes on in the health system as a whole (Blendon *et al* 2001). The questionnaires used in the surveys included items, which enabled the respondents to evaluate their personal satisfaction with the doctors and the services provided, as well as their satisfaction with the health system as a whole. The differences in satisfaction and acceptability levels between the different socio-economic groups of the respondents (age, place of residence, level of the income, and education) supported the construct validity of the instrument. Also, the correlations between the satisfaction rate and various aspects describing the provision of services in the PHC supported the construct validity. Criterion validity was not tested because of default of the appropriate standard instrument.

The reliability of the instruments in the population surveys used was tested with Cronbach's coefficient α . For the questionnaires used in 1998, 2002 and 2005, the Cronbach's reliability scores were 0.80, 0.71 and 0.72, respectively.

Representativeness

The samples used in the population surveys were stratified to ensure that all sectors of the Estonian population aged 15–74 were represented, and the sizes of the samples were adequate to present existing differences between the sub-groups. The people aged 75+ were not included in the sample, which can be considered as a limitation of the study. Although older people may need more health services, they cannot be considered as a homogenous group, which means that the results might be biased (McKinlay 1992). The use of face-to-face interviews and pre-structured questionnaires contributed to the reliability of the information collected in these surveys. In addition, professionally trained interviewers were used in the data gathering process, which minimised the interviewer bias.

8 CONCLUSIONS

Since 1992, the Estonian health system has undergone radical reforms. During these years, a number of legislative acts have been established, which form a new legal basis for the existing health care system. The success of the implementation of any health reform depends on many factors, but the main results of the reforms should be focused on better outcomes for the population. This study has aimed to analyse the recent health sector reforms in Estonia with a focus on the outcomes and the quality of the health system. The accessibility of the health services and the acceptability of and satisfaction with these services constitute important quality aspects from the population's point of view. In the planning of health sector reforms, however, it is most important to consider the outcomes in relation to existing health problems and improvements in the health of the population. Proceeding from this aim, the study has focused on the following objectives:

- to analyse the PHC reform in terms of the access to the health services and the acceptability and satisfaction with these services;
- to analyse the health insurance reform in terms of the acceptability and satisfaction with the new system; and
- to analyse the public health reforms and their impact on the health of the population.

The *primary health care reform* has been the most studied and also the most successful of the health sector reforms in Estonia. The development of family medicine was seen by the MoSA as the next step after the establishment of a mandatory health insurance system in 1992. The timing of the reform was appropriate, while people as well as health professional expected a more rational and organised health care delivery system. The reform of the medical education at the University of Tartu supported the PHC reform as well. As seen from the results of this study, the success of the PHC reform is expressed by the evaluations of the population as well. Most of the Estonian population has accepted the new PHC system, and the satisfaction rate has been increasing year by year. The family doctors are in the centre of the new PHC system, and their professional competence plays an important role in making the system meet the patients' needs more widely. Also, the satisfaction with the FDs and PHC system is an important predictor for the satisfaction with access to health services in general.

However, the aging of the population and a high level of life-style-related risk factors among the adult population would probably urge the growth of the number of chronically ill people who need more comprehensive and integrated health services. This is a challenge for the whole health system, but the strengthening of the existing PHC system seems to be the most effective way to meet the needs of those patients and to increase the satisfaction with the health system. On the other side, this also indicates a need for more effective health

promotion and disease prevention activities on the population as well as individual level. This is important in order to achieve a better health status for the population, but also to diminish in the future the amount of resources spent for treatment and rehabilitation.

The *health insurance* financing mechanism is a tool to achieve the main objectives of a health system: universal and equal access for all members of the society, effective care for better health outcomes, and responsiveness to patient concerns (Goddard & Smith 2001, Saltman *et al* 2002). The achievement of these objectives and the satisfaction with the health insurance is perceived through personal contacts with the health services and availability of the services most needed. In Estonia, the satisfaction with the health insurance system has been sustained and even increased at the same time as the dissatisfaction has been decreased, which indicates that the situation in the health system is becoming more stable. Due to the solidarity principles and the comprehensiveness of the financing mechanism, a high level of financial protection has been maintained and the co-payment for insured people is rather small. Regardless of the dissatisfaction with the current system, expressed by one third of the respondents, it seems that the mandatory social health insurance is in accordance with the needs and expectations of many people. Due to the solidarity principles, the health services are mostly accessible when people need them and there are no organisational barriers for those who need the services most. At the same time, people's attitudes to the financing mechanisms show that the cost sharing could be conditionally acceptable, if it would be accompanied with better access to the health services. This area should be studied in more depth in the future.

During the last ten years, Estonia has also made some progress in the field of the *public health*. A number of national programmes to prevent the most essential health risks have been initiated and financed by the state budget. In addition, the Estonian Health Insurance Fund has contributed by earmarking resources for different health promotion projects. As a result, there is some evidence of a positive impact on the health of the population, but at the same time some of the health indicators have not improved.

The public health projects have mostly focused on raising the awareness of the population without considering socio-economic risk factors like unemployment or poverty in the specific target groups. To be effective, health promotion and health education have to be supported by political decisions to make healthy choices for the population easier. Also, focusing more on the individual prevention in the level of PHC may have a more positive result. There is, however, still a lack of comprehensive national health policy and strategy in Estonia. There is also a lack of long-term planning and understanding of the need for intersectoral co-operation. The lack of co-operation between different sectors may be the result of a low awareness of responsibilities regarding public health among key decision makers.

The evaluation of health reforms is often complicated because the objectives have not been clearly formulated and measurable outcomes are missing. Except for the PHC reform, there is still a lack of systematic research and evaluation of the implemented health sector reforms that have taken place in Estonia.

In general, the main achievements of the reforms in the Estonian health sector are related to the quality – the accessibility and the responsiveness – of the health system and can be summarised as follows:

- The primary health care reform has been implemented and most of the objectives with this reform have been achieved. In general, people accept the changes in PHC system and the satisfaction with the FDs has increased. Access to the PHC services is good.
- The health insurance system has been implemented and a high level of financial protection has been maintained. The solidarity principle of the health insurance guarantees the accessibility of health services to all insured people. About half of the population is satisfied with the present system. The satisfaction with the health insurance system has been sustained and even increased, at the same time as the dissatisfaction has been decreased.

The main limitations in the Estonian health reforms are related to the health outcomes. Regardless of a number of activities in the field of public health, the level of lifestyle related risk factors is rather high, the incidence of some communicable diseases is still high and there is still a large discrepancy in life expectancy between men and women.

An analysis based on the outcomes, shows that the development of the Estonian health system has been heterogeneous. The reforms implemented within the health care system, focusing on the financing and organisation of health services, have been rather successful. However, in the field of public health where the implementation of changes requires long-term planning and intersectoral co-operation, the success in terms of improvements in the population's health has been rather modest. The health projects have also focused mainly on raising the awareness of the population without considering socio-economic risk factors like unemployment or poverty in the specific target groups.

A successful health reform needs support from the society – the public, the politicians and the professionals. To implement the reform, there should be an understanding of how the planned changes will affect the different levels of the health system as well as health outcomes. Planning a reform needs a clear vision, based on the common values accepted in the society. The next step should be the setting of goals and clearly defined objectives. Once the changes are being implemented, the evaluation process should also be started. This study has shown that it is possible to evaluate health reforms from the perspective of the population, and to understand what is important for the people.

Up to now, the major reforms in Estonian health system have been implemented. However, the environment is changing and the health system has to respond to these changes. The next step should be to achieve a public agreement on the common values of the health system and to set long-term health policy goals. To improve the effectiveness of policy implementation and reform, and the importance of systematic research and evaluation from the people's perspective, should also be stressed.

9 ACKNOWLEDGMENTS

I would like to thank all of those who in various ways have contributed to this work, and made my research possible.

I express my sincere gratitude to my supervisor Professor Runo Axelsson for his supportive guidance and advice in completing the manuscript. I would like to thank Professor Ingvar Karlberg for discussing the topics of the thesis and helping to compose the first draft of disposition for DrPH thesis.

My special gratitude goes to Associate Professor Ruth Kalda and Professor Margus Lember for involving me in the primary health care research process. During this process I also had the pleasure to work together with Professor Heidi-Ingrid Maaros, and Associate Professor Kersti Meiesaar. I am very thankful to all of them for good cooperation. I am grateful to my co-author Dr. Georg Männik for sharing their ideas during the preparation of the articles. Special thanks are due to my colleague Krista Fischer for her statistical advice.

I warmly thank Dr. Katrin Saluvere, Dr. Ivi Normet and Mr. Tiit Jürimäe who have supported my research ideas and helped to realize it during my work at the Ministry of Social Affairs in 2002–2003.

I feel much indebted to the Nordic School of Public Health for giving me the opportunity to attend the Diploma, Master and Doctor of Public Health Courses.

Finally, my special heartfelt thanks go to my husband Kaido for always encouraging and supporting me during my studies.

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APPENDICES

Appendix 1. Papers I–VII

Põlluste K, Kalda R, Lember M. Primary health care system in transition: patients' experience. *Int J Qual Health Care* 2000; 12:503–9.

Kalda R, **Põlluste K**, Lember M. Patient satisfaction with care is associated with personal choice of physician. *Health Policy* 2003; 64:55–62.

Patient satisfaction with care is associated with personal choice of physician

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Received 2 February 2002; accepted 16 June 2002

Abstract

Objective: To evaluate whether choosing one's own primary care doctor is associated with patient satisfaction with primary health care. To evaluate factors related to population's satisfaction with primary health care. **Population:** A random sample of Estonian adult population ($N = 997$). **Study design:** Cross-sectional study using a pre-categorized questionnaire which was compiled by the research group of the University of Tartu and the research provider EMOR. **Results:** Altogether 68% of the respondents had been listed in their personal physician. Their overall satisfaction with the physician as well as satisfaction with several aspects of primary health care were significantly higher compared with those of unregistered respondents. Although some other factors (practice size, patient age, health status) also influenced patient satisfaction, presence of a personal physician appeared the most important predictor of high satisfaction with physician's punctuality and understanding, effectiveness of prescribed therapy, clarity of explanations given by the physician as well as with overall satisfaction with the physician. **Conclusion:** Personal doctor system is associated with patient satisfaction with different aspects of care.

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Keywords: List system; Choice of personal physician; Patient satisfaction

1. Introduction

It is argued that a patient list system guarantees better continuity of care, contributes to health promotion and illness prevention activities, as well as helps to avoid duplication of services and create efficient referrals [1]. Among the characteristics of

practices which might influence patient satisfaction with care are presence of a list system and practice size [2,3]. Continuity of care has also been shown to improve patient satisfaction [4,5]. Patients' perception of care presents increasing interest, particularly in a situation where major changes have occurred in health care system. Following fundamental changes in society in the countries of Central and Eastern Europe, remarkable reforms in health care were undertaken at the beginning of the 1990s. Most of these countries

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changed from state-budget-funded centralized systems to insurance based liberal fee-for-service payment systems [6]. In the late 1990s, several of these countries have made attempts to introduce capitation payment system and patient lists in order to restrain soaring health care costs. During the last 7–8 years analogous changes have taken place in Estonian health care: changing of the funding system of health care from the state budget to the health care insurance fund in 1992, and moving from highly specialized medical providers to a primary care oriented system. Family medicine was seen as a possibility to build up a more effective and better coordinated health care system. At the center of primary care reform were: (1) recognition of family medicine as a speciality with its own under- and postgraduate training programs in 1993 (2) change of the contracting and remuneration system of primary care doctors together with introduction of a list system for family doctors in 1998 [7]. Every person was expected to choose their family doctor by registering on a patient list. They could register personally while contacting doctor at his/her office or at the registration desk of the polyclinic (without contacting doctor before registration), or to be included in the list by a medical staff of local polyclinic according territorial principle. An opportunity to contact the physician directly to be entered in the list was seen as a tool for strengthening personal relationship with doctor. There is limited evidence concerning the effects these changes exert on patient satisfaction as an indicator of quality of care. It has been demonstrated that in a large centralized Health Maintenance Organization, whose members reported having chosen their personal physician were substantially more satisfied with their physician than those who reported having been assigned [8]. It has been demonstrated by a recent study that choice is important for mutual trust, because patients have more confidence in physicians whom they themselves select [9]. While the success of medical care depends significantly on patients' trust in their physician, free choice of a personal doctor seems to be an important precondition for gaining good medical outcomes. However, patients in different cultures and health care systems may have differ-

ent views on several aspects of primary care, among them also on the possibility to see the same GP at each visit [10,11].

The aim of this study was: (1) to investigate whether having a personal physician is associated with patient satisfaction with different primary health care aspects (2) to compare satisfaction with primary health care in those who chose their doctor on their own initiative and in those who were directed to the list by the medical staff of a local polyclinic. (3) to assess whether choice of the personal doctor among other factors is related to satisfaction with primary health care.

2. Method

In October 1998, a random sample of Estonian residents, aged 15–74 years ($n=997$), were personally interviewed by using a pre-categorized questionnaire which was worked out in cooperation with a study group of the University of Tartu and the market research company EMOR. The sample of this study was formed by self-weighting: a proportional model of the total population aged 15–74 years, where all respondents represent the equal number of respective persons in the population, was used. Two-stage stratification was used to form the sample. First, the population was divided into six strata on the basis of territorial residence, sample size in each stratum was based on the proportional division of the population. Then two-stage selection was made in each stratum. Primary sampling units were settlements (towns, small towns, county centers and villages). Sampling points (a total of 63) were chosen randomly according to settlement size (number of residents who qualified for the survey's age group) on the basis of proportional probability. In each primary sampling unit, secondary sampling units, individuals were selected. Face-to-face interviews were carried out by interviewers of EMOR. To obtain a sample of the required size, 1895 contacts were made with respondents. The final number of interviews conducted was 997. In 446 cases nobody was at home during two visits, in 166 cases the person who was home did not meet the

criteria of the study (he/she was younger or older), and 286 persons refused to answer.

The questionnaire included questions about patient demographics, health status as well as about various aspects related to primary health care. Ten questions focused on satisfaction with specific elements of care and one was about overall satisfaction with the physician. Respondents rated satisfaction with each specific element on a 7-point scale (1, extremely dissatisfied; 7, extremely satisfied). Overall satisfaction was measured on a 4-point scale (very much satisfied, quite satisfied, not quite satisfied, very much dissatisfied). They were also asked whether they were registered with their personal doctor and how they chose their physician. Basing on answers we divided the patients into three groups: those who had chosen their doctor on their own initiative, those who had chosen the doctor at reception and those who had been registered by medical staff.

Data were analyzed by using SPSS (Statistical Package for the Social Sciences). χ^2 -test was used to compare the demographics, health status and satisfaction of the patients who had chosen their personal doctor and of those who had not. Categorical survey responses were dichotomized (e.g. extremely satisfied/very much satisfied versus all other responses on a 7-point satisfaction scale). A multiple logistic regression model was used to predict the reporting of high satisfaction with care. The model was developed using the following procedure: the dependent variable was taken as satisfaction with specific aspect of care (1, very satisfied; 0, other) and independent variables represented social-demographic aspects (gender, age, education, income, residency place, occupation), practice and health condition. All statistically nonsignificant variables were excluded from the final model.

3. Results

The survey was completed by 997 patients. The sample represents the Estonian population (Table 1).

Of the respondents 68% ($n = 675$) were entered in the list of their personal physician. There existed

Table 1

Characteristics of respondents by sex, age, nationality and place of residence in comparison with the total population of Estonia (aged by 15–74 years)

	Sample <i>N</i> (%)	Number of total population (1 January 1998) ^a <i>N</i> (%)
<i>Gender</i>		
Female	527 (53)	587 350 (53)
Male	470 (47)	515 436 (47)
<i>Age</i>		
15–24	191 (19)	207 751 (19)
25–34	184 (18)	204 541 (18)
35–49	285 (29)	312 276 (29)
50–64	221 (22)	244 575 (22)
65–74	116 (12)	133 647 (12)
<i>Nationality</i>		
Estonians	649 (65)	700 216 (64)
Non-Estonians	348 (35)	402 570 (36)
<i>Residential place</i>		
Capital	310 (31)	325 591 (30)
Urban area	411 (41)	452 773 (41)
Rural area	276 (28)	324 422 (29)

^a Source: Statistical Office of Estonia.

some differences in demographics and health status between the patients who had chosen a personal family doctor and those who had not.

Patients who had registered with a personal doctor were more likely to be women and persons who considered their health status poorer compared with the others ($P < 0.05$ by χ^2 -test). People with poorer health status were more likely self-selecting personal doctor compared with those who felt their health good ($P < 0.000$ by χ^2 -test). More than 3/4 of the urban population and 4/5 of the rural population had registered with their personal family doctor versus less than half of the population of the capital ($P < 0.001$ by χ^2 -test).

3.1. Satisfaction with primary health care

The data of this study revealed that patients who had registered with their personal doctor were more satisfied with different aspects of primary care than those who had not (Table 2).

Table 2

Comparison of satisfaction of patients who had chosen their personal doctor vs. those who had not (% of patients who were extremely satisfied or very much satisfied with the following aspects of care)

Satisfaction item	Patients who had registered with a personal doctor (<i>N</i> = 675)	Patients who had not registered with a personal doctor (<i>N</i> = 321)
<i>Organizational aspects of care</i>		
Location of the family practice centre/clinic	72	64
Cleanliness and comfort of the clinic	71	58**
Availability of modern equipment	42	37
Simplicity of access to appointment	75	63**
Waiting time in the family practice center/clinic	62	55
<i>Some aspects of patient–doctor interaction</i>		
Physician's punctuality	74	61**
Physician's ability to understand	81	64**
Physician's competence	71	63*
Effectiveness of prescribed therapy	67	58*
Clarity of physician's explanations	73	61**
Overall satisfaction with physician	77	50**

*, $P < 0.05$; **, $P < 0.01$; $df = 1$.

In the group of patients who had registered with a personal doctor, overall satisfaction with the physician, with waiting time at the family practice center and with cleanliness and comfort of the clinic as well as satisfaction with simplicity of access to appointment, with physician's punctuality, understanding and clarity of explanations were significantly higher than in the other group.

The mode of patient registration was different in different practices: some had a possibility to contact the physician before registration, some chose the physician at reception, while others were assigned to the list. Patients who chose their physician on their own initiative rated their satisfaction significantly higher than the others. (Table 3).

Persons who had chosen their doctor on their own initiative were more likely to rate their satisfaction as 'extremely satisfied' or 'very much satisfied' concerning eight items of the listed eleven.

3.2. Predictors of satisfaction

Most social-demographic variables (gender, education, nationality, place of residence, income

and occupation) were excluded from the final regression model due to their weak power to predict satisfaction with particular aspects.

The most common predictors of satisfaction were related to the practice: presence of the family doctor and size of the health center. Patients who had not chosen their personal doctor were less satisfied with the location, cleanliness and comfort of the practice, with physician's punctuality and understanding, effectiveness of prescribed therapy, clarity of physician's explanations; also, their overall satisfaction with the physician was much lower (Table 4). Large practice size was negatively correlated with satisfaction with some organizational aspects and with physician's punctuality and understanding.

4. Discussion

In January 1998 a list system with mixed remuneration (capitation, fee-for-service, basic practice payment and bonuses) was established in Estonia. All people were asked to register with a regular physician: family doctor, general internist or pediatrician. The right to choose one's own

Table 3

Patient satisfaction with different aspects of care according to the mode of registration (% of those who were extremely satisfied or very much satisfied with the following aspects of care)

Satisfaction item	Patients who had chosen their doctor on their own initiative (N = 263)	Patients who had chosen their doctor on reception (N = 182)	Patients who were assigned to a roster (N = 230)
<i>Organizational aspects of care</i>			
Location of the family practice center/clinic	79	65	69**
Cleanliness and comfort of the clinic	78	63	68**
Availability of modern equipment	49	40	35*
Simplicity of access to appointment	80	67	74**
Waiting time in the family practice center/clinic	68	52	61**
<i>Some aspects of patient–doctor interaction</i>			
Physician's punctuality	77	72	72
Physician's ability to understand	83	81	78
Physician's competence	79	66	65**
Effectiveness of prescribed therapy	73	64	63
Clarity of physician's explanations	80	73	66**
Overall satisfaction with physician	84	71	72*

*, $P < 0.05$; **, $P < 0.01$; df = 2.

physician and to contact the physician directly to be entered in the list was considered important points in this process. Since this kind of free registration is unique, analysis of its relationship with patient satisfaction can provide important information for all countries where similar reforms are in process.

The findings of the study showed that 9 months later, 68% of the Estonian population reported having a personal physician. Although this figure was not comparable at that time with the data of Denmark, UK or Portugal where 97–85% of the people are registered with the family doctor [12], it suggests that most Estonian citizens wish to receive care from a regular personal physician, who knows them and is familiar with their problems. Besides, in rural areas, where the personal doctor–patient relationship was much more expressed already in the past, almost all people had registered. Finding that individuals

who are more ill are more likely to self-select personal doctor has been shown already by an earlier study [13]. They demand more care and, therefore, are more interested to find a physician who knows about their health conditions. Probably they had chosen a doctor already familiar with them.

During this study a random sample of Estonian adult population was investigated. As the structure of the sample corresponded to the general structure of the Estonian population with respect to age, gender, nationality and territorial distribution, the results of this study can be regarded as representative.

The results of this study revealed that patients who had registered with their personal physician were more satisfied with some organizational aspects of primary care as well as with several aspects of patient–physician interaction compared with those who had not registered. Among the

Table 4

Multivariate logistic regression analysis of demographic factors, practice type, health status against satisfaction level: 0, less satisfied; 1, very satisfied (only statistically significant predictors are listed)

Item of satisfaction/predictor	Odds ratio (95% confidence interval)	P value	B estimate	S.E.
<i>(1) Location of the family practice center</i>				
*Absence of personal family doctor ^a	0.71 (0.52–0.98)	0.037	−0.34	0.16
<i>(2) Cleanliness and comfort of the clinic</i>				
*Absence of personal family doctor	0.69 (0.50–0.96)	0.026	−0.37	0.17
<i>*Practice type^b</i>				
Small (2–5 FD)	0.45 (0.22–0.89)	0.022	−0.81	0.35
Large (> 5 FD)	0.33 (0.18–0.60)	0.0004	−1.12	0.31
<i>*Age^c</i>				
25–34	1.07 (0.67–1.7)	0.79	0.06	0.24
35–49	1.17 (0.77–1.80)	0.47	0.16	0.22
50–64	1.68 (1.05–2.68)	0.03	0.52	0.24
65–74	2.25 (1.26–4.00)	0.006	0.81	0.29
<i>(3) Availability of modern equipment</i>				
<i>*Age</i>				
25–34	0.59 (0.35–0.97)	0.04	−0.53	0.25
35–49	(0.56–1.34)	0.52	−0.15	0.22
50–64	(0.76–1.93)	0.42	0.19	0.24
65–74	(0.95–2.85)	0.078	0.50	0.28
<i>(4) Simplicity of access to appointment</i>				
<i>*Practice type</i>				
Small (2–5 FD)	0.83 (0.40–1.72)	0.61	−0.19	0.37
Large (> 5 FD)	0.35 (0.19–0.65)	0.0009	−1.04	0.32
<i>(6) Physician's punctuality</i>				
*Absence of personal family doctor	0.62 (0.43–0.89)	0.009	−0.48	0.18
<i>*Practice type</i>				
Small (2–5 FD)	0.83 (0.40–1.69)	0.60	−0.19	0.37
Large (> 5FD)	0.48 (0.26–0.89)	0.02	−0.74	0.32
<i>(7) Physician's ability to understand</i>				
<i>*Health status</i>				
Fair	0.61 (0.41–0.90)	0.012	−0.49	0.19
Poor	0.92 (0.59–1.45)	0.71	−0.09	0.23
*Absence of personal family doctor	0.44 (0.31–0.64)	0.000	−0.81	0.19
<i>*Practice size</i>				
Small (2–5 FD)	0.47 (0.21–1.05)	0.065	−0.75	0.41
Large (> 5 FD)	0.41 (0.20–0.85)	0.01	−0.89	0.37
<i>(8) Physician's competence</i>				
<i>*Health status</i>				
Fair	0.59 (0.41–0.84)	0.004	−0.54	0.19
Poor	0.94 (0.61–1.44)	0.78	−0.06	0.22
<i>(9) Effectiveness of prescribed therapy</i>				
*Absence of personal family doctor	0.67 (0.48–0.94)	0.02	−0.40	0.17
<i>(10) Clarity of physician's explanations</i>				
*Absence of personal family doctor	0.54 (0.38–0.75)	0.0003	−0.62	0.17
<i>(11) Overall satisfaction with physician</i>				
*Absence of personal family doctor	0.63 (0.43–0.92)	0.037	−0.34	0.16

Baseline category, good health.

^a Baseline category, presence of personal family doctor.

^b Baseline category, solo practice.

^c Baseline category, 15–24 years.

patients who had their own family doctor, those who had chosen the doctor on their own initiative were more satisfied both with the physician and several organizational aspects of primary health care. The existence of such relationship between the choice of a physician and satisfaction confirms the results of Schmittiel et al. [8,9] and can be explained in different ways. The patient can choose the physician who will particularly suit his/her needs; having made the choice the patient is less apt to complain; the patient has more confidence and trust in the physician whom he/she has selected. It seems that interpersonal trust is a prerequisite of many aspects of effective health care, not only of patients' acceptance of prescribed therapy or investigations [12,14], but also of organizational factors.

Our data show that the person's opinion about several organizational and interpersonal aspects of care was more favorable when the chosen doctor had a solo practice, and significantly less favorable when the doctor worked in a big polyclinic. This confirms the findings that the process of providing care, which in the traditional physician's office involves only a few persons with shared responsibilities, becomes fragmented in larger organizations. The aspects of care not involving the physician, such as registration, telephone advice, and ancillary diagnostic services, become dispersed throughout the organization. Moreover, there is more staff in large practices compared with small ones, so that patients are less likely to encounter staff members familiar to them [3,15].

Our study showed that older people gave higher ratings for some organizational aspects of care. These findings are supported also by another study [16]. It has been found that older people are less ready to criticize and have more modest expectations [17]. Explanation could be that older patients, who have more diseases and visit the doctor more frequently, concentrate more on care itself rather than to external factors and, therefore, organizational aspects do not have significant effect on their satisfaction [18].

Nevertheless, the most important predictor for satisfaction with care was existence of a personal family doctor. People who had not chosen their family doctor gave lower ratings especially for

interpersonal aspects of care: for physician ability to understand, for effectiveness of prescribed therapy, clarity of explanations and for physicians punctuality, as well as for organizational aspects. It is known that the sense of responsibility of a physician for his/her patients is stronger in a personal doctor system than in an alternative system. Doctors who know their patients better are willing to make more effort [4]. They pay more attention to patient's problems, and spend more time on listening and on explanations, which leads to increased patient satisfaction. Moreover, it seems that patients who are highly satisfied with their physician tend to give higher ratings also for the structural aspects of primary care [19]. The results of a 3-year pilot project of a list system in Norway confirmed that collaboration with hospitals and specialists and coordination of services relating to the individual patient functions much more smoothly than before [20]. All this is important especially in case of patients with chronic and several problems.

As patients' opinions are an important tool in evaluation of health care system, this all-Estonian survey has provided valuable information about people's attitudes to the reform and to the present situation. The most important conclusion of our study is that there is association between personal choice and patient satisfaction. As the transition period in the health care has been relatively short, the current survey represents the first step to obtain the population's opinion, further research in this field appears necessary. It remains to be investigated whether the relationship is interdependent or not: whether higher satisfaction level with care determines patient's decision to choose one's own doctor personally, or whether personally chosen doctor results in higher satisfaction with care.

Acknowledgements

This study was supported by funding from the Estonian Health Project.

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III

Põlluste K, Kalda R, Lember M. Evaluation of Primary Health Care Reform in Estonia from Patients' Perspective: Acceptability and Satisfaction. *Croat Med J* 2004; 45: 582–7.

Evaluation of Primary Health Care Reform in Estonia from Patients' Perspective: Acceptability and Satisfaction

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Aim. To analyze the population's view of the primary health care reform five years after the formal implementation of the reform investigating the acceptability of the primary health care system, patients' preferences, and satisfaction with their family doctors.

Methods. Face-to-face interviews using structured questionnaires were preformed with a random sample of the Estonian residents aged 15-74 years (n = 999).

Results. Out of 999 respondents, 35% prefer to first see their family doctor and if necessary to get a referral or a recommendation to see a specialist. The referral to the specialist by the family doctor is more preferred by older respondents, rural people, by the respondents with a lower level of education and income as well as by people who were more satisfied with their family doctor. The people who were more satisfied with their family doctor found that the whole health care system was functioning better than the previous primary health care system. Out of all the respondents who have had a contact with their family doctor during the last 12 months 87% (n = 585) were satisfied with his work. The overall satisfaction with the family doctor depended on 1) perceived competence of the physician (OR = 0.624, 95% confidence interval (CI) = 0.419-0.933); 2) understanding the patient's problem (OR = 0.699, 95%CI = 0.496-0.984); 3) punctuality of the physician (OR = 1.533, 95%CI = 1.075-2.186); and 4) the location of the primary health care center/clinic (OR = 0.751, 95%CI = 0.574-0.983).

Conclusion. During the five-year-period most of the Estonian population has accepted the new primary health care system and the satisfaction rate has increased. Family doctors are in the center of the primary health care systems and their professional competence plays a great role in making the system acceptable for the patients.

Key words: family practice; patient acceptance of health care; patient satisfaction; primary health care

Any health system reform should attempt to achieve the main objectives of health care systems and overall requirements: universal and equal access for all the members of the society, effective care for obtaining better health outcomes, efficient use of resources, high-quality services, and responsiveness to patient concerns (1,2). These aspects can also be described as the elements of health care quality (3,4). To evaluate the quality of the health care system, the population's views should be considered. According to the Declaration on the Promotion of Patients' Rights in Europe, people should be informed about the health services and how to use them best, and they should also have the collective right to participate in the planning and evaluation of services (5). These aspects are also stressed in the Ljubljana Charter on Reforming Health Care: the health care reform must address the citizens' needs, taking into account their expectations (6). The citizens' voice should also be considered when planning the health care.

To collect information about the populations' evaluation, surveys are widely used, investigating various problems related to the population's need of services, the access and use of services as well as satisfaction with the provided services (2). Until now there were not many publications assessing the health reform in the Central and Eastern European (CEE) countries using the population surveys. A few studies found that in the primary health care system the involvement of patients could be realized by giving them a possibility to choose a personal doctor. Introducing the patient lists and giving the people the possibility to choose a family doctor causes a higher satisfaction with the family doctor as well as whole primary health care system (7-10). There are some studies which discuss the consumers' dissatisfaction with the ongoing reforms – difficulties in access to the health services including the limited access to the specialists due to introducing the gate-keeping system in primary health care, inadequate quality of services,

increasing the costs of health care services, and the lack of patient involvement in the health care reforms (11-14).

When evaluating the quality of the primary health care from the patients' perspective, the following aspects were taken into consideration: patient preferences and patient characteristics as predictors of preferences as well as the aspects which are important for the patient (15). It has been shown that the important aspects for the primary health care patients in different countries are related to the doctor-patient communication, like getting enough time during the consultation, the confidentiality of information about patients, telling patients all they want to know about their illness, making patients feel free to talk about their problems, access, like quick services in case of emergencies, and offering preventive services; and maintaining the competence of family doctors (family doctors going to courses regularly) (16). Patients' characteristics could be the predictors of preferences, as well as the satisfaction level. Patients' preferences for a direct access to the specialists are often related to the younger age, higher education, and lower satisfaction with the primary care doctor, as well as the urban population (17,18).

In Estonia, the first doctors who obtained special education in primary care started their work as family doctors in 1993. In January 1998, the regulation of the Ministry of Social Affairs on the improvement of primary health care came into effect, which regulated requirements for primary care doctors, introducing patient lists and new principles of financing the primary health care as well as gate-keeping function of primary care doctors. Family doctors in Estonia are independent contractors with the Health Insurance Fund. They provide comprehensive care irrespective of patient's age, gender, and kind of the health problem. Out-of-hours service is not a part of the family doctors contract, this is provided by a special emergency service (19).

To find out how Estonian people understand the changes in primary health care, how they accept the new system and how satisfied they are with their primary care doctor, the first in-depth population survey was conducted in 1998. The results demonstrated that ten months after introducing the key elements of the PCH reform, 46% of the Estonian adult population was sufficiently informed about the transition to the primary health care system based on family doctors and 49% of the respondents with health problems and complaints preferred to visit the family doctor or primary health care doctor first. Out of all the respondents, 68% were very satisfied or quite satisfied with their primary care doctor. Satisfaction depended on the physician's competence, the comprehensibility of the doctor's explanations, and the comfort of the clinic. The privilege of choosing their own primary care doctor and access to sufficient information about the changes in primary health care system also had a positive influence on the level of satisfaction. The people who were registered on the patient list and had chosen a personal doctor were also of opinion that the situation in primary health care had improved

(8,9). This study also provided essential baseline data for the further evaluation of the primary health care reform.

The aim of the present study was to follow up the changes in the population's evaluation of the acceptability of the primary health care system and the satisfaction with their family doctor.

Participants and Methods

Study Design and Sample

In November-December 2002, a population survey "People's Expectations about Health Care" was conducted. In the current paper the aspects of acceptability and satisfaction with the primary health care were analyzed. A random sample of the Estonian residents aged 15-74 years (n=999) were personally interviewed by using structured questionnaires. The used design of the study and the method of the sampling was the same as in the 1998 study (8,9). The face-to-face interviews were carried out by the 50 trained interviewers of the marketing and social research company EMOR.

The sample was formed by self-weighting: the proportional model of the total population aged 15-74 years, where all the interviewed respondents (n=999) represent the equal number of people in the population, was used. A two-staged stratification was used to form the sample. First, the population was divided by territorial domicile into 6 strata, the size of the sample in each stratum was based on proportional division of the population. Then, two-staged selection was done in each stratum. The primary sampling units were settlements (towns, small towns, country towns and villages). The sampling points (63 in total) were chosen at random according to the size of the settlement (the number of residents, who qualify for the survey's age group) on proportional probability bases. In each primary sampling unit, the secondary sampling units – individuals – were chosen. In 27 cases nobody was home during the two visits, in 88 cases the person who was home did not meet the criteria of the study (he/she was younger or older), and 118 persons refused to answer. For that reason, to get the required size of the representative sample the total number of contacts made with the respondents was higher. The structure of interviewees by age, gender, nationality, and the place of residents is presented in Table 1. The sample was representative of the Estonian population.

Questionnaire and Outcome Measures

The questionnaire concerning the primary health care was made by the research group at the University of Tartu in 1998 (8,9). This questionnaire was revised by the same group and used in the present study. The data set collected during the interviews included demographic data (gender, age, nationality, education, income, place of residence), self-assessment of health status, and various aspects related to primary health care: size of the primary health care institution, the preferences of doctors (family doctors or specialists), acceptability of the primary health care system (comparison of the existing primary health care system with the previous system based on the district physicians' and the acceptance of the family doctor as the first doctor seen in any case of health problems), and overall satisfaction with family doctor. Ten questions focused on patient-practitioner relationships and amenities: 1) perceived competence of a physician; 2) effectiveness of prescribed therapy; 3) understanding the patients' problems; 4) comprehensibility of explanations given by the physician; 5) modern equipment; 6) punctuality of the physician; 7) cleanliness and the comfort of the clinic; 8) waiting time in the family doctor center/clinic; 9) ease of access by appointment; and 10) location of the family doctor center/clinic.

Three categories were used for health status as defined by respondents themselves: 1) good; 2) normal; and 3) rather poor. The size of the primary health care institution was measured by three categories: 1) solo practice; 2) small group practice (up to 4 family doctors practicing together); 3) a bigger health center (more than four family doctors)/policlinic. The overall satisfaction with the family doctor was measured by a four-point scale: 1 – very satisfied; 2 – quite satisfied; 3 – quite dissatisfied; and 4 – very dissatisfied.

Table 1. Characteristics of respondents in comparison to the total population aged 15-74 years in Estonia*

Characteristic	No. (%) of participants	No. of total population aged 15-74 years (%)
Gender:		
male	464 (46)	486,255 (46)
female	535 (54)	560,666 (54)
Age:		
15-24	191 (19)	200,174 (19)
25-34	176 (18)	184,222 (18)
35-49	276 (28)	289,612 (28)
50-64	231 (23)	242,256 (23)
65-74	125 (12)	130,657 (12)
Nationality:		
Estonians	659 (66)	690,130 (66)
non-Estonians	340 (34)	356,791 (34)
Place of residence:		
capital	296 (39)	318,439 (30)
urban area	399 (40)	418,206 (40)
rural area	304 (30)	310,276 (30)

*Dates of January 1, 2004. Source: Statistical Office of Estonia (20).

To assess the patient-practitioner relationships and amenities, the respondents were asked to evaluate how relevant these aspects were for them, and how satisfied they were with them. For measuring the relevance and satisfaction with these items, a seven-point-scale was used (1 – "not at all relevant"/"very dissatisfied" and 7 – "very relevant"/"very satisfied"). The dichotomization point of the 7-point scale was between 5 and 6.

Statistical Analysis

The respondents were grouped by their health status, age, gender, the place of residence (the capital, the urban and rural population), education and monthly income, and the size of the primary health care institution. The differences between groups were tested using chi-square tests. To estimate the associations between variables, the Spearman ρ (rho) was used. The role of different predictors on the level of satisfaction with the primary health care doctor was investigated by the binary logistic regression analysis. Relationship of the patients' preferences by choosing the family doctor or the specialist to different predictors was explained by the binary regression analysis as well. For the statistical analysis, the SPSS 10.0 statistical software for Windows (SPSS Inc, Chicago, IL, USA) was used. The reliability of the survey instrument was tested with the Cronbach's alpha ($\alpha=0.71$).

Results

Sample Description

The education distribution of the sample showed that 26% of the respondents had primary school education (up to nine years), 57% had secondary school education (11 or 12 years), and 17% of the interviewed persons had university education. To explain the socio-economic group differences, the sample was divided into three income groups (monthly income per person) – less than 1,000 EEK or €64 (13%); 1,001-3,000 EEK or €65-195 (56%); and more than 3,000 EEK or €195 (18%). Out of all the respondents, 13% refused to answer the question about their income. Out of all the interviewed persons, 43% evaluated their health as generally good, 43% as normal, and 14% of the respondents evaluated their health status as poor. The age of the respondent was significantly correlated with the evaluation of the health status (Spearman's $\rho=-0.47$, $p<0.001$), level of education ($\rho=-0.10$, $p<0.001$), and income level ($\rho=-0.16$, $p<0.001$). Significant correlations were found between the evaluation of the health status and income ($\rho=-0.24$, $p<0.001$) and the evaluation of the health status and level of education ($\rho=-0.11$, $p<0.001$) as

well as between the income and the level of education ($\rho=0.16$, $p<0.001$). Based on the respondents' answers, 59% of the family doctors practiced in polyclinics or bigger health centers; 26% of family doctors had small group practices; 14% of family doctors had solo practices, mostly in the rural area; and 1% of the respondents did not know where their family doctor practices. Out of all the respondents, 414 persons or 41% did not have any contact with their family doctor during the last 12 months.

Acceptability of the Primary Health Care System

Preferences. Out of all the 999 respondents, 35% would like to see their family doctor first and if necessary to get a referral or a recommendation from their family doctor to see a specialist; 20% of the respondents would like to consult the specialist first; and 45% of the interviewed persons preferred when they could decide for themselves whether to first see a family doctor or a specialist. There were no significant differences in the observed preferences between male and female respondents, or between the groups divided by the health status. The referral to the specialist by the family doctor is more preferred by older respondents, the rural people, by the respondents with a lower level of education and a lower income as well as by the people who were more satisfied with their family doctor (Table 2).

Table 2. Predictors of the patients' preferences by choosing the family doctor or specialist* (Nagelkerke $R^2=0.12$)

Characteristic	Odds ratio (95% confidence interval)
Age	0.982 (0.972 – 0.994)
The level of the education	1.214 (1.018 – 1.448)
Satisfaction with the general practitioner	1.728 (1.305 – 2.288)
Place of residence [†]	0.579 (0.434 – 0.772)
Income	0.803 (0.647 – 0.997)

*To find out the predictors by using the binary logistic regression the patients' preferences were classified as: 0 – patients who would prefer to see first their family doctor and if necessary to get a referral to or a recommendation to see a specialist from their family doctor; and 1 – patients who would like to consult the specialist first or to decide for themselves in each case whether to first see a family doctor or a specialist.

[†]The coding of the place of residence was classified as follows: 1 – capital; 2 – urban area; 3 – rural area.

If the respondents faced a health problem in the evening, at night, or at the weekend, the way of acting would be as follows: 50% preferred calling an ambulance, 25% of the respondents would call their family physician, and 7% would request a home visit by their family physician. People prefer family doctors who know them and their diseases. Those who prefer calling an ambulance (50% of the respondents) consider it the fastest and surest way. Ten percent of the interviewed people would go to an emergency room on their own because they think it is the most convenient and surest way. Calling the ambulance was more often preferred by the persons at the age of 50 or more (62%, $p<0.001$) and the persons who evaluated their health status as poor (60%, $p<0.001$). Calling a family doctor was a more preferred action in case of health problems occurring in the evening, at night, or during the weekend among the rural population (31%, $p=0.002$).

Evaluation of changes in primary health care system related to the general practitioner's gate-keeping function – acceptance of family doctor as the first doctor seen in case of health problems. Of the 999 respondents, 23% were very satisfied and 50% rather satisfied with seeing their general practitioner in case of health problems. The acceptance of the family doctor as the first-contact doctor is relatively high with the overall satisfaction with the family doctor ($p=0.54$, $p<0.001$). The family doctor as the first-contact doctor is less accepted by the respondents with a higher education ($p=-0.16$, $p<0.001$).

Comparison of existing primary health care system with previous system based on the district physicians. The people who were more satisfied with their family doctors found that the existing system was functioning better than the previous primary care system (Table 3). The respondents whose family doctor had a solo practice or was practicing in a small center more often agreed that family doctors had better diagnostic methods and more modern treatment methods than the previous district doctors. Also, younger and healthier persons evaluated the existing system as better. Those with higher education were more critical towards the health care system than the respondents with a lower education. The income level of the respondents was not correlated with the evaluation. Table 4 explains the correlations between the features of family doctors work and the patients' characteristics. The higher evaluation of diagnostics and treatment was also given by the rural population – respec-

tively 76% and 87% of the rural respondents totally or generally agreed with these statements.

Satisfaction with the general practitioner

Out of all the respondents who had a contact with their family doctor during last 12 months ($n=585$) 37% were very satisfied and 50% quite satisfied with their family doctor, 1% of respondents did not have a personal opinion, and 12% were not satisfied. There was no statistically significant difference between male and female, rural or urban respondents; as well as in regard to age, education, income groups', and satisfaction. The satisfaction level was related to the size of the primary health care institution – out of all the respondents whose family doctor practices in a small center, 94% were very or quite satisfied; whereas 84% of the respondents whose family doctor practices in a bigger center or a polyclinic were very or quite satisfied ($p=0.03$).

Four items described the patient-practitioner relationships and six items described the amenities. Table 5 presents the evaluation of relevance and satisfaction with these items compared to the results of the survey in 1998 (9). In 2002 both the percentage of the respondents who considered these items relevant and those who were satisfied with them was higher when compared to the data of 1998. Almost all of the respondents considered the aspects that described the relationships between the doctor and the patient very relevant; amenities were considered less relevant.

Overall satisfaction with family doctors was investigated using binary logistic regression (Table 6).

Table 3. Respondents' views on the comparison of the present and previous primary health care system

Comparison of the existing primary health care system with the previous system based on the district physicians	Opinion (No. %)			
	totally agree	generally agree	generally do not agree	do not agree at all
Family doctors deal with a bigger number of health problems	180 (18)	451 (45)	132 (13)	68 (7)
Diagnostics and tests opportunities of family doctors have improved	170 (17)	386 (39)	181 (18)	86 (9)
Treatment methods of family doctors have become more modern	262 (26)	419 (42)	108 (11)	52 (5)

Table 4. Correlations between the evaluation of family doctors' work and patients' characteristics

Characteristic	Family doctors deal with a bigger number of health problems		Diagnostics and tests opportunities of family doctors have improved		Treatment methods of family doctors have become more modern	
	Spearman's ρ	p	Spearman's ρ	p	Spearman's ρ	p
Satisfaction with the family doctor	0.40	<0.001	0.40	<0.001	0.45	<0.001
Age	-0.12	<0.001	-0.08	0.02	-0.07	0.039
Education	-0.09	0.01	-0.19	<0.001	-0.11	0.002
Health status	0.09	0.013	0.08	0.02	0.08	0.026
Size of the primary health care institution	-0.05	0.178	-0.12	<0.001	-0.13	<0.001

Table 5. Satisfaction with amenities and patient-practitioner relationship in 2002 and 1998

Characteristic	Very relevant (%)			Very satisfied (%)		
	1998 (n=997)	2002 (n=999)	p	1998 (n=997)	2002 (n=999)	p
Patient-doctor relationship:						
perceived competence of physician	86	98	0.002	50	67	0.035
effectiveness of prescribed therapy	85	98	0.077	49	62	0.347
understanding the patient problem	82	97	0.114	62	75	0.067
comprehensibility of explanations given by physician	78	96	0.001	55	68	0.221
Amenities:						
modern equipment	73	92	0.014	29	48	0.001
punctuality of physician	68	88	0.354	54	69	0.018
cleanliness and comfort of the clinic	63	89	0.001	57	76	0.001
waiting time in the primary health care center/clinic	61	86	0.109	49	56	0.474
easy appointment access	63	88	0.001	59	70	0.198
location of the primary health care center/clinic	46	68	0.004	63	75	0.001

Altogether four predictors out of ten were included in this model: 1) perceived competence of a physician; 2) understanding the patient's problem; 3) punctuality of a physician; and 4) location of the primary health care center/clinic. If the respondents were satisfied with these items, they were more satisfied with their family doctor as well.

Table 6. Predictors of the overall satisfaction* with family doctors: amenities and patient-doctor relationship† (Nagelkerke $R^2 = 0.502$)

Characteristic	Odds ratio	95% confidence interval
Location of the primary health care center/clinic	0.751	0.574-0.983
Punctuality of physician	1.533	1.075-2.186
Understanding the patient problem	0.699	0.496-0.984
Perceived competence of physician	0.624	0.417-0.933

*To find out the predictors of the overall satisfaction with family doctors by using the binary logistic regression the satisfaction rate is classified as follows: 0 – patients who are very satisfied or satisfied with their family doctor; and 1 – patients who are not satisfied with their family doctor.

†For measuring the satisfaction with these items, a seven-point-scale was used: 1 – very dissatisfied and 7 – very satisfied.

Discussion

This study focused on the population's opinions about the changes, which have taken place in the primary health care system in Estonia since the beginning of 1998. Compared to the results of the study conducted in 1998, we see that people have a clearer opinion about the primary health care reform. In general, people accept the family doctor as the first doctor to be seen in case of any health problem. However, younger, more educated people with a higher income living in the urban area prefer having the freedom to decide for themselves whether to first see a family doctor or a specialist. These results correlate with previously published results (9,17,18). In the case of health problems occurring at night or during the weekend, approximately a half of the respondents would prefer to call the ambulance. According to the Estonian health care organization, the family doctors are not responsible for the out-of-hour care – this care is provided by the ambulance service and financed from the state budget. However, in this case, many patients would still like to receive first help from their own family doctor. All the same, a number of family doctors are available for their patients at nights and weekends.

The acceptance of the primary health care system based on the family doctors is expressed by the higher evaluation of the work of family doctors compared to the previous system. More than half of the respondents agree that family doctors deal with a bigger number of health problems, have better diagnostics opportunities, and use more modern treatment methods than the previous district doctors. These evaluations can be seen as a positive evaluation of the changes in the primary health care system and this positive evaluation is first of all related to the satisfaction with the family doctor.

Compared with 1998, people were more satisfied with their family doctors. At the same time, the proportion of dissatisfied persons has increased as

well. During the five year period almost all the people contacted their family doctors and have probably formed a clearer opinion about him or her. All the features characterizing the work of family doctors and the primary health care institutions have been more relevant to the people and at the same time satisfaction with the patient-doctor relationship and amenities has increased. In this study we did not find any patients' characteristics as important predictors of the satisfaction. However, the family doctors who had a solo practice or worked in smaller centers had more satisfied patients. This matter refers to a closer contact between patient and doctor in smaller centers than in big polyclinics and this issue has a positive influence to the satisfaction also. The similar results were also found in the previous studies (21,22). The physician's competence as perceived by the patients and the response to the patients' needs expressed by the understanding the patients' problems influence satisfaction with family doctors. The location of the primary health care center and the doctor's respect towards his patient expressed by his punctuality are also important factors. Similar results were also found in EUROPEP (the European Task Force on Patient Evaluations of General Practice) study in 1995 (16).

The success of the implementation of any health reform depends on many factors, but the result of the reform should be focused on the better outcome for the population. The acceptance of the changes and satisfaction with the system constitute an important outcome measure from the population's point of view. During the five-year-period most of the Estonian population has accepted the new primary health care system and the satisfaction rate has increased. In the center of the primary health care systems there are family doctors and their professional competence plays a great role in making the system meet the patients needs more widely.

Acknowledgments

The authors are grateful to the participating investigators: Heidi-Ingrid Maaroos, Department of Family Medicine, and Kersti Meesaar, Department of Public Health, University of Tartu, Estonia.

We wish to thank Merike Rätsep from the Ministry of Social Affairs and Agnis Koppel from the Health Insurance Fund for their assistance in data collecting.

The research was supported by the Ministry of Social Affairs of Estonia and Estonian Health Insurance Fund.

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Received: July 2, 2004

Accepted: September 1, 2004

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IV

Kalda R, **Põlluste K**, Maaroos H-I, Lember M. Patients'
Opinions on Family Doctor Accessibility in Estonia.
Croat Med J 2004; 45:578–81

Patients' Opinions on Family Doctor Accessibility in Estonia

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Aim. To investigate the accessibility of family doctors in Estonia from the patients' point of view.

Methods. Face to face interviews using structured questionnaires were performed. A random sample of the Estonian residents, aged 15-74 years, was studied (n = 999).

Results. The number of visits provided by family doctors has been continuously increasing since 1998. Out of 999 respondents, 59% visited the family doctor during the previous 12 months. The average number of visits per Estonian resident in one year is 2.48. Out of 999 interviewed persons, 72% said that they had a possibility of contacting their family doctor by phone. The waiting time for an appointment was short in most cases. The family doctor admitted 60% of the respondents on the same day the patients had requested; 22% of the patients were admitted within 1-2 days and 9% of the patients were admitted within 3-4 days. Only 9% of them had to wait more than 5 days. The current home visit fee in Estonia would have affected the decision of the home call of 58% of people. There was a correlation between the acceptability of a visit fee and the people's income.

Conclusion. The accessibility of family doctors can be considered good in Estonia.

Key words: family practice; health care reform; health services accessibility

One of the cornerstones of the Estonian health care reforms has been the reorganization of the primary level medical care. It was started in 1991 by commencing training for family doctors (1,2). Since 1993, the list of medical specialties in Estonia also contains family medicine, and by the present time more than 800 family doctors have been trained. In 1998 a new financing scheme for family doctors came into force, foreseeing the establishment of patient lists. It introduced a combined payment mechanism and a partial gatekeeping function for family doctors, and rendered the status of an independent contractor to family practitioners (3).

The aim of the reform in primary health care was to establish the primary health care system that is easily accessible and is based on trained and fully responsible family practitioners.

Several studies have shown that the access to the doctors is one of the most important determinants of patient satisfaction with the care (4,5). Although priorities regarding different aspects of family practice vary significantly among different countries, the absolute requirements for good family practice as reported by patients are: the possibility of making appointments within a short time, quick service in urgent situations, a family physician who really takes his/her time to lis-

ten and talk during the consultation. All these priorities refer particularly to accessible clinical care (6).

The common policy in the Estonian family medicine is that patients with urgent problems should be seen on the same day, while other patients should be granted an appointment in three days. These standard rules are fixed in the family doctor's job description. Since October 2002, when the Health Insurance Act came into force, all patients who have health insurance can visit their family doctors for free. According to the same act, family practitioners may ask up to EEK50 (€3.3, US\$3.9) for a home visit.

The aim of the study was to investigate the temporal accessibility and financial accessibility of family doctors in Estonia from the patients' point of view.

Material and Methods

Study Design and Sample

The analysis was based on the population survey "People's Expectations about the Health Care", conducted in November and December 2002. The survey was organized by the University of Tartu, the Ministry of Social Affairs, and with the help of the social research company EMOR.

A random sample of Estonian residents, (n = 999) aged 15 to 74, was personally interviewed by the trained personnel of EMOR. A structured questionnaire was used. The sample was self-weighted, ie the proportional model of the population was used, where all the respondents represented an equal number of

people in the population. The gender, age, and ethnic structures of the sample corresponded to those of the population of Estonia (Table 1).

Table 1. Characteristics of respondents by gender, age, nationality, and the place of residence (9)

Characteristic	No. (%) of participants	No. (%) of total population*
Gender:		
male	464 (46)	486,255 (46)
female	535 (54)	560,666 (54)
Age (years):		
15-24	191 (19)	200,174 (19)
25-34	176 (18)	184,222 (18)
35-49	276 (28)	289,612 (28)
50-64	232 (23)	242,256 (23)
65-74	124 (12)	130,657 (12)
Nationality:		
Estonians	659 (66)	690 130 (66)
non-Estonians	340 (34)	356 791 (34)
Place of residence:		
capital	304 (30)	318 439 (30)
urban area	399 (40)	418 206 (40)
rural area	296 (30)	310 276 (30)

*January 1, 2001.

Questionnaire

In order to evaluate the accessibility of family doctors, the respondents were asked how many times they had visited their family doctor, as well as other specialists, during the previous 12 months and how much time it took on average to wait for an appointment at the family doctor. The waiting period has been determined as follows: 1) the same day; 2) within 1-2 days; 3) within 3-4 days; 4) within 5-7 days; and 5) more than a week. Also, the respondents were asked whether they had a possibility of contacting the family doctor by phone when there was a need and finally, they were asked to assess whether their decision to ask for a home visit would be affected by the home visit fee of EEK25, 50, 100, or 200 (€1.7, 3.3, 6.7, or 13.3, respectively). The acceptability of the fee was measured by a Likert scale from "not at all" to "affects a lot."

The questionnaire also included questions about patient demographics and, the health status, as well as about various aspects related to family practice: the acceptability and the satisfaction with the family practice.

The data from 2002 were compared with the data of a similar study performed in 1998 (7). Also, the data of the official health statistics of Estonia have been used in order to describe the changes of the accessibility of family doctors.

Statistical Analysis

The data were analyzed by using SPSS software (SPSS Inc., Chicago, IL, USA). To evaluate the statistical significance of differences between the groups, chi-square test was used. To estimate the relations between variables, the Spearman correlation coefficient was used.

Results

Access to Family Doctors

Number of visits to a family doctor. Out of all the respondents, 59% had visited the family doctor during the previous 12 months and 41% had visited a specialist. In 1998 the respective numbers were 52% and 48% (7). According to the results, in 2002 the Estonian people visited a family practitioner 2.48 times on average during the previous 12 months.

The people who visited their family physicians most often during the previous 12 months were over 50; with an elementary or basic level of education; an income of less than EEK3,000 (€196); and of rural origin (Table 2).

Table 2. Number of visits to a family doctor by different social groups

Characteristic	Average number of visits during the previous 12 months
Age:	
< 24	2.16
25-34	2.13
35-49	2.34
50-74	2.94
Education:*	
elementary or basic	3.59
secondary or vocational	2.11
secondary	
higher	2.02
Income per family member:†	
< EEK1000	2.27
EEK1001-2000	3.69
EEK2001-3000	2.82
> EEK3000	1.96
Place of residence:*	
capital	1.62
city	2.80
town	2.67
country-side	3.02

*The differences between the groups were significant ($p < 0.001$, chi-square test).

†€1 = EEK15.65.

Table 3. Number of ambulatory visits 1998-2002*

Year	No. of ambulatory visits		Average number of ambulatory visits per Estonian resident	
	total	to family doctors (%)	total	to family doctors
1998	8,141,515	1,336,739 (16.4)	5.87	0.96
1999	8,073,029	1,525,673 (18.9)	5.60	1.06
2000	8,151,104	1,972,280 (24.2)	6.00	1.40
2001	8,013,315	2,763,460 (34.5)	5.87	2.03
2002	7,955,184	3,614,688 (45.4)	5.86	2.66

*Source: ref. 8.

According to the official data of the Estonian Health Statistics, since 1998 the number of visits provided by family doctors has been continuously increasing, whereas the number of the all ambulatory visits in Estonia is almost the same (Table 3).

Possibility of contacting family doctor by phone. Out of all the respondents, 72% said that if there was a need, they had a possibility of contacting their family doctor by phone, whereas 12% did not know whether they had or did not have such a possibility and 16% said that they did not have the possibility of contacting the family doctor by phone. People from rural areas and also people from smaller cities had significantly more such a possibility when compared with people from the capital (75%, 78%, and 58% respectively) ($p = 0.001$).

Financial accessibility of family medical care. Almost 55% of the respondents said that a EEK25 (€1.7) home visit fee would not affect their decision to call a doctor home and 12.5% said that it would seriously affect it (Table 4). The present fee of EEK50 (€3.3) would not affect the decision of 32% of the respondents (Table 4).

A correlation was found between the acceptability of a visit fee and the income of the respondents (income per person in the previous month) – the smaller the income, the more it would affect the decision to

Table 4. Number of the respondents (%) answering the question: "How much does a possible home visit fee affect the decision to call a doctor home?"

Answer	Cost of home visit (EEK)*			
	25	50	100	200
Not at all	196 (19.6)	93 (9.3)	32 (3.2)	52 (5.2)
Not significantly	351 (35.2)	227 (22.7)	103 (10.3)	38 (3.8)
Rather affects	132 (13.2)	305 (30.6)	190 (19.0)	135 (13.5)
Affects seriously	125 (12.5)	276 (27.7)	608 (60.8)	761 (76.1)
Difficult to say	18 (1.8)	14 (1.4)	15 (1.5)	14 (1.4)
No answer	176 (17.7)	83 (8.3)	52 (5.2)	0

*1 EUR = 15.65 EEK.

Table 5. Relation of a possible home visit fee and the respondents' income (% of the respondents who think that the home visit fee would affect their decision to call a doctor)

Home visit fee (EEK)*	Monthly income per person (EEK)*				Spearman correlation coefficient†
	<1,000	1,001-2,000	2,001-3,000	>3,000	
25	32	30	21	17	0.27
50	70	69	48	44	0.28
100	92	86	75	65	0.21
200	96	91	90	80	0.13

*1 EUR = 15.65 EEK.

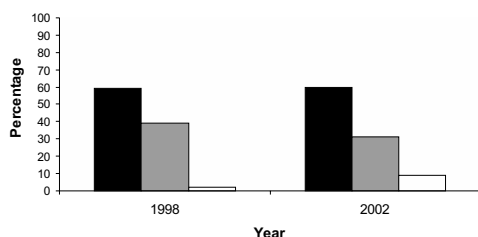
†p < 0.0001 in all cases (chi-square test).

ask for a home visit (Table 5). The correlation was calculated without the respondents who did not want to reveal their income or did not answer the question about the acceptability of a visit fee. Also, the ones who answered "it is difficult to say" were left out of the calculation.

Waiting Period for Seeing a Family Doctor

The waiting time for an appointment to see the family doctor was short for most of the respondents. The family doctor usually admitted 60% of the respondents on the same day that the patients requested, 22% of the patients were admitted within 1-2 days, 9% within 3-4 days, and 9% of the respondents had to wait up to 5 days. Waiting periods were significantly different in different regions in Estonia. In the capital, only 44% of the patients were admitted on the same day. Thirty percent of the patients living in the capital had to wait 3-7 days before being admitted, whereas in the rural areas the waiting period was mostly not longer than two days.

The comparison of the data with a similar study performed in 1998 revealed that there is no significant differences in waiting time in 1998 and 2002 ($p = 0.068$) (Figure 1).

**Figure 1.** Waiting time for an appointment to the family doctor in 1998 and 2002. Black – on the same day; gray – during 3-4 days; open – more than 5 days.

Discussion

The study mainly focused on the population's opinion of the accessibility of family doctors in Estonia. The main purpose of the primary health care reform in 1997 was to introduce an easily accessible family medicine system, which is based on trained and fully responsible family doctors.

As the population survey reveals and the official statistics show, the number of the outpatient visits to a family doctor has increased year by year, whereas the number of the outpatient visits to a specialist has decreased (7,8). It reveals that the workload and the responsibility of family doctors is also increasing. More and more health problems are solved by family doctors without referral to specialists. The fact that the number of visits to a family doctor is bigger among the patients who are less educated, whose income is lower and among those from the rural areas is in general favorable, since it reflects a good access to family doctors also for people of lower social class. Those patients may face more health problems that require medical attention and the primary care is accessible to them. However, the reason can also be that they face financial and geographical barriers to use specialist health care services. According to the Health Insurance Act of 2002, the fee for visiting a specialist is 1.7-3.3 Euros in Estonia. All outpatient visits to family doctors are free for people with health insurance. The average of insurance coverage is about 95% (9). According to the Health Insurance Act, family doctors are allowed to ask up to 50 EEK (up to 3.3 EUR) for a home visit. The study revealed that the present home visit fee would affect the decision of asking for the home call for 58 % of the people. As there is a correlation between the acceptability of a visit fee and the people's income, it would be politically wise to consider giving compensation for a visit fee.

In recent years the use of the telephone to deliver health care advice becomes more and more popular. Telephone consultations are increasingly accepted as alternatives to face to face contacts and it makes the family practice more accessible (10,11). In our study, 72% of the patients said that they had had good possibilities of contacting their family doctor by phone. The number is comparable with the study in Slovenia (12). There exist some problems with the telephone access in the capital, where most of the family doctors work continuously in bigger centers or polyclinics. Studies have shown that in larger settings the care is much more fragmented and dispersed throughout the organization and usually the patients do not have direct access to a doctor (13).

Our study demonstrated that according to population surveys, the temporary access of family medical care can be considered as good – about 60 per cent of the people can visit their family practitioner on the same day if they want to. The number of those patients who have had to wait for more than five days has slightly increased during five years, but the survey data do not give any information on whether they had to wait because the physician could not see them earlier or the available time did not suit the patient. Nevertheless, family doctors in Estonia are well accessi-

ble, especially if the data of our study are compared to other similar studies (14,15). However, trends in some countries have shown that new challenges have confronted primary care (16,17). If we keep the needs of persons and patients in sight and design systems to meet those needs, primary care will thrive and our patients will be well served (17).

Acknowledgments

We would like to express our thanks to Kersti Meesaar for her contribution to the working process. We also wish to thank Merike Rätsep from the Ministry of Social Affairs and Agris Koppel from Health Insurance Fund for their assistance in collecting of the data. The investigation was supported by the Estonian Foundation for Target Financing (TARPO 0821) and by the Estonian Health Insurance Fund and Ministry of Social Affairs of Estonia.

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Received: July 2, 2004

Accepted: September 2, 2004

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Põlluste K, Männik G, Axelsson R. Public health reforms in Estonia: impact on the health of the population. *BMJ*, 2005; 331:210–3.

Public health reforms in Estonia: impact on the health of the population

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BMJ 2005;331:210-3

The health of the population has worsened in most countries in central and eastern Europe during the transition period, but little has been written about the reforms in the field of public health during this time, and little evidence has been presented on the links between these reforms and the health of the population.

We describe public health reforms in Estonia, focusing on the institutional structure, the reform rationale, the specific proposals and reform processes, the achievements and limitations, and the wider impact of the reforms.¹ To describe trends in the health of the population, we use life expectancy, infant mortality, rate of abortions per 100 live births, morbidity rates (tuberculosis, HIV, sexually transmitted diseases), and the level of individual risk factors (smoking, diet, alcohol consumption). The study is based mainly on an analysis of previously published reports and official statistics.

Institutional structure

After the political changes in the beginning of the 1990s, the importance of a population based approach to public health was recognised in Estonia, and the understanding and application of the concept of health promotion became more comprehensive.²⁻⁴

In 1993 the Ministry of Social Affairs was established and included a Department of Public Health (fig 1, box 1), which was seen as a source of modern health promotion in Estonia. Health promotion was introduced in the curriculum of medical and nursing training at the University of Tartu, and public health training for civil servants and teaching staff was started.^{4 5}

The reform rationale

In general, democracy is considered to be good for the health of the population.⁶ When starting to build up a democratic society in the beginning of the 1990s, Estonia, like most other countries in central and eastern Europe, experienced a rapid worsening in population

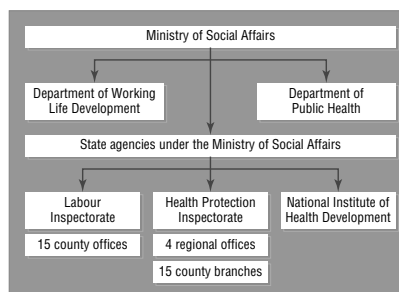


Fig 1 Organisation of health services in Estonia

health indicators. From 1988 to 1994, the life expectancy of males decreased by 5.5 years, due mostly to increased mortality in men of working age. The average life expectancy of men and women showed a big difference.⁷

In 1994, 56% of the male population died before the age of 65. Most of these deaths were caused by external factors, particularly at younger ages, where injuries, poisonings, homicides, and suicides made up about three quarters of the causes of death.⁷ Compared with Sweden, for example, the injury death rate for men was about six times higher, and for some types of injuries, such as alcohol intoxication and homicide, death rates were 10 times higher.⁸

Another serious public health problem since the beginning of the 1990s has been the continual increase in new cases of tuberculosis,⁷ especially multi-drug resistant tuberculosis. About half of these patients are alcohol misusers, but homeless and poor people are also at great risk.⁹

Reproductive health and sexual behaviour in the first half of the 1990s was described by high numbers of



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abortions and a growth of new cases of sexually transmitted diseases (table).⁷ The number of smokers and high consumers of alcohol started to increase in 1990 (see figs 2 and 3).¹⁰ The weekly consumption of alcohol in Estonia was significantly higher among both men and women in Estonia than in the other Baltic countries.¹¹

The reform proposals and processes

In 1995, the Ministry of Social Affairs formulated an Estonian health policy, which was approved by the government. This document defined the main factors influencing health and the necessary courses of actions, but action was delayed by changes in the government.⁸ Responsibilities in human health protection, disease prevention, and health promotion were defined in the Public Health Act of 1995.

A major landmark in the public health reforms was the Estonian Health Project (1995-9).¹² It was financed by the World Bank to support the health reform efforts initiated by the government. As a prerequisite for that project, the Ministry of Social Affairs had to agree to carry out nationwide programmes in prevention of cardiovascular diseases and injuries, family planning, and anti-smoking.³

The first national health programme on HIV was initiated in 1992. In the middle of the 1990s, three other national health programmes were launched and are continuing (box 2). Several national health projects have been initiated in certain priority areas. Since 1995, national as well as local health promotion projects have been financed by the the Estonian Health Insurance Fund.

Achievements and limitations

Most of the activities in the field of health promotion started in the period 1993-5, and in the 10 years since then the health status of the population has changed. Life expectancy for both men and women has increased, and infant mortality per 1000 live births has decreased considerably. The rate of abortions has declined since 1992 (table).^{13 14}

Since 2001, the number of new cases of tuberculosis has begun to decrease, as has the incidence of sexu-

Box 1: Organisation of public health services in Estonia

Ministry of Social Affairs

Created in 1993 by merging the former Ministries of Health, Social Welfare, and Labour. Two departments are responsible for the development of public health policy:

Department of Public Health—responsible for health promotion and disease prevention, environmental health, and communicable disease control.

Department of Working Life Development—responsible for occupational health and safety issues.

State agencies under the Ministry of Social Affairs

Health Protection Inspectorate—a successor of the Soviet sanitary-epidemiological service and up to 1993 responsible for implementing prevention and health education. It is responsible for the surveillance and control of communicable diseases and environmental health hazards, implementation of the national immunisation programme, and development of the environmental health information system.

Labour Inspectorate—responsible for the surveillance and control of occupational health and safety.

National Institute of Health Development—established in 2003 by merging three smaller governmental institutions. It is responsible for coordinating national public health programmes and most of the national health promotion projects, but also for the applied research and analysis in public health, continuing professional training in public health, and public health monitoring and reporting.

National Centre of Health Promotion and Education—established in 1993 as an independent structure within the Ministry of Social Affairs. Until 2003, when it was incorporated in the National Institute of Health Development, it was responsible for coordinating most national health programmes and health promotion projects at national level. In the middle of the 1990s the centre introduced a system of health promotion specialists working at county government level, which created a good foundation for a community based public health organisation, and trained these specialists.

Estonian Health Insurance Fund

The fund provides financing for national disease prevention activities (screening programmes) and supports health promotion activities. Since 1995, 0.5-1% of the health insurance budget has been spent on funding health promotion projects every year. Since 2001 the health promotion budget has not increased. This funding is open to anyone, and applications for projects are evaluated by an advisory committee at the fund. From 2005, the funding of health promotion projects is subject to public tender.

ally transmitted diseases. However, in 2000 and 2001, an explosive increase of new cases of HIV infection became a serious public health problem (table).

Individual risk factors have also changed, particularly the dietary habits of the Estonian population. The

Selected health indicators, Estonia

Health indicator	1990	1994	2002	2004
Life expectancy (years):				
Males	64.6	61.2	65.2	NA
Females	74.6	73.1	77.0	NA
Infant mortality (per 1000 live births):				
Early neonatal deaths (0-6 days)	6.1	6.6	2.4	NA
Neonatal deaths (0-4 weeks)	8.0	9.5	3.6	NA
Post-neonatal deaths (4 weeks-1 year)	4.3	4.9	2.1	NA
Number of abortions per 100 live births	132.0	160.2	101.3	NA
Morbidity (incidence per 100 000 population):				
Tuberculosis	21.0	35.0	38.4	31.6
Syphilis	3.3	56.5	20.1	13.6
Gonorrhoea	128.0	205.0	39.7	38.3
HIV infections	0.5	0.7	66.2	54.8
Type of cooking fat (% of households):				
Vegetable oil	21.5	64.5	89.0	NA
Animal fat	26.1	15.9	3.4	NA
Butter, margarine, vegetable fat, or mixture	52.4	19.6	7.6	NA
Use of fresh vegetables at least three times per week among the adult population (%)	27.5	34.3	50.3	NA

NA=not available.

Box 2: National health programmes and projects in Estonia

Programmes initiated since 1992

National Preventive Programme for HIV/AIDS (1992)—main objective is to decrease HIV/AIDS infections through information, training, and campaigns
National Children and Adolescents Health Programme (1996)—main objective is to improve children's health and quality of life by injury prevention, promotion of mental health, and improvement of school environment and nutrition
National Programme for Drug and Alcohol Prevention (1997)—main objective is to slow down the growth of drug use by 20% by the year 2007, and to reduce hospitalisation of patients with alcohol psychosis by 10% by the year 2007
National Programme for Prevention and Cure of Tuberculosis (1998)—objectives are to reduce tuberculosis incidence to the level of maximum 30 new cases per 100 000 of the population by year 2005, and to protect the population from tuberculosis infection and prevent the development of drug resistance

Projects initiated since 1993

Heart Health Project (1993)—main objective is to prevent early morbidity and mortality from cardiovascular diseases by informing and educating the population and creating an environment supporting health
Anti-Smoking Project (1996)—main objectives are to decrease smoking in the population, help people to quit smoking, and prevent young people from starting smoking
Injury Prevention Project (1993)—main objective is to decrease the number of injuries and deaths caused by road traffic crashes
Family Planning Project (1995)—focused on young people, with the main objective of improving the population's sexual and reproductive health

use of vegetable oil has increased and the use of animal fat has decreased. Another positive change is a higher consumption of fresh vegetables (table).^{10 15 16}

The proportion of daily smokers, both male and female, grew rapidly until 1994 and has not shown any clear tendency to decrease since then (fig 2). A similar trend has been observed concerning the consumption of alcohol (fig 3).^{10 15 16}

Impact of reforms

Every health reform should be focused on better health outcomes for the population.¹⁷ However, the moving forces of reforms are often economic and political, especially in the field of public health, where the outcomes depend on the cooperation of different sectors of society. The health of the population is also related to economic and political processes in society.^{18 19}

The decrease in life expectancy and the increase of mortality due to diseases of the circulatory system and external causes has mainly affected the social groups

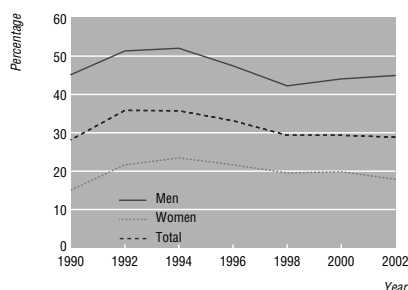


Fig 2 Percentage of adults who smoke daily, Estonia, 1990-2002

that have experienced the most socioeconomic difficulties during the transition period: those who were less educated and had a lack of social support.^{8 9 11 20 21} The health projects have focused on raising the awareness of the population and changing their attitudes towards healthier choices, without considering socioeconomic risk factors such as unemployment or poverty in specific target groups.

More progress in improving the health of the population has been made when the surrounding environment has been supportive. For example, the positive trends in dietary habits started after the monetary reform in 1992, when the range of goods in the shops changed dramatically and people got a chance to make healthier choices. The decrease in the number of abortions and in the incidence of sexually transmitted diseases is believed to have occurred because of raised awareness in the population, along with better availability of contraception.

Regardless of intensive health promoting activities, progress in reducing alcohol consumption and tobacco smoking has been unremarkable. This illustrates how health promotion is ineffective unless it is supported by other social and economic policies. Alcohol and tobacco policy in Estonia has been liberal, and alcohol and tobacco products are inexpensive and easily accessible.

Health programmes and projects need to have clearly formulated objectives and a well defined strategy to achieve expected results. A good example is the National Programme for Prevention and Cure of Tuberculosis, which has almost achieved one of its objectives, to decrease the number of new cases to 30 per 100 000 inhabitants. At the same time, however, the HIV prevention programme has had no positive effects. There has been very little collaboration between the different sectors involved, and the objectives and the strategy of the programme were not clearly formulated.

Conclusions

During the past decade, Estonia has made some progress in public health. Several national programmes dealing with essential health risks have been initiated and financed by the state budget, and the Estonian Health Insurance Fund has contributed by earmarking resources for health promotion projects.

Summary points

The national health programmes and projects initiated in Estonia in the middle of the 1990s have had a positive impact on the health of the population, as shown in improvements in life expectancy, infant mortality, number of abortions, sexually transmitted diseases, and dietary choices

Some health indicators have not improved, notably the incidence of HIV infection

Public health reforms have to be supported by political decisions that make it easier for people to make healthy choices

Priority setting, expressed in a clearly stated health policy and strategy, is needed

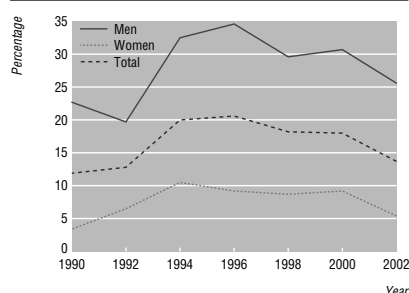


Fig 3 Percentage of adults who drink spirits every week, Estonia, 1990-2002

As a result, there is some evidence of a positive impact on the health of the population, but some health indicators have not improved.

To be effective, public health reforms must be supported by political decisions that make it easier for people to make healthy choices. A comprehensive national health policy and strategy is still lacking in Estonia. The evaluation of the health programmes and projects is often complicated because the objectives have not been clearly formulated and lack measurable targets. Priority setting expressed in a clearly stated health policy and strategy is needed. The strategy should be evaluated systematically to find the most effective way to improve the population's health.

Contributors and sources: KP is assistant professor of health care management at the University of Tartu in Estonia and doctoral student at the Nordic School of Public Health in Sweden. She is preparing a doctoral thesis on health system development in Estonia. GM is currently a member of the managing board of the ERGO life and non-life insurance company in Estonia, Latvia, and Lithuania. He has worked in the field of social insurance and welfare in Estonia, and as a consultant on social policy in different countries in central and eastern Europe. RA is professor of health management at the Nordic School of Public Health in Sweden. He has also worked as an expert for the European Union in different countries in central

and eastern Europe countries. The idea of this article was developed and a first draft written by KP after revisiting previous studies and health statistics. The subsequent drafts and the final draft was jointly written by all authors. KP is guarantor.

Funding: None.

Competing interests: None declared.

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Põlluste K, Kalda R, Lember M.
Satisfaction with the access to the health services of the people
with chronic conditions in Estonia, *Health Policy*, 2006;
doi: 10.1016/j.healthpol.2006.08.004.



Satisfaction with the access to the health services of the people with chronic conditions in Estonia

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Abstract

After the implementation of the primary health care reform in Estonia, most of chronic conditions are managed by family doctors (FD) in collaboration with specialists. Although the general population has demonstrated the increase in satisfaction with health care after the reform, it has been questioned if people with chronic diseases have been left on a more disadvantaged position in the new system with some restrictions in the access to specialists.

Objective: To investigate the satisfaction of people with chronic conditions with the access to the health services and compare them to those who did not have a chronic illness.

Method: In November 2005, a random sample of Estonian residents aged 15–74 were personally interviewed using structured questionnaires ($n = 1446$), 29% of them reported to have a chronic illness.

Results: The people with chronic conditions were less satisfied with the access to the health services. They were more satisfied with their family doctors, but less with the health insurance system and they often reported their problems in seeing the specialist. Compared to other respondents, the people with chronic conditions visited their FDs and specialists more often, but no significant differences were found between their waiting times to see the FD or a specialist.

Conclusion: In Estonia, the people with chronic conditions do not have organisational barriers in their access to the health services. As frequent users of health services, they perceive the shortages of the health system more obviously than the rest of the population and it may reflect their satisfaction with the different aspects of the health system as well as the access to the health services.

Published by Elsevier Ireland Ltd

Keywords: Chronic conditions; Access; Health services; Estonia

1. Introduction

The main goal of every health system is to improve the population's health. When individuals interact with

the health system, it influences their well being through improvements in health. People's well being and satisfaction with the health system are also related to the way they are treated, how easily they get the health services needed, and the environment where they are treated [1]. One particular group of the population who needs and uses many and various health services are

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people with disabilities and chronic conditions and the elderly [2–4]. Chronic conditions are increasingly the primary concern of health care systems throughout the world [5]. Chronic conditions are the leading reasons why people seek medical care, yet the current health care systems may not address the needs of those people [3,6–8]. It has been argued that health care systems are mostly designed for acute care, and patients with acute symptoms and concerns may crowd out the less urgent needs of chronic patients [9]. Also, in several studies people with chronic conditions have been found to be less satisfied with the quality as well as the access to health services [3,10–12]. The reasons for dissatisfaction might be limited access to health services, dissatisfaction with the costs of care, or also the fragmentation of care, the lack of continuity and the coordination of care for chronically ill people [10,12–15].

In different health systems the solutions how patients with chronic diseases are handled may be different. Before the 1990s, the Estonian health care system was rather specialist-oriented, and people with chronic diseases were mostly treated by specialists. Within the reorganised primary health care (PHC) system since the early 1990s PHC doctors have taken over a number of responsibilities which earlier belonged to the area of specialised outpatient care, including management of the care of chronically ill people. The implementation of gate-keeping functions of PHC doctors, as well as the patient list system, also changed the principles of care of chronic patients. The role of specialists in the management of chronic patients is mostly defined as a consultant, and most patients who need to see specialists need referrals from their family doctors (FD). A referral from a FD is not obligatory if the specialised medical care is provided in connection with an injury, tuberculosis, eye disease, dermatological or venereal disease or in the case when gynaecological or psychiatric care is provided [16]. To guarantee access to the health services, the Estonian Health Insurance Fund (EHIF) has established the standards for waiting time for the FD, as well as for outpatient specialised care. According to the contracts concluded between the providers of health services and the EHIF, FDs should be available in one working day for patients with acute diseases and in three working days for patients with chronic diseases. The scheduled appointment time for specialised outpatient care should be no longer than 4 weeks.

As demonstrated in previous studies, the Estonian people have accepted the new PHC system, and during the first years after the formal implementation of the PHC reform, satisfaction rate with family doctors has increased [17–19]. Access to PHC services is good, for elderly and people of the lower social class as well [4]. Improved management of some chronic conditions by family doctors has been found [20]. However, the results of another study demonstrated that large differences in the use of health services were observed in relation to socio-economic status, with a more favourable socio-economic status being associated with a higher probability of using health care services which may indicate the possibility of limited access [21].

Assurance of the availability of high-quality health services to all the persons in need of them is one of the objectives of the health policy in Estonia [22]. As it is known from previous studies, access to the health services in Estonia has been rather good in general and people have been satisfied with the services provided [4,17]. At present, it is not known whether people with chronic conditions have the same access to the health services as others, or if they are in a more disadvantaged position in their access to health services as reported by researchers from other countries [3,6–12]. Thus, in this study we investigated satisfaction of people with chronic conditions with access to health services and compared them to those who did not have a chronic illness. The results of this study might support the implementation of the national health policy as well as the further development of the primary health care system to improve the continuity and coordination of care.

2. Methods

In November 2005, a random sample of Estonian residents aged 15–74 were personally interviewed using structured questionnaires ($n = 1446$). The sample of the study was formed by self-assessment: a proportional model of the total population aged 15–74 was used, where all the respondents represented equally sized groups. A two-staged stratification was made in order to form the sample. First, the population was divided into six strata on the basis of their localisation, while the size of the sample in each stratum was based

on a proportional division of the population. After that, a two-staged selection was made in each stratum. The primary sampling units were settlements (cities, towns, urban settlements, and villages). The sampling points (100 in total) were chosen at random according to the size of the settlement (the number of residents who qualified for the survey's age group) on proportional probability bases.

In each primary sampling unit, the secondary sampling units – individuals – were chosen. In urban settlements, the choice was made by using randomly selected addresses from the national population register. In rural settlements, the systematic sampling of individuals was based on the population register of the local municipality. To select the individuals in selected households the so-called young-men rule was used. In each of the houses or apartments of the sample, the youngest man among the family members aged 15–74 being at home was interviewed or the youngest woman if no male family members were living there or were not at home. This method of the selection of individuals will give an additional chance to get into the sample for those categories of the respondents who commonly stay at home more rarely than others, and thereby form the structure by gender and age of the empirical sample more similarly to the real structure of the population. A socio-demographic structure of the sample (age, gen-

der, and place of residence), which was formed during the interviewing process, was compared to the total population and assessed if necessary. The structure of the respondents by gender, age and place of residence in comparison with the structure of the total population of Estonia aged 15–74 years is presented in Table 1.

Face-to-face interviews were conducted by 89 trained interviewers of the Faktum research company. To obtain the representative sample of the required size, 3536 contacts were made with respondents. The final number of interviews was 1446. In 923 cases nobody was at home during two visits, in 288 cases the person who was home did not meet the criteria of the study (he/she was younger or older), and 879 persons refused to answer.

The regular population surveys to investigate the population's opinion about the health services initiated by the Ministry of Social Affairs in Estonia and the Estonian Health Insurance Fund have been conducted in Estonia since 1998, and the methodology of these studies has also been described previously [4,17–19]. However, the number of questions has varied, they are based on the previous results, some questions were added and some were removed. The questionnaire was revised by the specialists from the Ministry of Social Affairs along with the researchers from the University of Tartu. The data set used in this study included

Table 1

Structure of respondents by gender, age and place of residence in comparison with the structure of the total population of Estonia (aged 15–74 years)

	Sample		Number of total population aged 15–74 years (1 January 2005) ^a	
	<i>n</i>	%	<i>N</i>	%
Gender				
Male	674	47	489,603	47
Female	772	53	559,883	53
Age				
15–24	282	20	209,916	20
25–34	256	18	187,652	18
35–49	393	27	279,990	27
50–64	333	23	239,113	23
65–74	182	12	132,815	12
Place of residence				
Urban area	1016	70	735,795	70
Rural area	430	30	313,691	30
Total	1446	100	1,049,486	100

^a Source: Statistical Office of Estonia.

demographic data (gender, age, nationality, education, income, place of residence), self-assessment of health status, the number of visits to doctors, and the evaluation of the various aspects of the health system: overall satisfaction with access to health services, satisfaction with the PHC system, which makes it possible to see the FD with any health problems; satisfaction with the existing health insurance system (satisfaction with the range of health services financed by health insurance); satisfaction with the FD and the specialist. Satisfaction rates were measured using a five-point scale—1: very satisfied; 2: fairly satisfied; 3: fairly dissatisfied; 4: very dissatisfied; 5: do not know. To analyse the use and the accessibility of health services, the respondents were asked how many times they had visited FDs and specialists and to specify the length of their waiting time to see doctors. If they had had the problems with access, they were also asked to explain it. All respondents ($n = 1446$) were also asked if they had a chronic illness or long-term health problem. If yes, they were asked to specify to what extent their illness or health problem would restrict their everyday life activities: (1) to a great extent; (2) to some extent; (3) not at all. Based on the answers, the respondents were divided for further analysis into two groups: (1) people with chronic conditions (respondents who reported having a chronic illness which has restricted their everyday life activities very much or to some extent); (2) healthy population (respondents who did not report having a chronic condition, or their illness did not affect their everyday life). The presence or absence of chronic illness was based on the respondents' self-assessment, similarly to the other study [12]. The reliability of their evaluation was tested by analysing the relationship between the respondent's statement about the absence or presence of chronic illness and the respondent's age and self-assessment of the health status as well as the use of medical services.

The data were analysed by using SPSS 10.0 statistical software for Windows. The χ^2 -test was used to compare the background characteristics and opinions about the health services between the people with and without chronic conditions. To estimate the relations between variables, the Spearman correlation coefficient was used. The predictors of satisfaction were calculated by using binary logistic regression. The models of satisfaction with access to health services were developed as follows: the dependent variable was taken as satisfaction with access to health services (0:

satisfied; 1: not satisfied) and independent variables (socio-demographic variables, health conditions, satisfaction with providers of health services and different aspects of the health system, and the number of visits to doctors). All statistically non-significant variables were excluded from the final model. The respondents who answered "do not know" about satisfaction were left out when performing the correlation and regression analyses.

3. Results

3.1. Sample description

Out of 1446 respondents, 419 or 29% reported having a chronic illness which had restricted their everyday life activities. Some differences existed in demographic characteristics and the health status between the respondents who had a chronic illness and those who did not (Table 2). The people who reported having a chronic illness were likelier to be women ($p < 0.05$), older persons ($p < 0.0001$), less educated ($p < 0.05$) and persons with lower income ($p < 0.0001$). Of those people who reported having a chronic illness, 35% rated their health status as bad or very bad, which was significantly higher compared to the respective percentage of healthy respondents (3%, $p < 0.0001$). The proportion of persons covered by national health insurance was significantly higher among the chronically ill people ($p < 0.05$).

The age of the respondent was significantly correlated with the evaluation of health status (the Spearman correlation coefficient $\rho = -0.45$, $p < 0.0001$), level of education ($\rho = -0.12$, $p < 0.0001$) and income level ($\rho = -0.12$, $p < 0.0001$). Significant correlations were found between the evaluation of health status and income ($\rho = -0.19$, $p < 0.0001$) and the evaluation of health and level of education ($\rho = -0.09$, $p < 0.0001$) as well as between income and level of education ($\rho = 0.27$, $p < 0.0001$).

3.2. Use of health services

People with chronic conditions use health services more often than the people who did not report having a chronic illness. During the last 12 months 82% of people with chronic conditions had visited the fam-

Table 2

Demographic and health characteristics of respondents ($n = 1441$)^a by the presence of chronic conditions (in %)

	People with chronic conditions		People not having chronic conditions		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Gender [*]						
Female	245	58	527	49	772	53
Male	174	42	500	51	674	47
Age ^{**}						
15–24	46	11	236	23	282	20
25–34	45	11	211	21	256	18
35–49	93	22	300	29	393	27
50–64	131	31	202	20	333	23
65–74	104	25	78	7	182	12
Native language						
Estonian	305	73	701	68	1006	70
Other	114	27	326	32	440	30
Education [*]						
Elementary	98	23	211	21	309	21
Secondary	255	61	597	58	852	59
Higher	66	16	219	21	285	20
Income per family member ^{**} ($n = 1243$ ^a)						
<EEK 1000	25	7	43	5	68	6
EEK 1001–2000	78	20	146	17	224	18
EEK 2001–3000	151	40	237	27	388	31
EEK 3001–4000	67	18	169	20	236	19
>EEK 4000	57	15	270	31	327	26
Place of residence						
Capital	127	30	311	30	438	30
Urban area	153	37	425	42	578	40
Rural area	139	33	291	28	430	30
Self-reported health status ^{**}						
Very good	5	1	143	14	148	10
Rather good	58	14	457	45	515	36
So-so	211	50	392	38	603	42
Rather bad	114	27	32	3	146	10
Very bad	31	8	3	0	34	2
Covered by national health insurance [*]	406	97	965	94	1371	95

^{*} $p < 0.05$; ^{**} $p < 0.01$.^a Out of the respondents, 203 did not report their income per family member.

ily doctor (FD) and 65% the specialist, and of other respondents 53% and 31%, respectively ($p < 0.0001$). The reported average number of visits during the last 12 months to the family doctor was 4.5 and to the specialist 3.7 for the chronically ill people, and 2.8 and 2.6, respectively, for other respondents ($p < 0.0001$).

When comparing the waiting times to see the FD or the specialist, we did not find a statistically significant difference in the waiting time for people with chronic

conditions compared to other respondents (Table 3). The majority of all respondents who visited the FD were admitted within 1–2 days. To see the specialist, two-thirds of all the respondents were admitted within 1–2 weeks. However, 14% of chronically ill and 5% of healthy respondents reported experiencing problems seeing the specialist, and most of them (89% and 78%, respectively) referred to the long waiting time.

Table 3

Waiting times to see the family doctor and specialists by the presence of chronic conditions (in %)

Waiting time to see	Total	People with chronic conditions	People not having chronic conditions
Family doctor			
On the same day when requested	52	48	54
1–2 days	32	31	32
3–4 days	11	15	9
5–7 days	4	4	4
More than 1 week	1	2	1
Specialist			
Up to 1 week	50	47	53
1–2 weeks	16	18	15
3–4 weeks	15	13	16
More than 4 weeks	19	22	16

3.3. Satisfaction with access to health services

Respondents with chronic conditions were less satisfied with access to health services than those who did not report having a chronic illness ($p < 0.05$, Table 4).

There was a weak, but statistically significant negative correlation between the number of visits to the specialist and satisfaction with access to health services—people who visited a specialist more often were less satisfied ($\rho = -0.08$, $p < 0.002$). Satisfaction with access to health services was also found to correlate with the length of the waiting time to see the FD ($\rho = -0.14$, $p < 0.0001$) and specialist ($\rho = -0.18$, $p < 0.0001$).

While checking for variables presented in Table 2 (demographic background, coverage with health insurance and the frequency of visits to the FD and specialists) having a chronic illness still had an independent effect on satisfaction with access to health services (Table 5). Also, self-reported health status, level of education and age of the respondent were found to be predictors for satisfaction with access to

health services—people with better health status, older respondents and those with lower education were more satisfied. The bigger number of visits to specialists had a negative effect on satisfaction with access to health services; on the other hand, a bigger number of visits to the FD had positive effects on satisfaction with access (Table 5).

In general, satisfaction with different aspects of health services and service providers was high, and there was a statistically significant correlation between these items and satisfaction with access to health services (Table 6). Compared to other respondents, we found people with chronic conditions to be more satisfied with their family doctors, but less satisfied with the existing health insurance system. No statistically significant differences between respondents with and without chronic conditions were found when comparing satisfaction with the PHC system and specialist care.

When analysing the influence of the factors describing satisfaction with the different aspects of the health system and which were found to correlate to satisfaction with access to health services (satisfaction with the

Table 4

Satisfaction with the access to the health services by the presence of chronic conditions (in %)

Satisfaction with the access to the health services	People with chronic conditions	People not having chronic conditions	Total
Good	10	11	11
Rather good	33	40	38
Rather bad	41	35	36
Bad	12	9	10
Do not have a personal opinion	4	5	5

Please cite this article as: Kaja Pölluste et al., Satisfaction with the access to the health services of the people with chronic conditions in Estonia, Health Policy (2006), doi:10.1016/j.healthpol.2006.08.004

Table 5

Factors having an effect on the level of satisfaction with the access to the health services

Predictors	Satisfaction with the access to the health services		<i>p</i> -Value
	<i>B</i>	OR (95% CI)	
Age of the respondents ^a	−0.20	0.82 (0.74–0.92)	0.000
Level of education ^b	0.39	1.48 (1.21–1.81)	0.000
Self-reported health status ^c	0.26	1.30 (1.14–1.48)	0.000
Having a chronic illness ^d	−0.54	0.59 (0.43–0.79)	0.016
Frequency of the visits to the specialist ^e	0.13	1.12 (1.02–1.23)	0.024
Frequency of the visits to the FD ^e	−0.15	0.87 (0.79–0.95)	0.002

^a 1: youngest age group to 5: oldest age group.^b 1, lowest level of education to 3: highest level of education.^c 1: very good to 5: very bad.^d 1: yes; 2: no.^e 0: has not visited to 4: visited four times or more.

PHC system, with the health insurance system, satisfaction with the FD and the specialist, access to health services: waiting time to see the FD and the specialist, having problems seeing the specialist) along with the background variables, we found five factors for predicting satisfaction with access to health services (Table 7). Satisfaction with the health insurance system and the

PHC system, as well as an older age of the respondents, had positive effects on satisfaction, at the same time a bigger number of visits to the specialist and experiencing problems seeing the specialist had negative effects on satisfaction with health services. Additionally, three factors were included in the model with borderline significance: satisfaction with the specialist, satisfaction

Table 6

Satisfaction with the family doctor, the specialist, and the organisation of primary health care and health insurance systems in the opinion of the people with chronic conditions and other respondents (in %)

	Most satisfied	Rather satisfied	Rather dissatisfied	Most dissatisfied	Do not know ^a	Correlations between the satisfaction rates and satisfaction with the access to the health services (Spearman's ρ)
Family doctor [*]						
Total	33	55	6	2	4	0.26***
People with chronic conditions	38	51	6	3	2	
People not having chronic conditions	32	56	6	2	4	
Specialist						
Total	39	51	7	2	1	0.24***
People with chronic conditions	39	51	5	4	1	
People not having chronic conditions	39	51	7	2	1	
Primary health care system						
Total	14	60	12	5	9	0.30***
People with chronic conditions	15	59	13	6	7	
People not having chronic conditions	14	61	11	4	10	
Health insurance system ^{**}						
Total	3	43	22	9	23	0.35***
People with chronic conditions	3	42	24	12	19	
People not having chronic conditions	3	43	22	7	25	

^{*} $p < 0.05$; ^{**} $p < 0.01$; ^{***} $p < 0.0001$.^a The respondents who answered about the satisfaction "do not know" were left out when performing the correlation analysis.

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Table 7
Predictors of the satisfaction with the access to the health services, all the respondents

Predictors	<i>B</i>	OR (95% CI)	<i>p</i> -Value
Satisfaction with the existing health insurance system ^a	0.82	2.27 (1.56–3.32)	0.000
Problems experienced to see the specialist ^b	−1.21	0.30 (0.14–0.63)	0.002
Satisfaction with the PHC system ^a	0.52	1.67 (1.08–2.63)	0.021
Age of the respondents ^c	−0.26	0.77 (0.61–0.97)	0.026
Frequency of the visits to the specialist ^d	0.23	1.26 (1.03–1.55)	0.028
Gender ^e	−0.52	0.60 (0.35–1.02)	0.059
Satisfaction with the specialist ^a	0.41	1.50 (0.99–2.28)	0.056
Satisfaction with the family doctor ^a	0.43	1.54 (1.00–2.38)	0.052

^a 1: very satisfied to 4: very dissatisfied.

^b 1: yes; 2: no.

^c 1: youngest age group to 5: oldest age group.

^d 0: has not visited to 4: visited four times or more.

^e 1: male; 2: female.

with the family doctor and gender (male respondents were less satisfied).

4. Discussion

Chronic diseases are a major cause of death and disability worldwide. According to the WHO non-communicable diseases now account for 46% of the global burden of disease [23]. The results of the present study demonstrated that almost one-third of the Estonian adult population suffers from chronic conditions which have in some way restricted their daily activities. As expected, people with chronic conditions also reported poor health status more often compared to other respondents. Comparing to respondents without a chronic illness, people with chronic conditions were older, less educated, and had a lower income. Similar results were found in previous studies as well [12,19]. Also, the more frequent use of health services among people with chronic conditions was anticipated while disease or symptom severity has been found to be predictors for health care utilisation [24].

In general, access to the PHC and specialised outpatient services in Estonia is rather good. Also, satisfaction with the PHC system and the providers of health services is continuously high. Previous studies about the implementation and progress of PHC reform in Estonia demonstrated that 73–82% of PHC patients were admitted within 2 days [4,17]. The results of the present study confirmed that access to PHC services is as good as before, and there was no difference in

waiting times for people with chronic conditions or other members of the population. Also, the waiting time to see a specialist was the same for both groups of respondents, but compared to other respondents people with chronic conditions still argued more often that they had difficulties seeing the specialist. Thus, it seems to also be one reason why people with chronic conditions were less satisfied with access to health services. The presence of a chronic condition was found to be an independent predictor of lower satisfaction with access to health services. When analysing the co-effect of different factors (respondents' background variables, use of health services, satisfaction with various aspects related to the health services and waiting times), the effect of a chronic illness as an independent predictor for satisfaction with access diminished significantly. Factors like satisfaction with the health insurance and PHC system, experiencing difficulties seeing the specialist, frequency of visits to the specialist and age of respondents were found to have a more expressed effect on satisfaction with access to health services than having a chronic condition. However, it seems that the presence of a chronic condition still has an indirect effect on satisfaction with access, while people with chronic conditions were less satisfied with the health insurance system, visited specialists and experienced problems seeing the specialist more often than other respondents. On the other hand, higher satisfaction with the PHC system, as well as an older age among the respondents with chronic conditions, may balance the effect of negative predictors.

Thus, objectively we did not find many considerable differences in access to health services for people with chronic conditions and those without a chronic illness. The factors describing access to health services, e.g. the waiting time to see the doctor did not have an influence on satisfaction with access to health services. Satisfaction with access to health services seems to correlate first of all to subjective matters: general satisfaction with the different aspects of the health system, previous experience and the self-determined need to see the doctor. It is possible that people who use health services more often also have a higher probability of experiencing several problems, e.g. a longer waiting time. Other researchers have found similar results, too [10,12]. Also, different matters related to chronic illness like additional costs due to illness, limitations in everyday life, not accepting the presence of the illness, etc., may affect expectations for health services and satisfaction with the health system.

On the other hand, the Estonian health care system has been rather specialist-oriented for a long time, and people with chronic conditions were mostly treated by specialists. Today, the PHC system has taken over a number of activities which earlier used to belong to the area of specialised outpatient care. Many patients with chronic conditions are successfully managed by family doctors, as it was found previously [20], and they no longer need to see a specialist as often. Still, as demonstrated in the previous study, people may accept the PHC system, but more than half of the population still preferred direct access to the specialist [19]. Although people with chronic conditions are satisfied with their FDs, they were used to consulting specialists as well. So they may feel that the existing health insurance system limits their possibilities to see the specialist as often as they believe they need. As argued by Øvretveit [25], people may not be satisfied with access in comparison to what they want from the health system, and they may feel that the system should provide more. People's expectations play a role in forming their satisfaction with health services, and the gap between their expectations and present experience may have an effect on the level of satisfaction [25,26].

It is important to mention that the factors related to the PHC services (satisfaction with the PHC services and the FD and the frequency of visits to FDs) were found to have positive effects on satisfaction with access to health services. Being satisfied with the exist-

ing health system, people found it to be likelier in accordance to their need and they were more satisfied with access to health services, too.

Our study also has some limitations. As it was a study which covered the whole population, there was a shortage of questions to look in detail into the problems of chronically ill people related to different aspects of access, including financial aspects, which have been found to be an essential problem by other researchers [12]. As people with chronic conditions were likelier with a lower income, they may also experience financial barriers as reported in previous studies [4,21]. Also, people aged 75+ were not included in the sample. Although due to health conditions older people may need more health services. They are not considered as a homogenous group, they may under-utilise or over-utilise health care services and therefore while using the usual survey technique the results might be biased [27].

The reorganisation of the medical care system devoted to the treatment of chronic conditions will be a challenge of the 21st century, and health care leaders around the world face the task of managing the quality of health services for chronically ill people [5,6]. This is the challenge for the Estonian health care system as well. The aging of the population and a high level of life-style-related risk factors among the adult population [28] would probably urge the growth of the number of chronically ill people and demand for health services even more. To improve the quality of care for people with chronic conditions, several models for chronic care have been developed and implemented [9,13]. Still, resulting from the present study, a well-functioning primary health care system and satisfaction with the FD would promote satisfaction with access to health services, too.

The results of this study have indicated that objectively at present in Estonia access to health services for people with chronic conditions is comparable with other people. Health services, including specialised care, are available to them if they need it, and access to health services for chronic patients in Estonia is more open than in some other countries [12]. For example, in Great Britain, as reported by Gask [7], most people with chronic illnesses are never seen by a specialist. Also, the results of an international study demonstrated that, for example, in the United Kingdom, New Zealand, the USA, Australia and Canada 36–53% of sicker adults

reported having difficulties seeing a specialist [14]. Compared to these results, in Estonia the share of those having difficulties seeing a specialist was much lower – 14%, although the dominant reason for difficulties was the same – a long waiting time.

The results of this study demonstrated that people with chronic conditions compared to others do not have any organisational barriers to access to health services. However, chronically ill people as frequent users of health services perceive the shortages of the health system more obviously than the rest of the population. It may generate a gap between their expectations and real experience, and this matter is expressed by lower satisfaction with access to health services, too. Therefore, access and satisfaction with health services for people with chronic conditions in Estonia should be studied more carefully hereinafter to explain the possible reasons for dissatisfaction and to make the health system more responsive to their health needs.

Acknowledgements

This study design and data collection were financed by the Ministry of Social Affairs of Estonia and the Estonian Health Insurance Fund. Data analysis was performed by independent researchers from the University of Tartu.

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Please cite this article as: Kaja Põlluste et al., Satisfaction with the access to the health services of the people with chronic conditions in Estonia, *Health Policy* (2006), doi:10.1016/j.healthpol.2006.08.004

Põlluste K, Männik G, Axelsson R. Satisfaction with social health insurance and awareness of rights among the Estonian population (submitted).

SATISFACTION WITH SOCIAL HEALTH INSURANCE AND AWARENESS OF RIGHTS AMONG THE ESTONIAN POPULATION

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ABSTRACT

Objective. The purpose of this study was to examine the Estonian people's attitudes towards the health insurance system in 2002 and 2005. Additionally, in 2005, the people's awareness of their rights concerning the access to the health services was also studied.

Methods. A random sample of Estonian residents aged 15–74 were personally interviewed using structured questionnaires in November and December 2002 (n=999) and in November 2005 (n=1446).

Results. In 2002 43% and in 2005 46% of the respondents were satisfied with the range of services financed by the health insurance. The relative importance of very dissatisfied persons decreased from 17% in 2002 to 9% in 2005, and the proportion of respondents who did not have a personal opinion about the health insurance system increased from 16% to 23%. The most important predictor of the satisfaction with the health insurance was the satisfaction with the existing primary health care system. The satisfaction with the health insurance was higher in 2002 as well as 2005 among those respondents who had visited a family doctor or specialist or had been admitted to a hospital during the last 12 months before the survey, but lower among those who had visited a dentist. More than three quarters of the respondents were informed about their rights concerning the access to the health services. Personal contacts with family doctors and specialists had a positive impact on the level of awareness.

Conclusions. People's attitudes towards the health insurance and their awareness of rights to health services were related to personal contacts with the providers of such services.

Key words: health insurance reform, satisfaction, awareness, Estonia

INTRODUCTION

In the beginning of the 1990s, the policy directions in most of the Central and Eastern European countries were targeting decentralisation and privatisation, moving away from state financed systems to private or public insurance systems.¹ The people's attitudes to the reforms in the health sector have been both positive and negative.²⁻⁶ At the same time, many people also have a lack of information about health insurance and patient rights.⁷

In Estonia, the first reform in the field of health care was the implementation of social health insurance in 1992. It was based on a political consensus to establish an earmarked health insurance fund, independent of the state budget. In 1992, the administration of health insurance was devolved to 15 county funds, six city funds, and one fund for seamen resembling a self-budgeting insurance company. In 1994, the number of funds was decreased to 17, and, since 2001, health insurance is provided by the Estonian Health Insurance Fund (EHIF), which is the only fund in the country. Since the beginning of the health insurance reform, a 13% payroll tax has been paid by the employers to the health insurance fund(s). The earmarked payroll taxes have been the main source of health care finance. In 2002, for example, the health care spending was financed 65.6% from social health insurance and 10.7% from state and municipal taxes. The private proportion of health care financing was 23.7%, including 19.9% out-of-pocket payments and 1% private health insurance.⁸

Since the health insurance system was introduced in Estonia, the coverage of the system has not significantly changed, incorporating approximately 95% of the population. According to the Health Insurance Act, the following persons are covered: employees and self-employed persons, specific groups (e.g. unemployed persons and persons in military service) covered by contributions from the state budget, and persons eligible for coverage without any contributions (e.g. children, retired persons and students). People who are not covered by health insurance have to pay for health services themselves. Still, ambulance services and emergency care are guaranteed to them, and these services are paid by the state budget.

The health insurance fund is responsible for contracting of health care providers and paying for health services, but also for reimbursing pharmaceutical expenditures and paying sickness and maternity benefits. Approximately 2/3 of the health insurance budget is spent on health services every year, 13–15% on reimbursing pharmaceutical expenditure, and 16–17% on sickness and maternity benefits.⁸ According to the law, all the insured people have the same rights and equal access to the health services.

In October 2002 a new Health Insurance Act was introduced.⁹ In this law, the package of health services covered by health insurance as well as the rate of coverage was more clearly defined. The new act regulated the co-payment of insured people as well as the principles behind waiting lists. The range of

benefits covered by health insurance is rather broad. Approximately 82% of the health insurance benefits cover the provision of preventive and curative health services, drugs and medical devices. Some of those benefits are subject to cost sharing, as regulated by law, for example outpatient prescription drugs, out- and inpatient specialised care (co-payment up to 50 EEK per visit and up to 25 EEK per day in hospital), and some health services like abortion (co-payment 30%), IVF treatment (co-payment up to 30%), rehabilitation (co-payment 20% per day) etc. Dental treatments for persons younger than 19 are totally covered by health insurance, while the adults have to pay for their treatments and dentures themselves.⁸

Since the beginning, health insurance in Estonia has been based on solidarity and characterised by high levels of financial and risk protection and equity. Like in some other countries, e.g. Croatia, the Czech Republic, Hungary and Slovenia, a high level of financial protection has been maintained.¹ In order to guarantee access to health services according to proven medical need, every provider of health services is obliged to have a waiting list. According to the contracts concluded between the family doctors (FD) and the EHIF, the FDs shall be available in one working day for patients with acute diseases and in three working days for patients with chronic diseases. The scheduled appointment times for specialised outpatient and inpatient care are respectively four weeks and six months.

Most of the time, health service providers can follow the standards of waiting lists fixed by the EHIF, and, in general, health services have been rather accessible. In 2005, however, 19% of the adult population found that the waiting lists for the out-patient specialised care were longer than the fixed standards.¹⁰ An insured person has the right to obtain a service outside the waiting list, but only on the condition that this does not prejudice the opportunities of persons on the waiting list to obtain that service. In this case, however, the health insurance fund will not pay for the service. It has to be paid by the insured person.⁹

Although the health insurance reform was introduced more than 10 years ago, there is very little evidence of whether the Estonian people are satisfied with the current health insurance system and the solidarity principles it is based on. The aim of this article is to examine the people's attitudes towards the health insurance system. Specifically, the satisfaction with the health insurance among the Estonian people will be assessed and the satisfaction rates in 2002 and 2005 compared. Additionally, the people's awareness of their rights concerning the access to the health services will also be studied.

METHODS

Survey sample

A random sample of Estonian residents aged 15–74 were personally interviewed using structured questionnaires in November and December 2002

(n=999) and in November 2005 (n=1446). The samples of the both studies were formed by self-assessment: a proportional model of the total population aged 15–74 was used, where all the respondents represented equally sized groups.

A two-staged stratification was made in order to form the sample. First, the population was divided into six strata on the basis of their localisation, while the size of the sample in each stratum was based on a proportional division of the population. After that, a two-staged selection was made in each stratum. The primary sampling units were settlements (cities, towns, urban settlements, and villages). The sampling points (100 in total) were chosen at random according to the size of the settlement (the number of residents who qualified for the survey's age group) on proportional probability bases.

In each primary sampling unit, secondary sampling units – individuals – were chosen. In urban settlements, the choice was made by using randomly selected addresses from the national population register. In rural settlements, the systematic sampling of individuals was based on the population register of the local municipality. A socio-demographic structure of the sample (age, gender, and place of residence), which was formed during the interviewing process, was compared to the total population and assessed if necessary. The structure of the respondents by gender, age and place of residence in comparison with the structure of the total population of Estonia aged 15–74 years is presented in Table 1.

Table 1. Structure of respondents by gender, age and place of residence in comparison with the structure of the total population of Estonia (aged 15–74 years), in %.

	Sample (n=999)	2002	Sample (n=1446)	2005
		Number of total population aged 15–74 years (January 1 st , 2001, n=1046921) ¹		Number of total population aged 15–74 years (January 1 st , 2005, n=1049486) ¹
Gender				
Male	46	46	47	47
Female	54	54	53	53
Age				
15–24	19	19	20	20
25–34	18	18	18	18
35–49	28	28	27	27
50–64	23	23	23	23
65–74	12	12	12	12
Place of residence				
Urban area	70	70	70	70
Rural area	30	30	30	30

¹Source: Statistical Office of Estonia

Face-to-face interviews were conducted by trained interviewers (50 in 2002 and 89 in 2005) from professional research companies. The sampling procedure is presented in Table 2.

Table 2. Sampling procedures in 2002 and 2005.

	2002	2005
Number of people interviewed (sample size n)	999	1446
Number of people unavailable for interviews during two visits	603	923
Number of people staying beyond those interviewed (due to age)	88	288
Number of people declining interview	455	879
Total number of contacts	2145	3536

Questionnaire

The regular population surveys to investigate the population's opinion about the health services initiated by the Ministry of Social Affairs in Estonia and the Estonian Health Insurance Fund have been conducted in Estonia since 1998, and the methodology of these studies has also been described previously.^{11–14} Data collected in the same studies have also been used previously to explain the satisfaction with the primary health care (PHC) reform^{13–14} and the access to medical services among people with chronic conditions in Estonia.¹⁰

The data set used in this study included demographic data (gender, age, nationality, education, income, place of residence), insurance status, self-assessment of health status, use of health services, and satisfaction with the range of health services financed by health insurance as well as with the PHC system. The satisfaction rates were measured using a four-point scale: 1 – very satisfied; 2 – fairly satisfied; 3 – fairly dissatisfied; 4 – very dissatisfied; with an additional item “do not have a personal opinion”.

In addition, attitudes to health care financing options were assessed by asking respondents to choose between two options: “*Would you prefer situation A (health insurance would finance all health services, even if there would be long waiting lists) or situation B (waiting lists would be short, but only a part of the services would be financed by health insurance)?*” The respondents were asked to choose one of the following answers: certainly A, rather A, rather B, certainly B, do not have a personal opinion.

In 2005, additionally six items describing the people's awareness about their rights in relation to the access to the health services were used. The respondents were asked whether the following statements were correct or incorrect: (1) in case of acute illness the FD must admit the patient within one working day; (2) every person has right to change his/her FD; (3) the provider of specialised out-patient health services may ask the fee for the visit; (4) the provider of in-patient health services may ask the fee for bed-day; (5) every health professional has to provide emergency medical aid to all patients, including uninsured persons; and (6) ambulance service provides the health services to all people,

including uninsured persons. Based on their answers, the respondents were divided for further analysis into two groups: (1) informed persons – the respondents who reported that these statements were correct; (2) persons not informed – respondents who have chosen the answers “incorrect” or “do not know”.

Statistical analysis

The respondents were grouped by their health status, age, gender, place of residence, education, and monthly income as well as by their contacts with the providers of health services. The differences between groups of respondents were tested using chi-square tests. To estimate the relations between variables, the Spearman correlation coefficient ρ was used. The impact of different factors on the level of the satisfaction with the health insurance system was explained by a binary logistic regression analysis.

The model of satisfaction with health insurance was developed as follows: the dependent variable was taken as satisfaction with health insurance (0 – satisfied; 1 – not satisfied) and independent variables represented socio-demographic background, health condition, and satisfaction with PHC system. All statistically non-significant variables were excluded from the final model. The respondents who answered “do not know” about satisfaction were left out when performing the correlation and regression analyses.

The statistical analysis was performed by using the SPSS (Statistical Package for the Social Sciences) 10.0 for Windows.

RESULTS

Self-assessed health status and use of health services

The self-assessed health status and use of health services in 2005 were almost the same as in 2002. In 2002 and 2005, respectively, 43% and 46% of the respondents in the population survey evaluated their health as good or very good; 43% and 42% as average; and 14% and 12% as bad or very bad. In 2005, the respondents visited more often their FDs and dentists, but the use of health services provided by specialists, hospitals and ambulance service was the same as in 2002 (Figure 1).

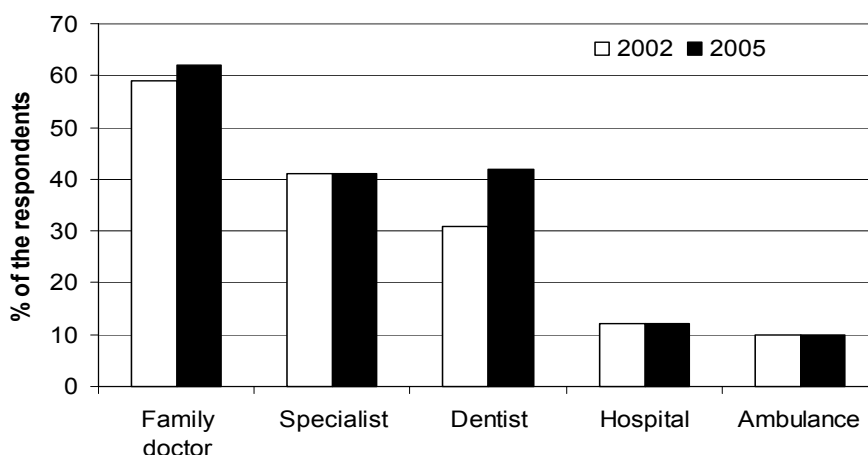


Figure 1. Use of health services among the Estonian population aged 15–74 in 2002 and 2005.

Satisfaction with the health insurance system

The proportion of respondents who were satisfied with the range of services financed by the health insurance was almost the same in 2002 and 2005. The relative importance of very dissatisfied persons decreased from 17% in 2002 to 9% in 2005, and the proportion of respondents who did not have a personal opinion about the health insurance system increased from 16% to 23% (Figure 2).

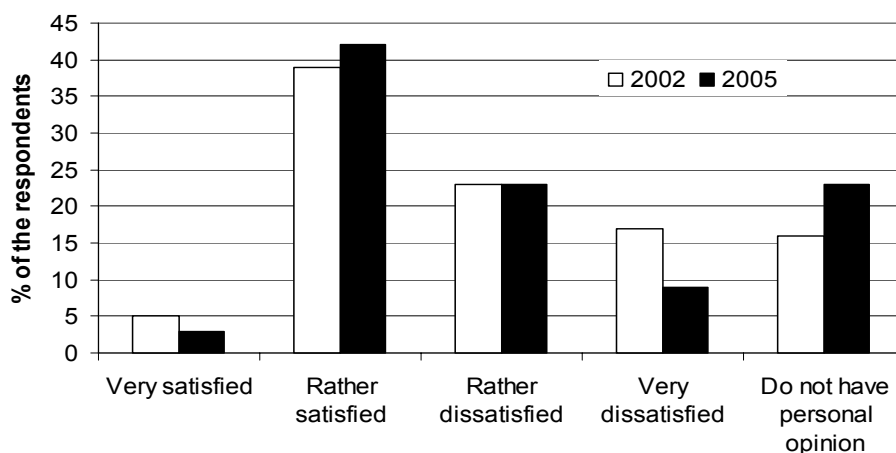


Figure 2. Satisfaction with the health insurance among the Estonian population aged 15–74 in 2002 and 2005.

The satisfaction or dissatisfaction with the health insurance was more often expressed by those respondents who had had contact with the providers of various health services during last 12 months before the survey. The satisfaction with the health insurance was higher in 2002 as well as 2005 among those respondents who visited a FD or specialist or were admitted in a hospital during the last 12 months before the survey, but lower among those who visited the dentist or called the ambulance (Tables 3 and 4).

Table 3. Satisfaction with the health insurance depending on the previous contacts with the providers of health services in 2002 (n=999, in %).

Having the contacts with the providers of health services during the last 12 months before the survey	Satisfaction with the health insurance		
	Very or fairly satisfied	Fairly or very dissatisfied	Do not have personal opinion
Family doctor (p<0.01)			
yes	45.1	40.9	14.0
no	40.8	37.7	21.5
Specialist (p<0.01)			
yes	46.3	41.2	12.4
no	41.3	38.4	20.4
Dentist (p<0.01)			
yes	43.6	44.6	11.7
no	43.2	37.3	19.5
Staying in the hospital (p=0.001)			
yes	49.6	45.3	5.1
no	42.6	38.7	18.7
Calling the ambulance (p<0.05)			
yes	37.0	51.0	12.0
no	44.0	38.3	17.7
All respondents	43.3	39.5	17.1

Table 4. Satisfaction with the health insurance depending on the previous contacts with the providers of health services in 2005 (n=1434¹, in %).

Having the contacts with the providers of health services during the last 12 months before the survey	Satisfaction with the health insurance		
	Very or fairly satisfied	Fairly or very dissatisfied	Do not have personal opinion
Family doctor (p<0.0001)			
yes	50.2	32.4	17.4
no	38.1	28.7	33.2
Specialist (p<0.0001)			
yes	47.6	34.6	17.8
no	44.1	28.4	27.5
Dentist (p<0.0001)			
yes	45.4	36.0	18.7
no	45.6	27.3	27.1
Staying in the hospital (p=0.053)			
yes	50.9	32.9	16.2
no	44.8	30.7	24.5
Calling the ambulance (p<0.05)			
yes	43.7	40.1	16.2
no	45.7	29.9	24.3
All respondents	45.5	31.0	23.5

¹ 12 respondents did not answer the question about their satisfaction with health insurance
Both in 2002 and 2005 the satisfaction with the health insurance system was higher among those people who were more satisfied with the organisation of the PHC system ($\rho=0.33$, $p<0.0001$ and $\rho=0.25$, $p<0.0001$).

When analysing the influence of the background factors (age, gender, health status, native language, place of residence, education, and income), contacts with the providers of health services (FD, specialists, dentist, hospital, ambulance services) and satisfaction with the PHC system on the satisfaction with the health insurance, three factors in 2002 and five factors in 2005 were included in the models. The most important predictor of the satisfaction with the health insurance in both years was the satisfaction with the PHC system. The higher level of the education was found to be a predictor of lower satisfaction, too. In 2002, Estonian-speaking respondents were less satisfied than others. In 2005, older respondents as well as respondents with the higher income level were found to be less satisfied. Also, personal contacts with the dental health services had negative impact on the satisfaction with the health insurance (Table 5).

Table 5. Predictors of satisfaction with the health insurance in 2002 and 2005.

	B	S.E.	Sig	EXP (B)	95.0% C.I. for EXP(B)	
					Lower	Upper
Model I (2002)						
Satisfaction with the primary health care system ¹	0.842	0.117	0.000	2.322	1.846	2.921
Education ²	0.585	0.143	0.000	1.795	1.357	2.375
Native language ³	-0.565	0.199	0.005	0.568	0.385	0.839
Model II (2005)						
Satisfaction with the primary health care system ¹	0.581	0.107	0.000	1.787	1.448	2.205
Age	0.012	0.005	0.010	1.013	1.003	1.022
Education ²	0.282	0.122	0.021	1.326	1.043	1.685
Visiting the dentist during last 12 months ⁴	0.325	0.148	0.028	1.384	1.036	1.848
Income ⁵	-0.126	0.64	0.048	0.881	0.777	0.999

The dependent variable was taken as satisfaction with the services of the health insurance (0 – satisfied; 1 – not satisfied);

¹ 1 – very satisfied ... 4 – very dissatisfied;

² 1 – lowest ... 3 – highest

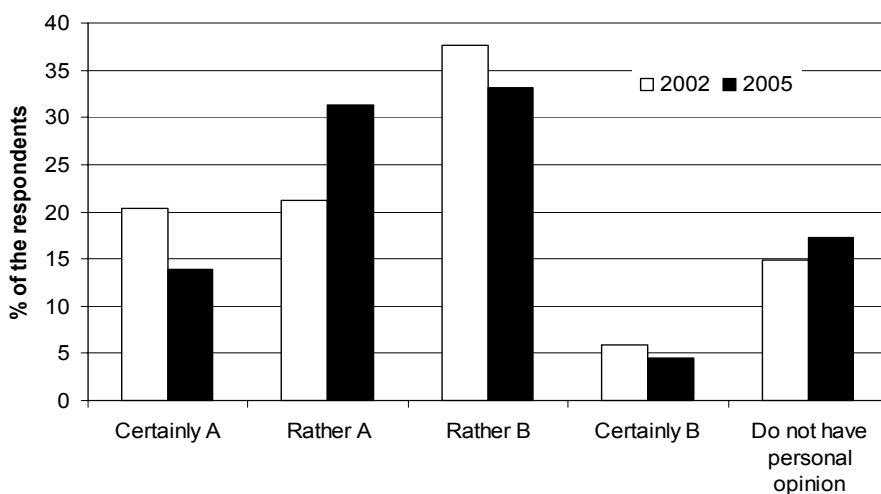
³ 1 – Estonian, 2 – other languages

⁴ 1 – yes, 2 – no

⁵ 1 – lowest ... 5 – highest

Preferences regarding financing principles

In 2005, the proportion of those respondents who preferred a situation where health insurance would finance all the health services, even if there would be long waiting lists (*Option A*) was a little bit higher compared to the year 2002. The relative importance of the respondents who would prefer shorter waiting lists even if only a part of the services would be financed by health insurance (*Option B*) decreased from 43% in 2002 to 38% in 2005 (Figure 3).



Option A: all health services financed by health insurance, even if there would be long waiting lists.

Option B: short waiting lists, but only a part of health services would be financed by health insurance.

Figure 3. Preferences concerning financing principles of health services.

In 2002, the shorter waiting lists were preferred by younger respondents ($p=0.09$, $p<0.02$), but also by respondents with higher education ($p=0.13$, $p<0.0001$) and higher income level ($p=0.14$, $p<0.0001$). Those who evaluated their health status lower preferred a more comprehensive financing of health services regardless of longer waiting lists ($p=0.16$, $p<0.0001$). In 2005, no statistically significant correlation between the preferences concerning the financing principles and the respondent's socio-demographic characteristics were found.

In 2002, the respondents' preferences were not related to their satisfaction with the existing health insurance. Still, in 2005, the option A was more likely preferred by the respondents who were less satisfied with the health insurance ($p=0.08$, $p<0.02$).

In 2005, the respondents' views on the financing principles were related to their personal contacts with the health services. Respondents who had visited a dentist or specialist doctor during the previous 12 months preferred more likely the option B. However, people who visited a FD or called an ambulance preferred more often the option A (Table 6). In 2002, the difference was found only in comparison of opinions of those people who had a contact with a dentist, and those who had not. Of those respondents, who had visited a dentist, 50% preferred the option B and 38% the option A. The respondents who did not have a contact with a dentists, more often preferred the option A (43%), the option B was preferred by 41% of those respondents ($p<0.05$).

Table 6. Preferences concerning financing principles of health services in 2005 (n=1426¹, in %).

Having the contacts with the providers of health services during the last 12 months before the survey	Respondents' preferences concerning the financing principles of health services		
	Option A ²	Option B ³	Do not have personal opinion
Family doctor (p<0.01)			
yes	47.3	38.2	14.5
no	41.8	36.6	21.6
Specialist (p<0.01)			
yes	45.4	41.3	13.3
no	45.0	35.1	19.9
Dentist (p<0.01)			
yes	45.4	41.3	13.3
no	45.0	34.9	20.0
Staying in the hospital (p=0.872)			
yes	44.6	36.7	18.7
no	45.3	37.7	17.0
Calling the ambulance (p<0.05)			
yes	56.4	29.3	14.3
no	44.0	38.5	17.5
All respondents	45.2	37.6	17.2

¹ 20 respondents did not answer the question about their preferences

² Option A: all health services financed by health insurance, even if there would be long waiting lists.

³ Option B: short waiting lists, but only a part of health services would be financed by health insurance

Awareness of rights in relation to health services

The awareness of the patients' rights to get health services was rather high. Most of the respondents (87%) were informed that in case of acute health problems they have the right to see their FD within one working day. Almost all people (96%) were informed that they had right to change their FD. If the person would visit a specialist or would be admitted in a hospital, the providers of specialised medical care may ask a fee for the visit and for staying in the hospital. About those matters, 76% and 73% of the respondents were informed. Most of respondents (94%) also knew that in an emergency case every person must receive health service irrespective of the presence or absence of health insurance, and every person in Estonia has the right to call an ambulance and get the needed emergency services. When comparing the level of awareness by the respondents' by the socio-demographic variables, there were not any significant differences. However, having personal contacts with FDs and specialists had some impact on the level of awareness (Table 7). At the same time, contacts with in-patient or emergency care (ambulance services) did not have any impact on the people's awareness of their rights.

Table 7. Percentage of the respondents informed about their rights to health services depending on their contacts with a family doctor or specialist.

Having the contacts with the providers of health services during the last 12 months before the survey	Personal contact with the provider of health services during 12 months before the survey	
	yes	no
Family doctor		
In case of acute disease the family doctor must admit the patient within one working day ($p<0.05$)	88.8	84.9
Every person has right to change his/ her family doctor ($p<0.01$)	97.4	94.5
There is fee for visit to see the specialist ($p<0.01$)	78.3	71.2
There is fee for day during the stay in hospital ($p=0.078$)	74.2	69.9
Every health professional has to provide emergency help to all patients, incl. non-insured persons ($p=0.729$)	94.3	93.8
Ambulance service provides the health services to all people (incl. uninsured persons) ($p=0.350$)	93.8	95.1
Specialist		
In case of acute disease the family doctor must admit the patient within one working day ($p<0.05$)	89.9	85.4
Every person has right to change his/ her family doctor ($p<0.05$)	97.8	95.3
There is fee for visit to see the specialist ($p<0.0001$)	80.5	72.1
There is fee for day during the stay in hospital ($p<0.05$)	75.9	70.3
Every health professional has to provide emergency help to all patients, incl. non-insured persons ($p=0.909$)	94.0	94.2
Ambulance service provides the health services to all people (incl. uninsured persons) ($p=0.642$)	94.0	94.6

Several sources of information about the health insurance were reported by the respondents. The FD as a source of information was reported most often, by 47% of the respondents, while the Internet was reported by 25%. Television and newspapers as sources of information were reported by 22% and 20% of the respondents.

DISCUSSION

The mandatory social health insurance in Estonia was implemented more than 10 years ago. The basic principles of new financing system were agreed already in 1992, when the health insurance system was introduced. Ten years later, in 2002, the new health insurance act stated more clearly some aspects of mandatory social health insurance, including the co-payment for insured people. This longitudinal study has shown that, directly after the implementation of these changes almost half of the Estonian adult population was satisfied with the benefits of the existing health insurance system. Three years later, the proportion of satisfied respondents remained on the same level, but the proportion of persons who were dissatisfied was decreased and much more people took a neutral stance.

The explanation could be that the first study was carried out a month after the new Health Insurance Act was enacted, and before that a number of public discussions were held about the changes planned in health insurance. Probably these discussions in media raised the public interest toward the health insurance and its benefits, and people were therefore more active to express their opinions.

Often enough, the people's opinions about health care and health care reforms are related to their socio-economic background, as found in previous studies conducted in Estonia^{11,13,14} as well as in other countries.^{2,5,6,15} However, in the current study, only a few background factors were found to be related to the satisfaction with the health insurance, e.g. age and level of education. People with older age and higher level of education were found to be less satisfied with the health insurance.

This finding is supported by previous results, where people with higher education were less satisfied with the changes in PHC system¹⁴ and the access to the health services.¹⁰ The older age of the respondents was also previously found as a predictor of lower satisfaction with the access to the health services.¹⁰ The same study also indicated that satisfaction with the health insurance itself was the most considerable predictor of the satisfaction with the access to the health services, and so the lower satisfaction among the older respondents was expected as well.

Beside the health insurance reform, the implementation of the primary health care reform has also played an important role in the development of the Estonian health care system. Therefore, an analysis of the people's satisfaction with the health insurance system has to take into consideration the achievements of the primary health care reform.

The results of the current study indicate that the level of satisfaction with the health insurance was strongly influenced by the opinion about the organisation of PHC system. The Estonian population has accepted the new system of PHC, the satisfaction with the FDs is rather high, and the access to PHC services can

be considered good.^{13,14} All of these changes have had impact on the access to health services, and also on the people's satisfaction with the health care system and the services provided.¹⁰

Based on the results of the current study, it seems that one factor which may have an influence on the satisfaction with health insurance is the level of co-payment for the health services. As the co-payment for the PHC services, specialised out- and in-patient care has been very small or nonexistent, the satisfaction with the doctors rather high and the access rather good, the people who have used these services were also more satisfied with the existing health insurance.

The most remarkable change for the adult population was related to the payment for dental care. Prospectively, this change could limit the access to those services, but, in comparison to the year 2002, the proportion of the respondents visiting the dentist was increased, not decreased. Still, the satisfaction with the range of services financed by the health insurance was lower among those people who had a recent personal experience of dental care, so the out-of-pocket payment for the dental health services may be one reason for dissatisfaction with the health insurance.

The preferences regarding the financing options were related to the socio-demographic factors in 2002, but to personal contacts with the health services in 2005. The results of the survey in 2002 were expected, since other researchers had come to similar results. Younger, healthier, more educated and wealthier people would prefer a more limited health insurance financing of health services.^{5,15} However, three years later, these relations between socio-economic background factors and preferences were not found. Instead, the attitudes regarding financing principles were related to the personal contacts with the health services.

The respondents who had used the PHC or ambulance services preferred a more comprehensive financing of health services. The FD or the ambulance services are usually the first contacts with the health system. In case of acute disease or accident, the essential health services are provided to everyone without any co-payment, which brings out the advantages of the health insurance financing. On the other side, people who had visited specialists usually had to wait 2–3 weeks or more and pay a small fee for the visit. In this case, based on the personal experience one may prefer shorter waiting lists and pay additionally for the health services.

People's awareness of their rights concerning the access to the health services can be considered as good. For example, compared to Russia⁷, Estonian people are better informed about their rights. The awareness was not related to the socio-economic background of the respondents, which can be seen as evidence that the information is equally accessible for all groups of the population. The most preferred source of information was the FD, and people who had contacts with their FDs were better informed about their rights. Some

aspects related to the specialised care were better known by those people who had recently visited out-patient specialists. Thus, both the opinion and the knowledge of the people about the health system was related mostly to their personal experiences.

The implementation of the health insurance system was the first reform in Estonian health care. Unfortunately, there are no reliable data about the public opinion about the health insurance before 2002. However, the study performed in 2002 allows assessing the people's attitudes directly after the change was implemented, and the follow-up study assessed the attitudes three years later. As reported previously, rapid changes in health care can bring dissatisfaction.^{2,3,6} Such evidence was found in this study as well. The level of dissatisfaction was more emphasised directly after the implementation of the changes than three years later.

This study has shown that the satisfaction with the health insurance system has been sustained and even increased at the same time as the dissatisfaction has been decreased, which indicates that the situation in the Estonian health care system is becoming more stable. Due to the solidarity principles and the comprehensiveness of the financing mechanism, a high level of financial protection has been maintained and the co-payment for insured people is rather small. Regardless of the dissatisfaction with the current system, expressed by one third of the respondents, it seems that the mandatory social health insurance is in accordance with the needs and expectations of many people. Due to the solidarity principles, the health services are mostly accessible when people need them, and there are no organisational barriers for those who need the services most.¹⁰

At the same time, the people's attitudes to the financing mechanisms show that the cost sharing could be acceptable conditionally, if it would be accompanied with better access to the health services. However, this area should be studied more deeply in the future. The health insurance financing mechanism is a tool to achieve the main objectives of health system, universal and equal access for all members of the society, effective care for better health outcomes, and responsiveness to patient concerns.^{16,17} The achievement of these objectives and the satisfaction with the health insurance is perceived through personal contacts with the health services and availability of the services most needed.

ACKNOWLEDGEMENT

The sampling procedure and the data collection for both surveys were financed by the Ministry of Social Affairs of Estonia and the Estonian Health Insurance Fund.

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Appendix 2. Questionnaires used for the interviews in population surveys in 1998, 2002 and 2005.

Questionnaire of the population survey in 1998

1. How do you evaluate your health status?
 - 1) Generally good
 - 2) Normal (medical aid is some-times needed)
 - 3) Rather poor, medical aid is often needed
2. Did you visit any doctor during the last 12 months?
3. Did you visit your primary health care doctor (district doctor or family doctor) during the last 12 months? If yes, how many times?
4. Did you visit specialist doctor during the last 12 months? If yes, how many times?
5. Have you registered on the patient list?
 - 1) Yes
 - 2) No
6. How did you register on the patient list?
 - 1) Personally at the family doctor
 - 2) Personally at the registration desk of the polyclinic/ PHC centre
 - 3) At the registration desk of the polyclinic/ PHC centre by a family member
7. Where does you family doctor work?
 - 1) He/ she has a solo praxis
 - 2) In a small centre (up to four FDs are working together)
 - 3) In a bigger centre or polyclinic (with more than four FDs work together)
8. Usually, how long do you wait for an appointment to see your FD?
 - 1) Usually, I am admitted on the same day I requested
 - 2) 1–2 days
 - 3) 3–4 days
 - 4) 5–7 days
 - 5) More than one week
 - 6) Difficult to say
9. How satisfied you are with your FD?
 - 1) Very satisfied
 - 2) Rather satisfied
 - 3) Rather dissatisfied
 - 4) Not satisfied at all
 - 5) Difficult to say

10. How do you feel are you sufficiently informed about changes that go along with the transition to the FD-based PHC system?

- 1) Yes, I am sufficiently informed
- 2) Yes, more or less
- 3) No, not enough
- 4) No, not at all
- 5) Difficult to say

11. If you have health problems, do you prefer first to consult with your FD or specialist?

- 1) FD
- 2) Specialist
- 3) Difficult to say

12. If you compare the previous PHC system with the existing, how do you think about the changes?

- 1) Situation in PHC has improved a lot
- 2) Situation has improved somewhat
- 3) Situation in PHC has become somewhat worse
- 4) Situation in PHC has become remarkably worse
- 5) I have not perceived any change
- 6) Difficult to say

13. If your child would have health problems, you usually consult with

- 1) FD
- 2) District paediatrician
- 3) Specialist
- 4) Hospital doctor
- 5) Difficult to say

This question was asked only from those respondents who had children aged less than 16 years

14. How relevant are for you the following aspects of PHC services?

	Not relevant at all					Very relevant		
Location of the GP centre / clinic	1	2	3	4	5	6	7	
Cleanliness and comfort of the clinic	1	2	3	4	5	6	7	
Modern equipment	1	2	3	4	5	6	7	
Easy of appointment access	1	2	3	4	5	6	7	
Waiting time in the PHC centre / clinic	1	2	3	4	5	6	7	
Punctuality of physician	1	2	3	4	5	6	7	
Understanding the patient problem	1	2	3	4	5	6	7	
Competence of physician	1	2	3	4	5	6	7	
Effectiveness of prescribed therapy	1	2	3	4	5	6	7	
Comprehensibility of explanations given by physician	1	2	3	4	5	6	7	

15. How satisfied are you with the following aspects of PHC services?

	Very dissatisfied					Very satisfied	
	1	2	3	4	5	6	7
Location of the GP centre / clinic	1	2	3	4	5	6	7
Cleanliness and comfort of the clinic	1	2	3	4	5	6	7
Modern equipment	1	2	3	4	5	6	7
Easy of appointment access	1	2	3	4	5	6	7
Waiting time in the PHC centre / clinic	1	2	3	4	5	6	7
Punctuality of physician	1	2	3	4	5	6	7
Understanding the patient problem	1	2	3	4	5	6	7
Competence of physician	1	2	3	4	5	6	7
Effectiveness of prescribed therapy	1	2	3	4	5	6	7
Comprehensibility of explanations given by physician	1	2	3	4	5	6	7

Questionnaire of the population survey in 2002

1. In your opinion the access to the health services is
 - 1) Good
 - 2) Rather good
 - 3) Rather bad
 - 4) Bad
 - 5) Difficult to say
2. In your opinion the quality of health services is
 - 1) Good
 - 2) Rather good
 - 3) Rather bad
 - 4) Bad
 - 5) Difficult to say
3. How do you evaluate your health status?
 - 1) Very good
 - 2) Rather good
 - 3) So-so
 - 4) Rather bad
 - 5) Very bad
 - 6) Difficult to say
4. Do you have any long-time/ chronic disease/ health problem?
 - 1) Yes
 - 2) No
5. Did you visit any doctor during the last 12 months?
6. Do you know who is your family doctor?
 - 1) Yes
 - 2) No

7. During the last 12 months
 - 1) Did you visit your family doctor?
 - 2) Did you visit specialist?
 - 3) Did you visit dentist?
 - 4) Were you admitted to the hospital?
 - 5) Did you call ambulance service?

If the answer was yes, the respondents were asked also how many times did they visit the doctor, were admitted to the hospital or did call the ambulance service.

8. How satisfied were you

	Very satisfied	Rather satisfied	Rather dissatisfied	Very dissatisfied	Do not have personal opinion
With FD?					
With specialist?					
With dentist?					
With hospital care					

The question about the satisfaction was asked only those respondents who had the contact with service provider during the last 12 months.

9. How long do you wait for an appointment to see your FD?
 - 1) I was admitted on the same day I requested
 - 2) 1–2 days
 - 3) 3–4 days
 - 4) 5–7 days
 - 5) More than one week
 - 6) Difficult to say
10. How long do you wait for an appointment to see the specialist?
 - 1) I was admitted on the same day I requested
 - 2) 1–2 days
 - 3) 3–4 days
 - 4) 5–7 days
 - 5) 1–2 weeks
 - 6) 3–4 weeks
 - 7) More than one month
 - 8) Difficult to say

11. If you have health problems, do you prefer first to consult with your FD or specialist?
 - 1) FD (and if necessary to get referral to the specialist)
 - 2) Specialist
 - 3) Patients should decide themselves – either to see the FD or specialist

12. How much would a possible visit fee affect your decision to see the doctor?

	25 EEK	50 EEK	100 EEK	200 EEK
Not at all				
Not significantly				
Rather affects				
Affects a lot				
Difficult to say				

13. How much would a possible home visit fee affect your decision to call a doctor home?

	25 EEK	50 EEK	100 EEK	200 EEK
Not at all				
Not significantly				
Rather affects				
Affects a lot				
Difficult to say				

14. If there is a need, do you have possibility to contact with you family doctor by phone?

- 1) Yes
- 2) No
- 3) Do not know

15. Where does you family doctor work?

- 1) He/ she has a solo praxis
- 2) In a small centre (up to four FDs are working together)
- 3) In a bigger centre or polyclinic (with more than four FDs work together)

16. How satisfied you are with the opportunity to see your FD in any case of health problems?

- 1) Very satisfied
- 2) Rather satisfied
- 3) Rather dissatisfied
- 4) Very dissatisfied
- 5) Difficult to say

17. How relevant are for you the following aspects of PHC services?

	Not relevant at all				Very relevant			
Location of the GP centre / clinic	1	2	3	4	5	6	7	
Cleanliness and comfort of the clinic	1	2	3	4	5	6	7	
Modern equipment	1	2	3	4	5	6	7	
Easy of appointment access	1	2	3	4	5	6	7	
Waiting time in the PHC centre / clinic	1	2	3	4	5	6	7	
Punctuality of physician	1	2	3	4	5	6	7	
Understanding the patient problem	1	2	3	4	5	6	7	
Competence of physician	1	2	3	4	5	6	7	
Effectiveness of prescribed therapy	1	2	3	4	5	6	7	
Comprehensibility of explanations given by physician	1	2	3	4	5	6	7	

18. How satisfied you are with the following aspects of PHC services?

	Very dissatisfied				Very satisfied			
Location of the GP centre / clinic	1	2	3	4	5	6	7	
Cleanliness and comfort of the clinic	1	2	3	4	5	6	7	
Modern equipment	1	2	3	4	5	6	7	
Easy of appointment access	1	2	3	4	5	6	7	
Waiting time in the PHC centre / clinic	1	2	3	4	5	6	7	
Punctuality of physician	1	2	3	4	5	6	7	
Understanding the patient problem	1	2	3	4	5	6	7	
Competence of physician	1	2	3	4	5	6	7	
Effectiveness of prescribed therapy	1	2	3	4	5	6	7	
Comprehensibility of explanations given by physician	1	2	3	4	5	6	7	

19. If you would compare the existing PHC system with the previous system based on the district physicians in your opinion

	FDs deal with a bigger number of health problems	Diagnostics and tests opportunities of FDs have improved	Treatment methods of FDs have become more modern
Totally agree			
Generally agree			
Generally do not agree			
Do not agree at all			
It is difficult to say			

20. If you would face with the health problem in the evening, at night, or in the weekend, would you prefer

- 1) Call your FD?
- 2) Request for a home visit by your FD?
- 3) Call an ambulance?
- 4) Go to the emergency department of the hospital?
- 5) Any other possibilities?

21. How satisfied are you with the range of services financed by the health insurance?

- 1) Very satisfied
- 2) Rather satisfied
- 3) Rather dissatisfied
- 4) Very dissatisfied
- 5) Difficult to say

22. Which of the following options would you prefer? A: Health insurance would finance all health services, even if there would be long waiting lists; or B: Only a part of the services would be financed by health insurance, but the waiting lists were short.

- 1) Certainly A
- 2) Rather A
- 3) Rather B
- 4) Certainly B
- 5) Difficult to say

Questionnaire of the population survey in 2005

1. In your opinion the access to the health services is

- 1) Good
- 1) Rather good
- 2) Rather bad
- 3) Bad
- 4) Difficult to say

2. In your opinion the quality of health services is

- 1) Good
- 2) Rather good
- 3) Rather bad
- 4) Bad
- 5) Difficult to say

3. How do you evaluate your health status?

- 1) Very good
- 2) Rather good
- 3) So-so
- 4) Rather bad
- 5) Very bad
- 6) Difficult to say

4. Do you have any long-time/ chronic disease/ health problem?

- 1) Yes
- 2) No

5. Did you visit any doctor during the last 12 months?

6. During the last 12 months

- 1) Did you visit your family doctor?
- 2) Did you visit specialist?
- 3) Did you visit dentist?
- 4) Were you admitted to the hospital?
- 5) Did you call ambulance service?

If the answer was yes, the respondents were asked also how many times did they visit the doctor, were admitted to the hospital or did call the ambulance service.

7. How satisfied were you

	Very satisfied	Rather satisfied	Rather dissatisfied	Very dissatisfied	Do not have personal opinion
With FD?					
With specialist?					
With dentist?					
With hospital care					

The question about the satisfaction was asked only those respondents who had the contact with service provider during the last 12 months.

8. How long do you wait for an appointment to see your FD?

- 1) I was admitted on the same day I requested
- 2) 1–2 days
- 3) 3–4 days
- 4) 5–7 days
- 5) More than one week
- 6) Difficult to say

9. How long do you wait for an appointment to see the specialist?

- 1) I was admitted on the same day I requested
- 2) 1–2 days
- 3) 3–4 days
- 4) 5–7 days
- 5) 1–2 weeks
- 6) 3–4 weeks
- 7) More than one month
- 8) Difficult to say

10. How satisfied you are with the opportunity to see your FD in any case of health problems?

- 1) Very satisfied
- 2) Rather satisfied

- 3) Rather dissatisfied
- 4) Very dissatisfied
- 5) Difficult to say

11. How satisfied are you with the range of services financed by the health insurance?

- 1) Very satisfied
- 2) Rather satisfied
- 3) Rather dissatisfied
- 4) Very dissatisfied
- 5) Difficult to say

12. Which of the following options would you prefer? A: Health insurance would finance all health services, even if there would be long waiting lists; or B: Only a part of the services would be financed by health insurance, but the waiting lists were short.

- 1) Certainly A
- 2) Rather A
- 3) Rather B
- 4) Certainly B
- 5) Difficult to say

13. In your opinion, are the following statements correct?

	Yes	No	Do not know
In case of acute illness the FD must admit the patient within one working day			
Every person has right to change his/her FD			
The provider of specialised out-patient health services may ask the fee for the visit			
The provider of in-patient health services may ask the fee for bed-day			
Every health professional has to provide emergency medical aid to all patients, including uninsured persons			
Ambulance service provides the health services to all people, including uninsured persons			

1983

- 1983:1 Hälsa för alla i Norden år 2000. Föredrag presenterade på en konferens vid Nordiska hälsovårdshögskolan 7–10 september 1982.
- 1983:2 Methods and Experience in Planning for Family Health – Report from a seminar. Harald Heijbel & Lennart Köhler (eds).
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- 1983:4 Själv mord i Stockholm – en epidemiologisk studie av 686 konsekutiva fall. Thomas Hjortsjö. Avhandling.

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- 1984:1 Långvarigt sjuka barn – sjukvårdens effekter på barn och familj. Andersson, Harwe, Hellberg & Syrén. (FoU-rapport/shstf:14). Distribueras av Studentlitteratur, Box 141, SE-221 01 Lund.
- 1984:2 Intersectoral Action for Health – Report from an International Workshop. Lennart Köhler & John Martin (eds).
- 1984:3 Barns hälsotillstånd i Norden. Gunborg Jakobsson & Lennart Köhler. Distribueras av Studentlitteratur, Box 141, SE-221 01 Lund.

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- 1985:2 Socialt stöd åt handikappade barn i Norden. Mats Eriksson & Lennart Köhler. Distribueras av Allmänna Barnhuset, Box 26006, SE-100 41 Stockholm.
- 1985:3 Promotion of Mental Health. Per-Olof Brogren.
- 1985:4 Training Health Workers for Primary Health Care. John Martin (ed).
- 1985:5 Inequalities in Health and Health Care. Lennart Köhler & John Martin (eds).

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- 1986:1 Prevention i primärvården. Rapport från konferens. Harald Siem & Hans Wedel (red). Distribueras av Studentlitteratur, Box 141, SE-221 01 Lund.
- 1986:2 Management of Primary Health Care. John Martin (ed).
- 1986:3 Health Implications of Family Breakdown. Lennart Köhler, Bengt Lindström, Keith Barnard & Houda Itani.
- 1986:4 Epidemiologi i tandvården. Dorthe Holst & Jostein Rise (red). Distribueras av Tandläkarförlaget, Box 5843, SE-102 48 Stockholm.
- 1986:5 Training Course in Social Pediatrics. Part I. Lennart Köhler & Nick Spencer (eds).

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- 1987:1 Children's Health and Well-being in the Nordic Countries. Lennart Köhler & Gunborg Jakobsson. Ingår i serien Clinics in Developmental Medicine, No 98 och distribueras av Blackwell Scientific Publications Ltd, Oxford. ISBN (UK) 0 632 01797X.

- 1987:2 Traffic and Children's Health. Lennart Köhler & Hugh Jackson (eds).
- 1987:3 Methods and Experience in Planning for Health. Essential Drugs. Frants Staugård (ed).
- 1987:4 Traditional midwives. Sandra Anderson & Frants Staugård.
- 1987:5 Nordiska hälsovårdshögskolan. En historik inför invigningen av lokalerna på Nya Varvet i Göteborg den 29 augusti 1987. Lennart Köhler (red).
- 1987:6 Equity and Intersectoral Action for Health. Keith Barnard, Anna Ritsatakis & Per-Gunnar Svensson.
- 1987:7 In the Right Direction. Health Promotion Learning Programmes. Keith Barnard (ed).

1988

- 1988:1 Infant Mortality – the Swedish Experience. Lennart Köhler.
- 1988:2 Familjen i välfärdsstaten. En undersökning av levnadsförhållanden och deras fördelning bland barnfamiljer i Finland och övriga nordiska länder. Gunborg Jakobsson. Avhandling.
- 1988:3 Aids i Norden. Birgit Westphal Christensen, Allan Krasnik, Jakob Bjørner & Bo Eriksson.
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- 1988:5 Training Course in Social Pediatrics. Part II. Perinatal and neonatal period. Bengt Lindström & Nick Spencer (eds).
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- 1989:2 Folkhälsovetenskap. Ett nordiskt perspektiv. Lennart Köhler (red).
- 1989:3 Training Course in Social Pediatrics. Part III. Pre-School Period. Bengt Lindström & Nick Spencer (eds).
- 1989:4 Traditional Medicine in Botswana. Traditional Medicinal Plants. Inga Hedberg & Frants Staugård.
- 1989:5 Forsknings- och utvecklingsverksamhet vid Nordiska hälsovårdshögskolan. Rapport till Nordiska Socialpolitiska kommittén.
- 1989:6 Omstridda mödrar. En studie av mödrar som förtecknats som förståndshandikappade. Evy Kollberg. Avhandling.
- 1989:7 Traditional Medicine in a transitional society. Botswana moving towards the year 2000. Frants Staugård.
- 1989:8 Rapport fra Den 2. Nordiske Konferanse om Helseopplysning. Bergen 4–7 juni 1989. Svein Hindal, Kjell Haug, Leif Edvard Aarø & Carl-Gunnar Eriksson.

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- 1990:3 Methods and Experience in Planning for Health. The Role of Women in Health Development. Frants Staugård (ed).
- 1990:4 Coffee and Coronary Heart Disease, Special Emphasis on the Coffee – Blood Lipids Relationship. Dag S. Thelle & Gerrit van der Stegen (eds).

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- 1991:2 Health Policy Assessment – Proceedings of an International Workshop in Göteborg, Sweden, February 26 – March 1, 1990. Carl-Gunnar Eriksson (ed). Distributed by Almqvist & Wiksell International, Box 638, SE-101 28 Stockholm.
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- 1991:4 Poliklinikker og dagkururgi. Virksomhedsbeskrivelse for ambulent helsetjeneste. Monrad Aas.
- 1991:5 Growth and Social Conditions. Height and weight of Stockholm schoolchildren in a public health context. Lars Cernerud. Avhandling.
- 1991:6 Aids in a caring society – practice and policy. Birgit Westphal Victor. Avhandling
- 1991:7 Resultat, kvalitet, valfrihet. Nordisk hälsopolitik på 90-talet. Mats Brommels (red). Distribueras av nomesko, Sejrgade 11, DK-2100 København.

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- 1992:1 Forskning om psykiatrisk vårdorganisation – ett nordiskt komparativt perspektiv. Mats Brommels, Lars-Olof Ljungberg & Claes-Göran Westin (red). sou 1992:4. Distribueras av Fritzes, Box 16356, SE-103 27 Stockholm (Allmänna förlaget).
- 1992:2 Hepatitis virus and human immunodeficiency virus infection in dental care: occupational risk versus patient care. Flemming Scheutz. Avhandling.
- 1992:3 Att leda vård – utveckling i nordiskt perspektiv. Inga-Maja Rydholm. Distribueras av shstf-material, Box 49023, SE-100 28 Stockholm.
- 1992:4 Aktion mot alkohol och narkotika 1989–1991. Utvärderingsrapport. Athena. Ulla Marklund.
- 1992:5 Abortion from cultural, social and individual aspects. A comparative study, Italy – Sweden. Marianne Bengtsson Agostino. Avhandling.

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- 1993:1 Kronisk syke og funksjonshemmede barn. Mot en bedre fremtid? Arvid Heiberg (red). Distribueras av Tano Forlag, Stortorget 10, NO-0155 Oslo.
- 1993:2 3 Nordiske Konference om Sundhedsfremme i Aalborg 13–16 september 1992. Carl-Gunnar Eriksson (red).
- 1993:3 Reumatikernas situation i Norden. Kartläggning och rapport från en konferens på Nordiska hälsovårdshögskolan 9 – 10 november 1992. Bjarne Jansson & Dag S. Thelle (red).
- 1993:4 Peace, Health and Development. A Nobel seminar held in Göteborg, Sweden, December 5, 1991. Jointly organized by the Nordic School of Public Health and the University of Göteborg with financial support from SAREC. Lennart Köhler & Lars-Åke Hansson (eds).
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- 1994:1 Innovation in Primary Health Care of Elderly People in Denmark. – Two Action Research Projects. Lis Wagner. Avhandling.
- 1994:2 Psychological stress and coping in hospitalized chronically ill elderly. Mary Kalfoss. Avhandling.
- 1994:3 The Essence of Existence. On the Quality of Life of Children in the Nordic countries. Theory and Practice. Bengt Lindström. Avhandling.

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- 1995:1 Psykiatrisk sykepleie i et folkehelseperspektiv. En studie av hvordan en holistisk-eksistensiell psykiatrisk sykepleiemodell bidrar til folkehelsearbeid. Jan Kåre Hummelvoll. Avhandling.
- 1995:2 Child Health in a Swedish City – Mortality and birth weight as indicators of health and social inequality. Håkan Elmén. Avhandling.
- 1995:3 Forebyggende arbeid for eldre – om screening, funn, kostnader og opplevd verdi. Grethe Johansen. Avhandling.
- 1995:4 Clinical Nursing Supervision in Health Care. Elisabeth Severinsson. Avhandling.
- 1995:5 Prioriteringsarbeid inom hälso- och sjukvården i Sverige och i andra länder. Stefan Holmström & Johan Calltorp. Spri 1995. Distribueras av Spris förlag, Box 70487, SE-107 26 Stockholm.

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- 1996:1 Socialt stöd, livskontroll och hälsa. Raili Peltonen. Socialpolitiska institutionen, Åbo Akademi, Åbo, 1996.
- 1996:2 Recurrent Pains – A Public Health Concern in School – Age Children. An Investigation of Headache, Stomach Pain and Back Pain. Gudrún Kristjánsdóttir. Avhandling.

- 1996:3 AIDS and the Grassroots. Frants Staugård, David Pitt & Claudia Cabrera (red).
- 1996:4 Postgraduate public health training in the Nordic countries. Proceedings of seminar held at The Nordic School of Public Health, Göteborg, January 11–12, 1996.

1997

- 1997:1 Victims of Crime in a Public Health Perspective – some typologies and tentative explanatory models (Brottsoffer i ett folkhälsoperspektiv – några typologier och förklaringsmodeller). Barbro Renck. Avhandling. (Utges både på engelska och svenska.)
- 1997:2 Kön och ohälsa. Rapport från seminarium på Nordiska hälsovårdshögskolan den 30 januari 1997. Gunilla Krantz (red).
- 1997:3 Edgar Borgenhammar – 65 år. Bengt Rosengren & Hans Wedel (red).

1998

- 1998:1 Protection and Promotion of Children's Health – experiences from the East and the West. Yimin Wang & Lennart Köhler (eds).
- 1998:2 EU and Public Health. Future effects on policy, teaching and research. Lennart Köhler & Keith Barnard (eds)
- 1998:3 Gender and Tuberculosis. Vinod K. Diwan, Anna Thorson, Anna Winkvist (eds) Report from the workshop at the Nordic School of Public Health, May 24–26, 1998.

1999

- 1999:1 Tipping the Balance Towards Primary Healthcare Network. Proceedings of the 10th Anniversary Conference, 13–16 November 1997. Editor: Chris Buttanshaw.
- 1999:2 Health and Human Rights. Report from the European Conference held in Strasbourg 15–16 mars 1999. Editor: Dr. med. Stefan Winter.
- 1999:3 Learning about health: The pupils' and the school health nurses' assessment of the health dialogue. Ina Borup. DrPH-avhandling.
- 1999:4 The value of screening as an approach to cervical cancer control. A study based on the Icelandic and Nordic experience through 1995. Kristjan Sigurdsson. DrPH-avhandling.

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- 2000:1 Konsekvenser av urininkontinens sett i et folkehelsevitenskapelig perspektiv. En studie om livskvalitet hos kvinner og helsepersonells holdninger. Anne G Vinsnes. DrPH-avhandling.
- 2000:2 A new public health in an old country. An EU-China conference in Wuhan, China, October 25–29, 1998. Proceedings from the conference. Lennart Köhler (ed)

- 2000:3 Med gemenskap som grund – psykisk hälsa och ohälsa hos äldre människor och psykiatrisjuksköterskans hälsofrämjande arbete. Birgitta Hedelin. DrPH-avhandling.
- 2000:4 ASPHER Peer Review 1999. Review Team: Jacques Bury, ASPHER, Franco Cavallo, Torino and Charles Normand, London.
- 2000:5 Det kan bli bättre. Rapport från en konferens om barns hälsa och välfärd i Norden. 11–12 november 1999. Lennart Köhler. (red)
- 2000:6 Det är bra men kan bli bättre. En studie av barns hälsa och välfärd i de fem nordiska länderna, från 1984 till 1996. Lennart Köhler, (red)
- 2000:7 Den svenska hälso- och sjukvårdens styrning och ledning – en delikat balansakt. Lilian Axelsson. DrPH-avhandling.
- 2000:8 Health and well-being of children in the five Nordic countries in 1984 and 1996. Leeni Berntsson. DrPH-avhandling.
- 2000:9 Health Impact Assessment: from theory to practice. Report on the Leo Kaprio Workshop, Göteborg, 28–30 October 1999.

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- 2001:1 The Changing Public-Private Mix in Nordic Healthcare – An Analysis. John Øvretveit.
- 2001:2 Hälsokonsekvensbedömningar – från teori till praktik. Rapport från ett internationellt arbetsmöte på Nordiska hälsovårdshögskolan den 28–31 oktober 1999. Björn Olsson, (red)
- 2001:3 Children with asthma and their families. Coping, adjustment and quality of life. Kjell Reichenberg. DrPH-avhandling.
- 2001:4 Studier av bruket av dextropropoxifen ur ett folkhälsoperspektiv. Påverkan av ett regelverk. Ulf Jonasson. DrPH-avhandling.
- 2001:5 Protection – Prevention – Promotion. The development and future of Child Health Services. Proceedings from a conference. Lennart Köhler, Gunnar Norvenius, Jan Johansson, Göran Wennergren (eds).
- 2001:6 Ett pionjärarbete för ensamvargar. Enkät- och intervjuundersökning av nordiska folkhälsodoktorer examinerade vid Nordiska hälsovårdshögskolan under åren 1987 – 2000. Lillemor Hallberg (red).

2002

- 2002:1 Attitudes to prioritisation in health services. The views of citizens, patients, health care politicians, personnel, and administrators. Per Rosén. DrPH-avhandling.
- 2002:2 Getting to cooperation: Conflict and conflict management in a Norwegian hospital. Morten Skjørshammer. DrPH-avhandling.
- 2002:3 Annual Research Report 2001. Lillemor Hallberg (ed).
- 2002:4 Health sector reforms: What about Hospitals? Pär Eriksson, Ingvar Karlberg, Vinod Diwan (ed).

2003

- 2003:1 Kvalitetsmåling i Sundhedsvæsenet. Rapport fra Nordisk Ministerråds Arbejdsgruppe.
- 2003:3 NHV 50 år (Festboken)

- 2003:4 Pain, Coping and Well-Being in Children with Chronic Arthritis. Christina Sällfors. DrPH-avhandling.
- 2003:5 A Grounded Theory of Dental Treatments and Oral Health Related Quality of Life. Ulrika Trulsson. DrPH-avhandling.

2004

- 2004:1 Brimhealth 1993–2003
- 2004:2 Experienced quality of the intimate relationship in first-time parents – qualitative and quantitative studies. Tone Ahlborg. DrPH-avhandling.

2005

- 2005:1 Kärlek och Hälsa – Par-behandling i ett folkhälsoperspektiv. Ann-Marie Lundblad. DrPH-avhandling.
- 2005:2 1990–2000: A Decade of Health Sector Reform in Developing Countries – Why, and What Did we Learn? Erik Blas. DrPH-avhandling
- 2005:3 Socio-economic Status and Health in Women Population-based studies with emphasis on lifestyle and cardiovascular disease Claudia Cabrera. DrPH-avhandling

2006

- 2006:1 "Säker Vård -patientskador, rapportering och prevention" Synnöve Ödegård. DrPH-avhandling
- 2006:2 Interprofessional Collaboration in Residential Childcare. Elisabeth Willumsen. DrPH-avhandling
- 2006:3 Innkomst-CTG: En vurdering av testens prediktive verdier, reliabilitet og effekt. Betydning for jordmødre i deres daglige arbeide Ellen Blix. DrPH-avhandling

2007

- 2007:1 Health reforms in Estonia – acceptability, satisfaction and impact Kaja Pölluste. DrPH-avhandling

