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Health care utilisation in Estonia:  
socioeconomic determinants and  
financial burden of out-of-pocket payments



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*To my family*



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## LIST OF ORIGINAL PUBLICATIONS

- I Habicht J, Kunst AE. Social inequalities in health care services utilisation after eight years of health care reforms: a cross-sectional study of Estonia, 1999. *Social Science and Medicine*, 2005, 60(4):777–787.
- II Habicht J, Kiiwet RA, Habicht T, Kunst AE. Social inequalities in the use of health care services after 8 years of health care reforms – a comparative study of the Baltic countries. *International Journal of Public Health*, 2009, 54:250–259.
- III Habicht J, Xu K, Couffinhal A, Kutzin J. Detecting changes in financial protection: creating evidence for policy in Estonia. *Health Policy and Planning*, 2006, 21(6):421–431.

### **Contribution of Jarno Habicht to the original publications:**

Papers I, II, III: design of the study, preparing the datasets, data analysis, interpretation of results, coordinating the other authors contribution, and writing the final paper.

## **ABBREVIATIONS**

CEE	central and eastern Europe
CSDH	Commission on the Social Determinants of Health
EHIF	Estonian Health Insurance Fund
EU	European Union
EU-25	the 25-nation European Union after the accessions of 2004 and before 2007
GDP	Gross Domestic Product
GP	general practitioner
HFA	Health For All
OECD	Organisation for Economic Co-operation and Development
OOP	out-of-pocket payment
OR	odds ratio
PHC	primary health care
WHO	World Health Organization
WHO/Europe	WHO Regional Office for Europe
WHO-HFA	HFA health statistics database in WHO/Europe

## INTRODUCTION

The concepts of health, health needs, determinants of health and health systems have developed rapidly in past sixty years, while discussion has moved away from pure disease and health care relations to include health promotion and disease prevention and viewing health in a broader context (Evans, Stoddart, 1990). The high burden of illness responsible for premature loss of life arises in part because of the conditions in which people develop and find the freedom to pursue their daily lives (Sen, 1999; Commission on Social Determinants of Health [CSDH], 2008).

Socioeconomic inequalities in health have been found in all the observed European countries. Further previous studies have found evidence that lack of access to good quality health care is part of a causal chain leading from low socioeconomic status to poor health, because there are important differences in mortality from conditions amenable to medical intervention (Mackenbach et al., 2007). Ensuring access to care based on need and not ability to pay is instrumental to improving health (World Health Organization [WHO], 2000).

Access to health care is a concept that brings together supply, demand and need. Supply-side factors determine service availability, including allocation of physical and human resources, waiting times, referral patterns, how patients are treated and the continuity and quality of care (Whitehead, 1990; Gulliford et al., 2002). The demand side comprises health system and other factors: predisposing, enabling and need-related features; health behaviour and health care utilisation and outcome-related characteristics, from perceived health status to satisfaction (Andersen, 1995). Health needs are complex and while theory supports the capacity-to-benefit approach, the most commonly used measure in studies is subjective self-assessment of health (Smith et al., 2009). Furthermore, there are financial barriers to access at the systemic, organisational and individual levels.

The most appropriate metric of access remains to be found, as currently many different indicators of access can be measured and utilisation can be observed. Three working definitions for policymakers are proposed as (a) equal access to available care for equal need; (b) equal utilization for equal need and (c) equal quality of care for all (Whitehead, 1990). While (a) is the appropriate principle for policy and practice, it is typically (b) that is measured and analysed. Inequity is assumed to arise when individuals in higher socioeconomic groups are more likely to use or are using more health services after controlling for their level of need (Smith et al., 2009). One of the objectives of any health system should be to distribute the funding burden fairly according to the ability to pay, so that individuals and families do not become impoverished as a consequence of illness or use of health services (World Health Organization Regional Office for Europe [WHO/Europe], 2008), so financial barriers such as out-of-pocket payment (OOP) need to be analysed and well-managed in policy decisions.

Estonia has vigorously reformed its economic and social sectors, including health system, over the past decades. Attention has shifted in recent years to incremental changes after large-scale legislative reforms took place in the early

1990s and at the beginning of this century that influenced access to care. The current system is built on solidarity-based health financing with single mandatory health insurance with nearly universal coverage, a modern provider network based on family medicine-centred primary health care (PHC), restructured hospital services, increased access to modern medicines and more attention to a public health and e-health solutions. The changes have aimed to ensure adequate health service access (Habicht & Habicht, 2008; Koppel et al., 2008)

The objective of the current study is to analyse health care utilisation in Estonia after extensive reforms since early 1990s in terms of access, socio-economic determinants and the financial burden of out-of-pocket payments.

# REVIEW OF LITERATURE

## I. Health policy, health systems and social determinants

### I.1. Global and regional perspective

*The world health report 2000* stated that ensuring access to care based on need and not ability to pay is instrumental to improving health (WHO, 2000). The Health for All (HFA) policy framework and principles has inspired many countries since its launch in 1977, the same year as the start of the Working Group on Inequalities in Health, which delivered the Black Report in 1980 (Black et al., 1992) and overall diffusion of social inequalities in health to policy arena in many European countries (Whitehead, 1998). The regional approach has been adopted over time with clear targets for many health areas in 1999 (WHO/Europe, 1999) and recently evaluated in 2005 (WHO/Europe, 2005).

The regional approaches have guided many countries in implementing the reforms (Saltman, Figueras, 1997; Ritsatakis et al., 2000) including Estonia, where Health21 was made available in Estonian, with the principles adapted to policy development and health system changes. Examples are the comprehensive health policy developed in 1995 and subsequent amendments and the Ministry of Social Affairs' Population Health Plan 2009–2020, adopted in 2008 and highlighting equity as a guiding value for health insurance pursuing solidarity and limited cost sharing within the health system (Estonian Health Insurance Fund [EHIF], 2009). But even as there has been a shift in thinking on the global, regional and country levels, there are inconsistencies among nations and thirty years after the start of the primary health care movement, further progress needs to be ensured (WHO, 2008).

### I.2. Health systems

Health systems are complex and there are ongoing discussions of what they should encompass. A recent discussion and agreement in Europe inspired by the *World health report 2000* (WHO, 2000) defines a health system as follows.

Within the political and institutional framework of each country, a health system is the ensemble of all public and private organizations, institutions and resources mandated to improve, maintain or restore health. Health systems encompass both personal and population services, as well as activities to influence the policies and actions of other sectors to address the social, environmental and economic determinants of health.

(WHO/Europe, 2008)

The Tallinn Charter echoes fundamental health system objectives: improving the population's health, responding to people's expectations and providing financial protection against the costs of poor health, as well as calls for making the best use of available resources along the way. Most importantly, equity has been one of the fundamental values (in addition to solidarity and participation) behind the agreement leading to the HFA approach (WHO/Europe, 2005) and the objectives are meant to be achieved in an equitable way to reach those in need.

The framework is one commonly used, where four functions need to be aligned in health systems to achieve the objectives: delivering health services to individuals and to populations, financing the system, creating resources and stewarding and governing (WHO/Europe, 2008). All the functions alone and together focus on equity. It should be noted that there are also further divisions of functions to building blocks highlighting ways to improve coverage and access to services (WHO, 2007). Another approach aims at the same health system objectives, but using such controls as financing, payment, organisation, regulation, and behaviour to balance intermediate performance measures such as efficiency, quality and access. The strength of this approach is a clear ethical foundation with different means of access to the care and equity dimensions (Roberts et al., 2004). These frameworks have been instrumental in describing, understanding and analysing changes in health systems and external influences on health.

### **1.3. Health, health care and social determinants**

Sixty years ago, the WHO charter defined health as “a state of complete physical, mental, and social well-being, and not merely the absence of disease or injury”. Subsequently, thinking has moved from pure disease and health care relations to include health promotion, disease prevention and a broader context of individual and social development (Evans, Stoddart, 1990). Traditionally, societies have looked to the health sector to deal with health and disease. The maldistribution of health care – not delivering care to those who most need – is counted as a negative determinant of health. But a high burden of disease responsible for premature loss of life also arises because of the conditions in which people are born, grow, live, work, and age – conditions that together provide the freedom people need to live their daily lives (Sen, 1999; CSDH, 2008).

There are frameworks for understanding how social determinants influence health and health inequalities (CSDH, 2008). Another pathway framework considers health production and social interactions. It identifies health outcomes (including of those in vulnerable groups); provides a diagnostic for analyzing household behaviour and resources that influence health outcomes; examines household interactions with the health system and with communal factors such as education, transport and water; and highlights the role of policy making in the health sector and other sectors. While noting all other determinants, the framework provides a good approach to thinking systematically about inequality in the use of health services. Its “eight steps to effective use by the poor” looks

linearly at physical accessibility, human and material resources, organisational quality, relevance of services, timing and continuity, technical quality and social accountability (Yazbeck, 2009). The examples show that those at the lower end of the socioeconomic scale usually are worse-off at each step. Analysing the different aspects of service utilisation usually requires multiple data sources and consideration of other health system features such as financing; it is a complex approach to understanding the barriers to good health outcomes.

#### **I.4. Policies to address social determinants**

Socioeconomic inequalities in health were found in all in European countries in a recent analysis, confirming evidence that a lack of access to good quality health care is part of the causal chain leading from low socioeconomic status to poor health, because there are important differences in mortality from conditions amenable to medical interventions (Mackenbach et al., 2007). The earlier studies on avoidable mortality and changes during the 1990s show improvements in Estonia, as in many other European Union (EU) countries, but also a further potential to improve health via both prevention and treatment (Newey et al., 2004). There are interventions in both areas for improving the health of those of lower socioeconomic status and not just the average (Paterson, Judge, 2002). International evidence shows that many forms of health care (e.g., specialist services and preventive care) are more often used by higher socioeconomic groups, while lower socioeconomic groups more often report having forgone health care because of cost or lack of availability (Mackenbach et al., 2007).

It has been well recognised that integrated and multisectoral policies that include the health system and other entities are needed to improve health and reduce inequalities. However, equitable access to health care plays a critical role (Dahlgren, Whitehead, 2006). Improvements in health care can play a role in reducing health inequalities, and policies promoting financial, geographical and cultural access to good quality services for people of low socioeconomic status should be a priority, tailored to country-specific conditions. A recent evidence review suggest that universal coverage and pooling can reduce inequalities of health and of income distribution, while fragmented coverage can increase inequalities of access. Where services not covered by a national system require OOP, inequality of access is higher (Gelormino et al., 2007).

Policies addressing upstream determinants of health inequality, including income and education, are necessary strategic components, but the persistence of health inequality in countries with universal welfare systems shows they are not sufficient. Thus, policies addressing both midstream and downstream determinants are also needed. This means targeting factors such as health-related behaviour (particularly smoking and excessive alcohol consumption) and access to services. Further quantification of the clear targets would help to steer policies and monitoring needs to be improved in many countries (Mackenbach et al., 2007). As equity-related research evolves, more complex concepts are developed, providing potential pathways for improving health (e.g., primary care orientation in health services) (Starfield, 2007).

## 2. Equity in health care

### 2.1. The concept of equity in health care

There are two main ideological perspectives dominating current debates about the individual's right to health care. Egalitarians seek to ensure that health care is financed according to ability to pay and delivery is organised so that everyone has the same access. Care itself is allocated on the basis of need rather than the ability to pay, thereby promoting equality in health (Wagstaff, van Doorslaer, 2000). On the other hand, libertarians are concerned with preserving personal liberty and ensuring that only minimum health-care standards are achieved. Moreover, access to health care is seen as a privilege, not a right: people who can afford it should be able to pay for better or more health care than their fellow citizens (van Doorslaer, Wagstaff, Rutten, 1993). The egalitarian view of access to care is that it is a fundamental human right and prerequisite for personal achievement, therefore it should not be influenced by income, wealth or other determinants (ibid.) No perfectly libertarian or egalitarian health systems exist but the egalitarian viewpoints are largely supported by both policy-makers and the public. Health system design affects equity of access to health services in terms of service availability from public or private providers, the role of OOP, financial risk protection and general financing arrangements, among other factors. In reality, policies preserving individual autonomy and freedom of choice exist alongside policies of redistribution (Smith et al., 2009).

The equity in health care does not just mean equitable allocation of financial and other resources regionally, as that might not lead to equitable utilisation or outcomes since health care is only one of many factors contributing to health differences in a country. Taking into account the multidimensionality of equity issues and the theoretical foundation (ibid.) Whitehead (1990) argues in her concept paper for WHO for three working definitions for policymakers:

- a) equal access to available care for equal need: equal entitlements under universal coverage, fair distribution of resources in the country or region and removal of geographical barriers;
- b) equal utilization for equal need: ensuring unrestricted use of services by the socially or economically disadvantaged, while accepting differences in utilisation arising from individual choice; and
- c) equal quality of care for all: an absence of preferential treatment not based on need, the same professional standards for everyone (e.g., referral patterns, consultation time) and care considered acceptable to everyone (Smith et al., 2009).

When looking at different operational definitions of equity, it is argued that equal access for equal need is most appropriate because it is specific to health care and respects acceptable differentials in health care utilisation. Moreover, unequal access due to socioeconomic status is the most appropriate starting point for directing policy and is consistent with many governments' aims of providing services on the basis of need rather than ability to pay (Oliver, Mossialos, 2004).

## 2.2. Defining access to health care services

Access to health care is a concept that brings together supply, demand and need. First of all, access depends on the variety of supply and demand-side factors. Supply-side factors define service availability influencing access to and delivery of care, including allocation of physical and human resources, waiting times, referral patterns, how patients are treated and continuity and quality of care (Whitehead, 1990; Gulliford et al., 2002). The demand side factors were described first in the behavioural model of the late 1960s by Andersen and further criticised and developed with colleagues. It included predisposing, enabling and need-related factors (Aday, Andersen, 1974) while the outcome was related to utilisation of services at first. In the subsequent thinking the health system was more prominently included and the model outcome measure was patient satisfaction (Aday, Andersen, 1981). In third and fourth phases of the model, health behaviour and health outcome were included, and finally the more dynamic relations between factors used in the first model and the health system as well as the broader environment were established (Andersen, 1995). At the same time the application of the model while studying access in various settings showed some limitations, as environmental or provider-related variables were only included in half of the cases, so the model was not fully applied (Phillips, 1998). Andersen also clearly distinguishes “potential access” while the factors in the model can either increase or decrease the probability of “realized access”. Sometimes they are used simultaneously (Waters, 2000), however use should be mean the “realized access” (Goddard, Smith, 2001).

While the Andersen model has been one of the best known and used models, there are others. Pechansky and Thomas (1981) describe the “degree of fit” between patient and health system while analysing availability, acceptability, affordability, accessibility and accommodation, but mainly measuring patient satisfaction. Another approach has been to consider how barriers influence timely access to care for the best outcome (Millmann, 1993) shifting the focus more to effectiveness and efficiency (Gold, 1998). This approach includes barriers (structural, financial, individual), service utilisation and appropriateness as sequential steps before health outcomes. It is worth noting the inclusion of appropriateness in the model as not all services would improve health, due to unsuitability for the patient, low effectiveness, non-compliance, etc. More recently access has been reviewed using service availability, service utilisation and barriers to access (personal, organisational and financial), relevance and effectiveness of access and equity in access (Gulliford et al., 2002; Gulliford, Morgan, 2003). Concepts of effective coverage and health system responsiveness capturing elements of access have also been developed (Murray, Evans, 2003).

Several models have been developed to describe access to care and distribution as holistic understanding of health systems has evolved. Driven from different ethical foundations various dimensions of access and use indicators were also used (provider distribution, use of services relative to need, use of selected services, patient and public opinion) (Gold, 1998).

The most appropriate metric of access remains to be found as currently many different indicators of access can be measured (as for example waiting times, queues, availability of resources, access cost, unmet needs) and utilisation can be observed. Therefore, while equal access for equal need is the principle to be followed and appropriate for policy, equal utilisation for equal need is typically measured and analysed. Inequity is assumed to arise when individuals in higher socioeconomic groups are more likely to use or are using more health services after controlling for their level of need. However it should also be remembered while drawing conclusions that differences in utilisation by socioeconomic status might also be driven in part by individuals informed choices and preferences (Smith et al., 2009).

Defining need is another step in analysing access to care. There are many alternative approaches in the literature, as related to the individual's current health status, capacity to benefit from health care, the expenditure needed to attain health and the minimum resources needed to exhaust capacity to benefit. While this last approach is gaining support in the literature, empirical studies measure need by the level of poor health because of data availability and relative ease of measurement. Thus the most commonly captured and used measure is subjective self-assessment of health, being predictive and comprehensive measure compared to others. But the limitations are well known and thus several approaches (objective indicators of health, health vignettes and biological markers) have been developed to test the validity of this measure and understand the potential reporting bias (Smith et al., 2009).

While different models help one to understand the complexity of access to care, in many instances the analysis using surveys or databases concentrates on one specific area, while concepts help to interpret the results.

### **2.3. Financial barriers in health care**

There are financial barriers at the systemic, institutional and individual levels influencing the availability and use of health care services. Their occurrence is determined by the overall resources committed to health and health care, the distribution of the resources to regions and services and provider incentives. One of the financial barriers directly affected by health policy is the OOP. Well-performing health systems ensure people are protected from the financial consequences associated with the use of services. Patients face costs as a result of time lost from work or travelling to and from health care facilities. User charges and other health-care incurred costs affect socioeconomic groups differently (Louckx, 2002; Gulliford, Morgan, 2003).

As described earlier, the concept of access includes potential and actual use, while patient cost-sharing is one of the factors determining whether services – in the form of visits to a doctor or purchasing medicines – are accessed. In 1980 cost sharing was increasingly introduced in western Europe as a cost containment measure and to influence the demand for health care. After increasing for some time, cost-sharing has recently become more limited. The result, nonetheless, has been an increase in private funding for health care, mainly

through OOPs, to varying degrees among countries. Similarly, eastern European OOPs grew in importance after the transition to a market economy, but mainly as revenue source for the health system when public sources were scarce. There were both formal and informal copayments,<sup>1</sup> but formalising of the fees was resisted and under-the-table payments still pose a problem in many countries (Rechel, McKee, 2009; Kutzin, Cashin, Jakab, 2010).

Previous studies have considered the impact of user charges and co-payments on the use of medical services (less so on outcomes) and drug prescriptions. Studies have found, unsurprisingly, that utilisation of all types of services (physician visits, hospital admissions, prescriptions, dental visits) fell as cost-sharing increased. It was also found that the user charges are likely to affect socioeconomic groups differently and that sensitivity to user charges for different services varies. In western European countries, user charges are applied to control pharmaceutical and dental care expenditures, free care at point of use is more common for other health care services (Gulliford, Morgan, 2003).

The *World health report 2000* (WHO, 2000) proposed that one of the main objectives of any health system should be to protect households from the risk of becoming impoverished as a consequence of their health care expenditures. More generally, two related objectives of health financing policy are equity in funding distribution (the financial dimension of solidarity) and protection against financial risk. Experience from many countries shows that OOPs made at the time of utilisation are harmful to this objective while possibly restricting access to care (Xu et al., 2003a, 2007). As a consequence, the financial protection provided to the majority of the population is often inadequate. In terms of policy objectives, however, we are not concerned with the rise in private expenditure per se (nor its causes) but rather with whether it leads to inequitable redistribution of the funding burden and an erosion of financial protection for the population, as a whole and for particular groups.

## **2.4. Measuring differences in health care utilisation and financial protection**

Equitable distribution of health care is a principle subscribed to in many countries, often explicitly in legislation or official policy documents (van Doorslaer, Wagstaff, Rutten, 1993). Equity goals distinguish between two types: horizontal (equal treatment of equals) and vertical (appropriately unequal treatment of unequals). Most attention in health care policy and research has been given to the horizontal equity principle, defined as “equal treatment for equal medical need, irrespective of other characteristics such as income, education, place of residence, etc”.

Many approaches to analysing household data on inequality in health, service delivery, financing and catastrophic payments have been developed by different research groups and specialities (Kunst, Mackenbach, 1995; Wagstaff, van

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<sup>1</sup> See Lewis, 2002 and Ensor, 2004 for regional reviews of informal payments.

Doorslaer, 2000; Kunst, Bos, Mackenbach, 2001; Gulliford, Morgan, 2003; Murray, Evans, 2003; O'Donnel et al., 2008; Smith et al., 2009). While all have their favourite methods they usually are limited to data availability and approaches (for example when limited socioeconomic indicators are used, epidemiologists prefer education and economists prefer income as the primary variable), but are complementary. As better data become available and methods are developed, there is more insight into health care distribution (D'Uva, Jones, van Doorslaer, 2009).

Methods of measuring equity in access to health care originated in the utilisation and need comparisons of the late 1970s, and have since gone in two directions. The first uses regression models to measure independent effect of some socioeconomic measure of the likelihood of contacting health services, the volume of services used or the expenditures incurred. The second quantifies inequity by comparing the cumulative distribution of utilisation and need-adjusted utilisation (Smith et al., 2009).

When access to services is analysed, gender and age differences are usually analysed first. Then the geographical dimension is analysed (applying various regional dimensions depending on data availability) since it has been noted in previous research that “the availability of good medical care tends to vary inversely with the need for it in the population served” known also as “Inverse Care Law” (Hart, 1971). Many variables are used to measure socioeconomic status when analysing household surveys, but the most important are employment, education and income. Each of the indicators covers a different aspect of social stratification and it is therefore preferable to use all three instead. If the three are not available, proxy measures such as living standards or assets are used or measures describing part of the population studied (unemployed, ethnic minorities, single mothers, etc.), while accounting for confounding effects. A separate approach is needed when performing ecological studies, and measures describing socioeconomic status need to be defined for regions studied (Kunst, Mackenbach, 1995).

Analysis of equity in health financing can be performed in three areas: the share of private spending, particularly OOPs among other sources of revenue; distribution of OOPs and services (by socioeconomic and other characteristics); and financial protection provided by the health system (Wagstaff, van Doorslaer, 2001; Xu et al., 2003b). Latter methods allow estimating the burden of health expenditures and their impact on poverty (e.g., measuring the number falling under the poverty line) (Smith et al., 2009).

In the wider literature, data on inequality are presented in a number of ways (standardised rates, wealth gaps, absolute or relative changes, odds ratios, full gradients, concentration curves, concentration indices), each chosen in accord with several practical, technical and strategic factors. To take just the strategic perspective, it is important to match the presentation to the targeted audience. Policy makers need simple, easy-to-explain, politically powerful tools, while researchers prefer more complex, comprehensive analyses (Yazbeck, 2009).

### **3. Health care reforms in Estonia in broader context**

#### **3.1. Trends in the health system reforms in Europe**

In the early 1990s, a number of health system reforms were launched in eastern Europe. These included initiatives such as introducing health insurance systems and explicit copayment schemes, separating funding from provision, changing the legal status of providers (e.g. corporatisation or privatization), developing provider networks (modernizing and broadening the scope of primary health care, increasing the share of private providers, restructuring inpatient and outpatient hospital care), restructuring workforce training and increasing access to new technologies and pharmaceuticals. As a result, the health systems of eastern Europe have undergone major changes, coupled by rising expectations from the public but not by substantial increases in budgets until recently (Mossialos et al., 2002; Figueras, Robinson, Jakubowski, 2005; Shakarishvili 2005; Saltman, Rico, Boerma, 2006; Waters et al., 2006; Rechel, McKee, 2009; Kutzin, Cashin, Jakab, 2010; Kutzin, Jakab, Cashin, 2010).

#### **3.2. Changes in Estonia, Latvia and Lithuania**

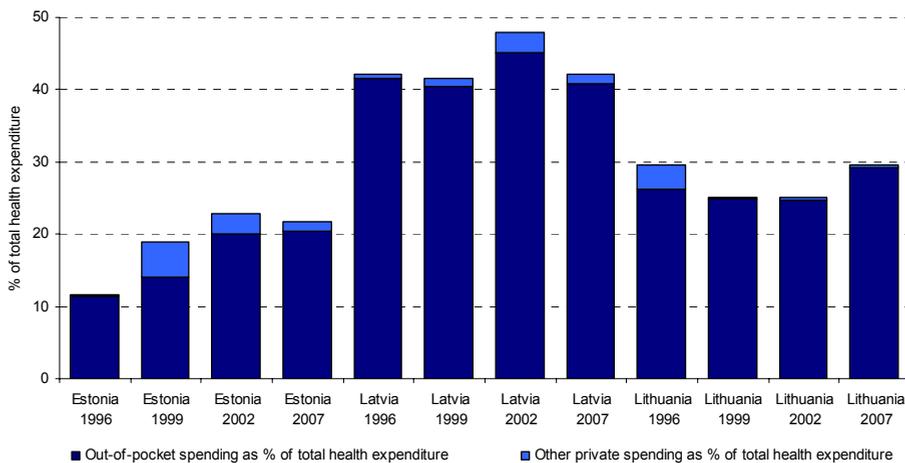
Under Soviet rule, the three Baltic countries had similar health systems, whereby the privileged (according to Party or bureaucratic status) had better access to services while the majority of the population had virtually universal access to services with lower standards and more limited coverage than in western Europe (Field, 2002). One of the main goals of the post-1991 reforms was to develop a universal system that would be accessible to the entire population regardless of social position. This has primarily meant a move from centralized planning to insurance-based financing with decentralized service provision. A common package for all insured was developed and the fragmented old system with different health care facilities for different population groups was replaced. Access to care, primarily geographic, was a key concern of policy-makers during the reforms. Recently, the convergence of reforms up to 2004 (in decentralisation and later centralisation, financing, primary health care and hospitals) and outcomes were evaluated, confirming the rapid pace of reform in the period (Bankauskaite, O'Connor, 2008). The following sections provide a short description of the context in which the study was implemented. The comparative figures below provide an opportunity to follow the changes from early 1990s to the most recent data points.

##### *Health financing and patient cost sharing*

Estonia introduced a mandatory social health insurance system in 1991, followed by Lithuania in 1996. In Lithuania, the coverage became universal with special schemes for vulnerable groups. In Estonia, however, specific population groups, such as the unemployed and poor, were not covered (Marksoo, Oja, Kutsar, 2001). These groups, who constituted around 5% of the population (quite stable

proportion over time), were only eligible for emergency care or specific services (e.g., treatment of tuberculosis or HIV/AIDS) (Couffinhal and Habicht, 2005; Koppel et al., 2008). At the end of the 1990s, Latvia achieved universal coverage through a health insurance system, but it was based on a high level of OOPs, which contributed nearly half of the health care revenue (Müller et al., 2005). In addition, the benefit package was considerably rationed by means of explicit lists of services not covered by the insurance (ibid.; European Observatory, 2000; Jesse et al., 2004; Koppel et al., 2008).

The three countries experienced an economic recession in the early 1990s, but then enjoyed economic growth until 2008. The allocations to health system as a share of GDP were similar in all three countries, at around 6% at the end of 1990s. Economic development and public sector allocations to health have been slightly different. For example, Estonia increased public health care funding in the late 1990s, but Latvia still had less public money available after economic development (Shakarishvili, 2005). In absolute terms there were important variations among the countries, related to differences in general economic development. In 1999, in terms of purchasing power parity per person, total health expenditure was highest in Estonia, at US \$510. Corresponding figures were \$326 for Latvia and \$399 for Lithuania (WHO-HFA database, 2008).



**Figure 1.** Total private and out-of-pocket spending as percentage of total health expenditure in Estonia, Latvia and Lithuania in 1996, 1999, 2002 and 2007.

Source: WHO National Health Accounts database (<http://www.who.int/nha/en/>).

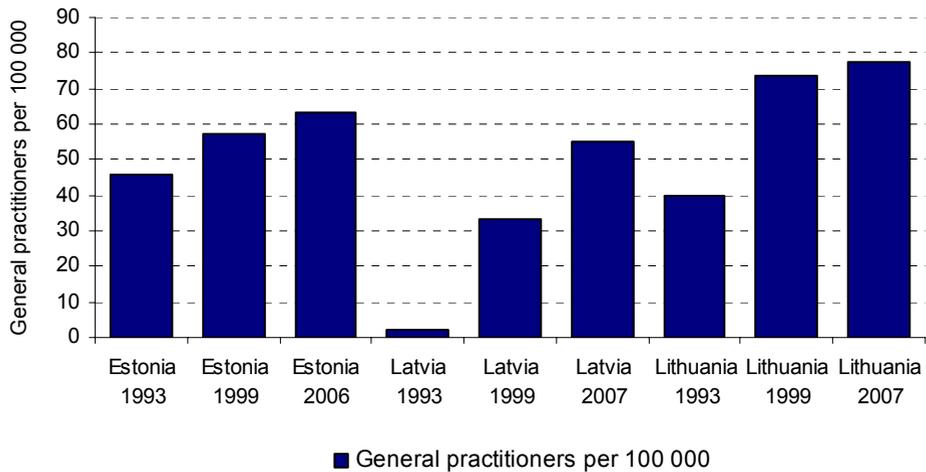
The health system before the 1990s provided an environment for informal payments and “thanksgiving” in all three countries. There are no comparative studies available about informal payments in Baltic countries in the 1990s. According to a 2002 study, the lowest level of unofficial payments was in Estonia (1% of health care service users), followed by Latvia (3%) and Lithuania (8%). In Latvia and Lithuania unofficial payments were related to social status,

as those with higher income or education claimed to make unofficial payments for health services (Cockcroft et al., 2008). This is also in line with earlier information suggesting that informal payments are not very common in Estonia. A survey by the OECD (CIET International, 2002) found that unofficial payments are rare and that such payments are mainly driven by patients' own initiative. In a more recent study conducted by the Estonian Institute of Market Research (Josin, 2004), 3.4% of respondents reported that health care personnel had asked for some kind of payoff.

In spite of the similar share of health expenditures in total GDP, the role of private spending and particularly the OOPs strongly varied among the countries being lowest in Estonia and highest in Latvia (see Figure 1). Similarly, there are important variations in the proportion of households with catastrophic health care expenditures. In the late 1990s, from 0.31% in Estonia to 1.34% in Lithuania and 2.75% in Latvia (Xu et al., 2003c). Thus, there is a correspondence between the share of OOP and the financial risk of health care utilisation.

### *Service delivery*

Improving equity of access to and quality of PHC services have been main objectives of health reforms in all three countries, although reforms were implemented in different ways and paces (Figure 2). Fast progress was made in Estonia with the start of new family physician training programmes in 1991 (Lember, 1996; Maaros, 2004), a network of family doctors in the mid-1990s and the introduction of open enrolment to patient lists with financing schemes to primary care doctors in 1998 (Lember, 2002). Two thirds of the Estonian population were subscribed to family doctors in 1998 (Jesse et al., 2004; Atun et al., 2006). Lithuania followed the institutional model, in which patients were asked to enrol at ambulatories or polyclinics for both family doctors and selected specialists. In 1998, 90% of the Lithuanian population was covered by this system (European Observatory, 2000; Shakarishvili, 2005). In Latvia, a family doctor-based system was designed in the early 1990s and extensive new training programs were begun. However, this system was not consistently implemented, leading to a mixed system where patients could go to different PHC institutions. Nonetheless, 80% of the Latvian population had registered with a specific primary care provider at the end of the 1990s (European Observatory, 2001).

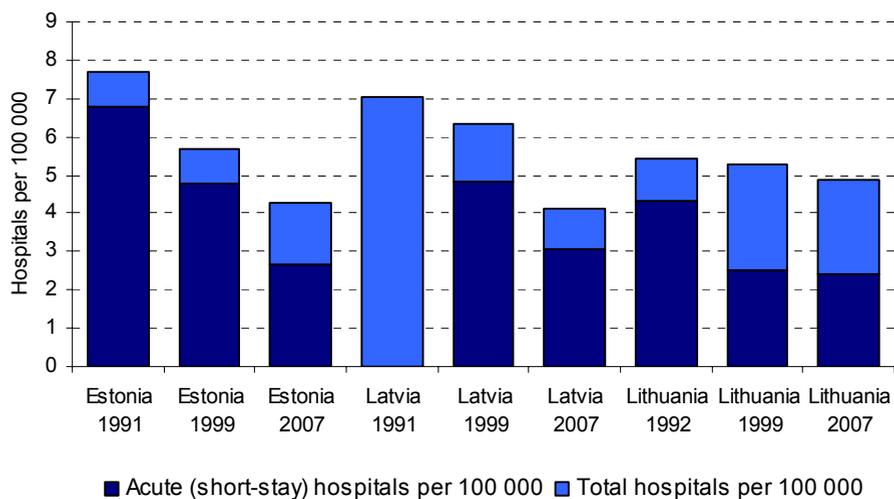


**Figure 2.** General practitioners per 100 000 in Estonia, Latvia and Lithuania, 1993, 1999 and 2007.

Source: WHO-HFA database, 3 February 2010

Note: Comparative statistics should be regarded with caution. In Estonia, all GPs, and internal medicine doctors in outpatient establishments were included in 1993 and 1999. From 2002, only PHC doctors as family doctors were included. In Lithuania, GPs, therapists and paediatricians were included. In Latvia only retained GPs were counted.

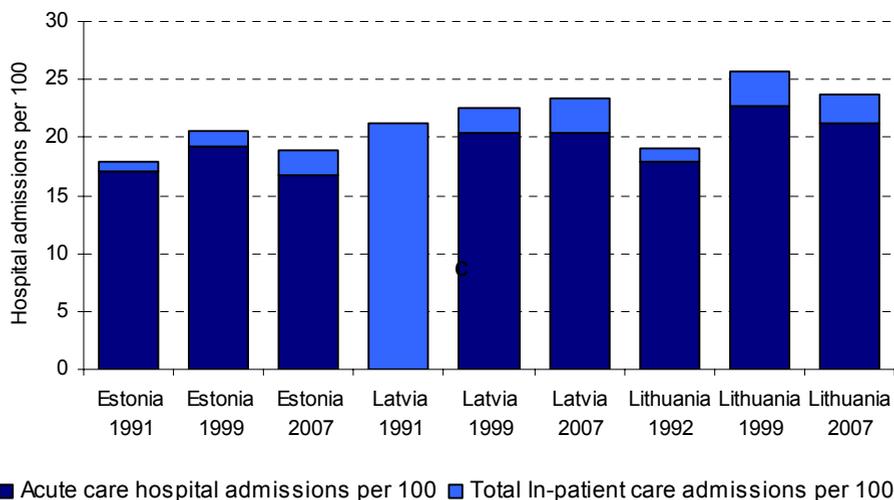
Outpatient specialist and hospital care reforms have concentrated on the rationalisation of the provider network, centralisation of high technology and promotion of new treatment methods. In Estonia that meant restructuring hospital organisation and financing in both acute and long term care and developing quality of care (Howe and Koppel, 2001; Palu and Kadakmaa 2001; Põlluste et al., 2006). These changes have been complemented by increased access to modern medicines not available before the 1990s in Estonia (Kiivet and Harro, 2002; Jesse et al., 2004). During the 1990s, all three countries reduced the number of hospitals (Figure 3) and acute care beds while keeping admissions at a steady level (Figure 4).



**Figure 3.** Acute care and total hospitals per 100 000 in Estonia, Latvia and Lithuania, 1991, 1999 and 2007.

Source: WHO-HFA database, 3 February 2010, author's calculations

Note: 1991 figures for Latvia are unavailable to distinguish acute care, and for Lithuania the first available year is 1992.

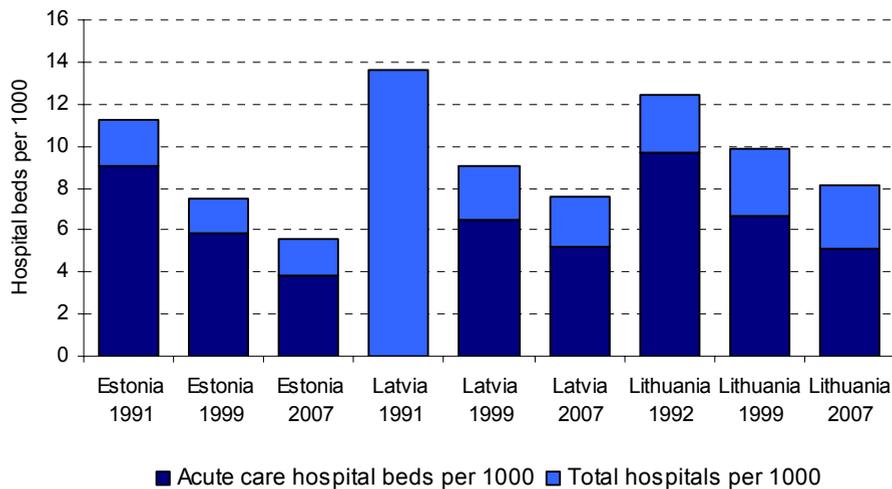


**Figure 4.** Acute care and total hospital admissions per 100 in Estonia, Latvia and Lithuania, 1991, 1999 and 2007.

Source: WHO-HFA database, 3 February 2010, author's calculations

Note: 1991 figures for Latvia are unavailable to distinguish acute care, and for Lithuania the first available year is 1992.

In 1999, the overall number of beds per 1000 inhabitants was 7.5 in Estonia, 9.0 in Latvia, and 9.8 in Lithuania (see Figure 5). By that time, geographical access to specialists and hospitals was considered to be good thanks to large number of providers distributed throughout all parts of the countries. The providers were mainly public but some private providers, especially for outpatient services, had already emerged in the early 1990s. Systems of long-term and nursing care had not yet been fully developed and as a result, in the late 1990s, use of hospital services to fulfil social needs was still frequent. Common to all three countries is that physicians working in the health care have been entirely taken off the civil service salary scale (Healy, McKee, 2002).



**Figure 5.** Acute care and overall hospital beds per 1000 in Estonia, Latvia and Lithuania, 1991, 1999 and 2007.

Source: WHO-HFA database, 3 February 2010, author's calculations

Note: 1991 figures for Latvia are unavailable and for Lithuania the first available year is 1992.

For non-emergency cases, a PHC referral system was partially implemented in all the countries by the late 1990s. However, in Lithuania, most of outpatient consultations to specialists were still made without referral (70% in 1996) (European Observatory, 2000). Even though the PHC gate-keeping function had increased in all the countries, by 1999 they all had maintained the possibility of getting direct access to specialists within hospitals or specialist outpatient care settings.

### **3.3. Regulatory environment related to access in Estonia**

Health care in Estonia has been dramatically reorganised since 1991 as described and evaluated by various authors (Habicht & Habicht, 2008; Habicht T, 2008; Koppel et al., 2008). On many fronts Estonia has been considered a successful reformer in ensuring a comprehensive delivery network (Gottret, Schieber, Waters, 2008) and arranging the health financing system (Kutzin, Jakab, Cashin, 2010), but mid- and long-term challenges and potential further reforms have recently highlighted (Thomson, et al., 2010).

The new regulations were drafted and adopted after independence in 1991 with the introduction of several regulatory acts (inter alia, the National Health Insurance Act of 1992, Health Care Regulation Act of 1994, Public Health Act of 1995). All these regulations imply access to care, as does the Constitution, which mentions a right to health protection, but not to health or health care services explicitly. System-wide cost containment and improvements in health system efficiency have always been driving forces of the health care reforms (Jesse et al., 2004). Equity in funding and access are also officially promoted. When comparing the legal environment of the 1990s and the past decade, it is important to note that since 2001 “access”, “accessibility” and “equal regional access” have been included in regulations (Habicht & Habicht, 2004). Thus, the second main wave of regulations – the Health Services Organization Act (2002), Health Insurance Act (2002), Estonian Health Insurance Fund Act (2001) (Jesse et al., 2004) introduced many features defining access as well making the system more transparent.

The new regulations stipulated the geographical availability of such providers as GPs by the number of practices in each county according to population size and travel time to the nearest hospital specialties (60 minutes or 70 kilometres). Waiting time limits were introduced for GPs (acute cases on the same day; regular visits during three working days) and outpatient care (regular visit by number of weeks, surgical procedure by number of months) according to condition severity and queues for certain procedures (hip prosthesis, cataract operations, etc.) with explicit targets set by the Estonian Health Insurance Fund supervisory board. Access is regulated through a partial gate-keeping system by GPs, and all citizens have an individual family practitioner. A limited copayment system for patients was introduced, with clear rules for specialist visits and bed-day fees as well cost sharing for a few services that was not clearly stated earlier (Habicht, Habicht, Võrk, 2003).

Thus, one can conclude that whereas during the first decade emphasis was mainly on structural reforms, the focus later shifted to the demand side of the health system. However, even though access to health services is explicitly regulated in Estonia, with special attention to the geographical dimension and limited cost sharing for services there is incomplete focus on access and outcomes of different population groups. The latter area is a defined value in health policy, but it has not resulted in concrete actions.

### 3.4. Health policy and evidence informing the policy

Evidence on inequalities in health and health care in Estonia, Latvia and Lithuania was scarce until recently (Mackenbach et al., 1999; Bobak et al., 2000; Pomerleau et al., 2000; Leinsalu, 2002; Leinsalu, Vagero, Kunst, 2003; Kaleldiene, Petrauskiene, 2004, 2005; Klumbiene et al., 2004; Lawlor et al., 2005; Helasoja et al., 2006; Leinsalu et al., 2009). Estonia only performed its first large-scale equity study in 2002 (Kunst et al., 2002a). In Lithuania, however, inequalities have been on the policy and research agenda since the 1990s (WHO/Europe, 1998; Grabauskas, Kaleldiene, 2002) with a further studies recent years (Padaiga, 2002). In Latvia, on the other hand, there was no information on inequalities in health or access during the 1990s (Monden, 2004, 2005).

Lithuania is the only of three studied countries that has been explicitly targeting inequality in health and health care since mid 1990s. At the same time, Estonia has only in recent years discussed equity targets. Reform implementation has implicit influence on inequality in health, since health insurance and PHC and specialist services reforms have been based on the principles of solidarity and equity. Latvia has not targeted equity at the health policy level, except in social cohesion programmes.

An internationally comparative study on access to care and more specifically on health service utilisation in former Soviet Union countries did not include all of the Baltic countries (Balabanova et al., 2004). Comparisons among high-income countries have not been sufficiently extended to the Baltic countries, nor to other parts of eastern Europe (van Doorslaer, 2000; Mackenbach, Bakker, 2002; van Doorslaer, Masseria, Koolman, 2006). The increase in equity-related research and international comparisons has been associated with EU accession in 2004, when the common data collection tools were applied (e.g., the annual EU-SILC survey [Eurostat, 2010]) and countries have been more prominently involved in multicountry comparisons (Kunst, 2007) and policy discussions of inequalities in health and health care.

#### *Rational for the present study*

The 2001 equity study in Estonia (Kunst et al., 2002a) was informed by previous fragmented research and provided the first comprehensive view of the potential data sources that can be utilised to analyze variations in health care services, and described in detail the inequalities in health, health behaviour and health services utilisation. The papers presented here were built on previous evidence and provided the first comprehensive insight into patterns of health service utilization, the distribution of services by socioeconomic group and OOP levels and distribution.

In addition, while the main focus here is on Estonia, international comparison provides more insight to the situation. Given the dramatic nature and important national variations in the health system reforms, the Baltic countries in the 1990s provide a “natural experiment” that allows assessment of the potential impact of health system reforms on utilisation inequality. Important variations are to be expected among the three countries in the magnitude or pattern of inequalities in health care use.

The analysis of OOP aims to illustrate that, if household budget survey data are available, monitoring a population's financial protection is not a complex undertaking. Further, by combining simple statistical analyses of these data with a good knowledge of a country's health system, it is possible to give a fairly detailed diagnosis of coverage limitations. This allows for the presentation of easily interpretable results that can raise awareness among policy-makers and help formulate adequate policy responses in Estonia and other countries.

Estonia and neighbouring countries have been part of overall trends in Europe with respect to measuring inequalities. The availability of the data and analysis in central and eastern Europe has been much improved since 1989, when there were many barriers to analyzing social differentials in health and health systems (Bobak, 2009). Now there is increasingly more information on inequalities from both western and CEE countries, but more in-depth analysis is needed to understand and predict how policies will influence inequalities in health and health care (Kunst, 2009).

## **AIMS OF THE RESEARCH**

The objective of this study was to generate new knowledge of patterns of health care services utilisation and the health-system provided financial protection, with particular focus on Estonia.

The specific aims of the research were to:

1. analyse health care services utilisation (telephone consultations, visits to general practitioner, dentist, specialist, and hospitalisations) and related socioeconomic inequalities;
2. provide an international comparison analysing the health care services utilisation and socioeconomic inequalities in Baltic countries;
3. analyse the population's financial protection provided by health financing system with particular focus on financial burden and patterns of OOP, its distribution by household income and by services and changes from 1995 to 2002.

## **MATERIAL AND METHODS**

The current study is based on the secondary analysis of the cross-sectional surveys and provides original results complementing the 1999 household interview survey NORBALT II of Estonia, Latvia and Lithuania and the 1995, 2001 and 2002 household budget surveys in Estonia. In the case of Estonia, comparisons to data from the 1994 NORBALT I are made where applicable to hospitalisation.

### **4. Analysing health care service utilisation**

#### **4.1. Data and variables in Estonia**

The first paper analyses data from 1999 and has three objectives as: to describe differences in services use by ethnicity, place of residence, income, education and employment status; to determine to what extent these differences can be attributed to differences in need, as measured by health variables; and to assess the extent the social variables are independent of one another in their effects. While the first objective is purely descriptive, the second and third are aimed at explanation.

##### *Socioeconomic status and other variables*

For each utilisation variable, inequalities were assessed in relation to age, gender, three socioeconomic variables (education, household income and employment), place of residence and ethnicity. The first column in Table 1 presents the number of respondents according to each socio-economic variable used and second column the sample distribution.

- Place of residence is measured by a distinction between the capital (Tallinn, where about one third of the Estonian population lives), other urban places, and rural areas.
- Ethnicity is based on self-identification, and is classified according to a common distinction between ethnic Estonians, Russians (by far the largest minority group), and a rest group of other ethnic groups from more than 20 different countries of origin.
- Educational level is measured with a distinction into three groups: elementary or lower secondary education (9 years), higher secondary education (12 years) and university education (up to 16 or more years).
- Income level is measured by means of household equivalent income, which is calculated by dividing the total net household income by the number of household members. The latter number was calculated using a standard adjustment formula for Estonia (Ministry of Social Affairs, 1999), in which the first household member is given weight 1, and every subsequent member is given weight 0.8.
- Economic activity was measured by a distinction between the (self) employed, the unemployed, and the economically inactive (students, house-

wives, pensioners, and work disabled persons). The economic activity measure was not applied to people 60 and older, because nearly all men and women in this age group fall into the inactive group.

**Table 1.** Description of the study sample in Estonia (Norbalt 1999) (papers I and II)

<b>Variable</b>	<b>Number</b>	<b>Distribution (%)</b>
<b>Total</b>	3990	
<b>Gender</b>		
Women	2413	60.5
Men	1577	39.5
<b>Place of residence</b>		
Tallinn	1100	27.6
Other urban area	1662	41.7
Rural area	1228	30.8
<b>Ethnicity</b>		
Estonian	2619	65.6
Russian	1060	26.6
Other	311	7.8
<b>Education</b>		
University	708	17.8
Upper secondary	2357	59.3
Lower secondary	910	22.9
<b>Household adjusted income</b>		
4 quartile (highest)	922	25.0
3 quartile	920	25.0
2 quartile	921	25.0
1 quartile (lowest)	921	25.0
<b>Economic activity</b>		
Employed/self-employed	2631	65.9
Unemployed	257	6.4
Economically inactive	1102	27.6

### *Health care services*

Services utilisation was analysed for five types of services:

- telephone consultations with a doctor during the prior six months;
- visits to general practitioner meaning any doctors working in the first level of health care according to the family doctors system introduced in 1998, and non-specialist physicians working in local clinics characteristic of the former system in the past six months;
- visits to specialists in the prior six months, including outpatient specialists (not dentists) and visits to specialists as part of outpatient hospital or specialised clinic treatment;
- visits to dentists in the past six months; and

- hospitalisation during the preceding 12 months, including public hospitals, private clinics and psychiatric hospitals, but excluding hospitalisation for normal child birth or stays at homes for elderly people.

In the last category, the changes over time were analysed, since information for 1994 is available in a way comparable to 1999. The sample size was 3864 individuals in 1994 (the 25 to 74 year-old population) (Kunst et al., 2002b).

### *Health status*

In the analyses, the respondent's health status is measured by three complementary variables of physical and mental health (see Table 3), used all together in the models applied:

- general self-assessed health, measured by the question "How would you characterise your health in general? very good, good, fair, bad or very bad?" (see Table 3);
- the presence of any long-standing health problem, measured by the question "Do you have any illnesses or disabilities of prolonged nature, or any afflictions due to an injury?" with a follow up for those answering positively to distinguish those who had a "very much limiting problem" with any one of eight listed activities from those who had no problem with any of them; and
- mental health and general distress, as measured by the occurrence of eight types of complaints such as nervousness, tension, depression, and sleeplessness during the last week, classified according to severity, and distinguishing between respondents who reported suffering at least "quite a bit" from three or more problems, those who report one or two problems and those who report no serious complaint of any of the problems.

## **4.2. Data and variables in Estonia, Latvia and Lithuania**

To compare the situation in Estonia to its neighbours Latvia and Lithuania the second paper explores the situation in 1999, with the specific objective of assessing whether the countries differ in the extent to which utilization and access vary according to key socioeconomic variables (household income, education level and place of residence). It is important to note the difference in the variables used compared to the detailed analysis of Estonia. Different variables are applied to enable better comparison and only the differences are described in detail below.

The central hypothesis for international comparison is that social and geographical inequalities observed at the end of the 1990s were influenced by the health system reforms that had taken place in all three countries during the previous years. The data were obtained from a nationally representative household interview survey, the NORBALT II, which was conducted in 1999 in all three Baltic countries. The NORBALT survey gives detailed information about the respondents' social-demographic characteristics, health status and health care utilisation. It was conducted by the respective statistical offices of the countries. Implementation was supervised by the Norwegian Fafo Institute for

Applied Social Sciences (Central Statistical Bureau of Latvia, 1999; Marksoo et al., 2000; Ministry of Social Security and Labour of the Republic of Lithuania, 2000; Aasland and Tyldum, 2002).

The original survey included subjects 18 years old and over. As in the case of Estonia, stratified random samples were used in Latvia and Lithuania in same age group, and overall response rates were over 90% in all three countries (Table 2). For the present study, we only included the 3990 respondents aged 25–74 years. Details on our approach are given elsewhere (Kunst et al., 2002b). Table 3 provides an overview of the health and socioeconomic variables used and distribution of respondents according to the variables used in the quantitative analysis.

**Table 2.** Description of the study sample (Norbalt 1999) (paper II)

<b>Variable</b>	<b>Estonia</b>	<b>Latvia</b>	<b>Lithuania</b>
Original sample size (n)	5 500	3 500	3 159
Survey response rate (%)	91.8	90.6	90.7
Selected 25–75 sample (n)	3 990	2 512	2 211

#### *Socioeconomic status and other variables*

Place of residence was measured as a distinction between the urban and rural areas. Ethnicity was based on self identification, and classified according to a common distinction between ethnic Estonians, Latvians or Lithuanians, and other (majority Russians, but also Ukrainians, Polish and more than thirty different countries of origin). The education and income level variables used are similar and described earlier (see 4.1).

#### *Health care services*

Health service use was analysed by applying three variables:

- visits to a GP in the past 6 months, including all PHC doctors in the respective health systems, family doctors and non-specialist physicians the local clinics characteristic of the former systems, and perhaps other gynaecologists and paediatricians, if they were working in PHC;
- visits to outpatient specialists in the prior six months, including specialists (not dentists) and visits to a specialist as part of hospital or clinic outpatient treatment; and
- hospitalisation during the 12 preceding months.

#### *Barriers to use health care services*

Respondents were also asked to report whether financial barriers (lack of money and/or absence of insurance coverage) had prevented them from: having a long hospital stay; having a surgery or and consulting “a good doctor”. While the last variable might be strongly related to a people’ subjective assessment, the first

variable more directly measures deferral of treatment (mainly in inpatient care) that the patient would otherwise have used.

### *Health status*

In the analyses, the respondent's health status is measured by the three complementary variables of physical and mental health described earlier (see 4.1).

**Table 3.** Study variables in Estonia, Latvia and Lithuania (Norbalt 1999) (paper II)

<b>Variable</b>	<b>Distribution (%)</b>		
<b>Gender</b>			
Women	60.5	60.2	57.3
Men	39.5	39.8	42.7
<b>Age groups</b>			
25–29	9.8	8.5	10.5
30–34	11.7	8.8	11.2
35–39	15.1	11.0	11.8
40–44	13.5	11.8	11.5
45–49	11.3	11.3	10.0
50–54	8.6	9.6	9.0
55–59	8.1	10.3	9.0
60–64	8.7	10.4	10.4
65–69	7.2	10.1	9.8
70–74	6.1	8.1	6.9
<b>Place of residence</b>			
Rural	30.8	33.8	32.6
Urban	69.2	66.2	67.4
<b>Ethnicity</b>			
Estonian/Latvian/Lithuanian	65.6	57.9	85.3
Other	34.4	42.1	14.6
<b>Education level</b>			
University	35.5	31.1	33.1
Upper secondary	41.3	37.7	34.8
Lower secondary	23.2	31.2	32.2
<b>Self-assessed health</b>			
Very good	3.4	1.6	2.4
Good	26.5	20.2	26.4
Fair/Average	54.9	51.4	55.0
Bad	13.3	20.8	14.2
Very bad	1.9	6.0	2.0
<b>Everyday limiting physical disorders</b>			
No long standing limitations	59.6	68.6	72.4
Not very many limiting disorders	32.0	19.8	15.7
Everyday life-limiting disorders	8.4	11.7	11.9

**Table 3.** Continuation

Variable	Distribution (%)		
<b>General distress</b>			
No symptoms	60.5	55.2	67.5
1–2 symptoms	25.8	24.1	20.4
3 or more symptoms	13.7	20.7	12.1

### 4.3. Methods of studying inequality in service utilisation

In the first stage of analysis of Estonian data, social differences in health care utilisation are measured by means of standardised prevalence rates to control for differences between social groups' population structure by age and sex. The direct method was applied, with the standard population being the total Estonian population in the year 2000, according to the Estonian 2000 Population and Housing Census (Statistical Office, 2001). Age-standardised rates are calculated for the age group 25–74 years, except for comparisons between economic activity groups, which were made for the age group 25–59 years. Similarly, for international comparison in the first stage of analysis, directly standardized utilisation rates were calculated for each country and subgroup of the population, but using a European standard population (Waterhouse et al., 1976) to have comparable reference point. So different standard populations were been applied in papers I (Estonia) and II (comparative).

In further analysis of Estonian data, social differences in utilisation rates were analysed by means of logistic regression presented as odds ratio (OR). Each regression model includes at least the following independent variables: the variables of interest (e.g., educational level), sex and age (a series of dummies with one for each 5-year age group, except the reference group). For each variable, we selected the reference group that is generally best off in terms of general health: the 25–29 years old (for age), men (sex), Tallinn residents (place of residence), Estonians (ethnicity), university level (education), upper income quartile (income), and employed (economic activity).

Three types of regression models are applied to the Estonian data, each one corresponding to one of the three specific objectives mentioned at the beginning of data and variables section. The first model, which was used to describe social differences in health care utilisation, includes only age, sex and the social variable of interest. For the second model, which was used to evaluate whether these differences can be explained by differences in health-related needs, we added the three health variables mentioned before, and measured them as dummies. For the third model, which was used to assess the effect of each social variable independent of all other social variables, we added all social and health variables to one model.

For international comparison inequalities in health care utilisation were assessed in relation to sex, educational level, household income, ethnicity, and rural-urban place of residence for each country sample and for each variable of health care utilisation. The differences in utilisation rates by socioeconomic

variable were analysed by means of logistic regression. Each regression model includes at least the social variables of interest, sex and age. We selected as reference categories men, urban residents, lower secondary level education, other than native ethnicity in the respective countries, and lowest income quartile.

Two types of regression models were applied for international comparison. The first, used to describe social differences in utilisation, included only age, sex and the social variable of interest. This allows for describing differences in utilisation as a dependent variable by one socioeconomic variable while also accounting for age and sex structure. For the second model, used to evaluate whether these differences can be explained by differences in health-related needs, we added the three health variables described earlier, measured as dummies independent of the model.

## **5. Analysing out-of-pocket payments and financial protection**

### **5.1. Data and variables for analysing OOP and financial protection in Estonia**

Data from nationally representative household budget surveys conducted in 1995, 2001 and 2002 are used to conduct the analysis (EMOR, 1996; Statistical Office, 2002, 2003a,b). The household budget survey includes information on household monthly income, expenditures and characteristics. Households record all monetary and non-monetary income and expenditure, except for food, during one month. Later the expenditures are classified in various expenditure groups to allow analysis. Food expenditure is recorded for two weeks and scaled up. The sample sizes were 2816 in 1995, 6053 in 2001 and 5721 in 2002. It is also important to note that before 1999, the data collection methods were slightly different compared to the one in place since 2000, but this does not limit the comparisons over the time.

The changes in OOP in 1995, 2001 and 2002 are analysed in the third paper. The focus of our analysis is OOP on health, i.e. payments made by households at the point of receiving health services net of any insurance reimbursement. Typically these include doctors' consultation fees, purchases of medication, hospital bills as well as informal payments. Although spending on alternative and/or traditional medicine is included in out-of-pocket payments, expenditure on health-related transportation and special nutrition are excluded. The household survey includes all household reported expenditures, i.e. both formal and informal. Distinguishing between them is not possible, but other studies undertaken in Estonia (CIET International, 2002; Josin, 2004) suggest that the share of informal payments is among the lowest in CEE and Baltic countries.

Household income is measured by total consumption expenditure. Reported consumption expenditure is used in the analysis in preference to reported income for two reasons. Firstly, the variance of current expenditure is smaller than that

of current income over time. Secondly, in most household surveys, expenditure data are more reliable than income data. This is particularly true in developing countries (Bouis, 1994; Deaton, 1992). Households were divided into five groups according to their per capita expenditure to reflect differences in income. The first quintile represents the poorest households and the fifth quintile the richest. The 1995 survey does not provide a breakdown per type of expenditure and the full amount of OOP is accounted for. In 2001 and 2002, where the data is available, four broad categories of OOP are identified: outpatient services (including, and mostly consisting of, dental care), inpatient services, medicines (both prescription and over-the-counter) and medicinal products, appliances and devices.

## **5.2. Methods of analysing OOP and financial protection in Estonia**

The distribution of total OOP in absolute and relative terms across income groups over time is analysed as well as, when possible, its composition by income group. In order to assess the financial protection provided to the population, we use the measure of the financial burden proposed by WHO (Xu et al., 2003b), and in addition we determine the proportion of households that fall under the poverty line due to health care payments. These two measures are fairly easy to compute, simple to explain and, to an extent, complementary.

The household financial burden is measured by the ratio of total OOP to a household's capacity to pay or non-subsistence spending. The methodology developed by WHO was applied in estimating a household's capacity to pay, which is the total household expenditure minus the poverty line. The poverty line is estimated from the food expenditure of the household with the median food share of total household expenditure adjusted for household size (Xu et al., 2003b, 2003c). The financial burden can therefore be roughly interpreted as the proportion of their income that households spend on health once they have paid for their food. Based on the survey data, the subsistence need or poverty line was set at 783 krooni per person per month in 1995, 1171 krooni in 2001 and 1202 krooni in 2002.

Once each household's burden is computed, the resulting information can be summarized by choosing a level that is considered high and determining the proportion of the population falling into that category, thus facing an excessive burden. Obviously, the choice of the threshold will have an impact on the perceived intensity of the problem. The choice should probably in part be driven by the economic context and the country's capacity to address the problem, given its level of development. For instance, Waters et al. (2004) look at a 10% threshold in the US context; Xu et al. (2003a), who focus on low-income countries, label a 40% level "catastrophic". But the choice also undeniably reflects the author's value judgment of what an excessive burden might be. In the present context, we concentrated our analysis on a 20% threshold but present other results as well.

We have measured OOP's impact on the poverty headcount in the population, in other words to estimate the proportion of the population that falls under the poverty line due to health payments. This is done by comparing each household's total expenditure to its expenditure net of health care.<sup>2</sup> If the former is below the poverty line and the latter not, it can be said that the household "became poor" because of OOP. This measure indirectly focuses on the bottom of the income distribution (the closer you are to the poverty line the higher your chances of falling below). The extent to which this is an asset or a weakness in terms of advocacy depends on the values of the society and particularly its emphasis on helping the poor.

Having identified households that face excessive health care payments or fall into poverty because of them, the next step is to try to better identify who they are. Cross-tabulations of their high payer status with other characteristics (e.g., income level, health status) can shed some light on the reasons why they might have been put at risk, but regression analyses can provide additional insights. The number and type of variables that can be used in the regression will obviously depend on the quality of the data and adjustments usually have to be made. For instance, in the Estonian household budget survey, basic socioeconomic characteristics were reported, but the household members' health or insurance status were not available for us when the study was carried out. So finally, in order to characterize the factors associated with a high financial burden, we applied a logistic regression to the 2002 data.

**Table 4.** Variables in the regression analysis in paper III (2002 data)

Variable	Label	Note	Mean	Std. Dev.
Quintile	income quintiles	the 1st quintile is the base	3.00	1.41
Urban	household location	1, yes. 0, no	0.79	0.41
Old65	with members above 65 years old	1, yes. 0, no	0.23	0.42
Child	with members under 16 years old	1, yes. 0, no	0.30	0.46
Hhsize	household size		2.41	1.30
Male	household head	1, yes. 0, no	0.51	0.50
Primary	complete primary but not secondary school	1, yes. 0, no	0.76	0.43
Secondary	above secondary school	1, yes. 0, no	0.15	0.36
Employed	household head	1, yes. 0, no	0.60	0.49

<sup>2</sup> More detailed explanations about how to compute these measures can be found on the World Bank website: Quantitative techniques for health equity analysis: Technical notes, [www.worldbank.org](http://www.worldbank.org), Topics, Poverty and Health, Publications.

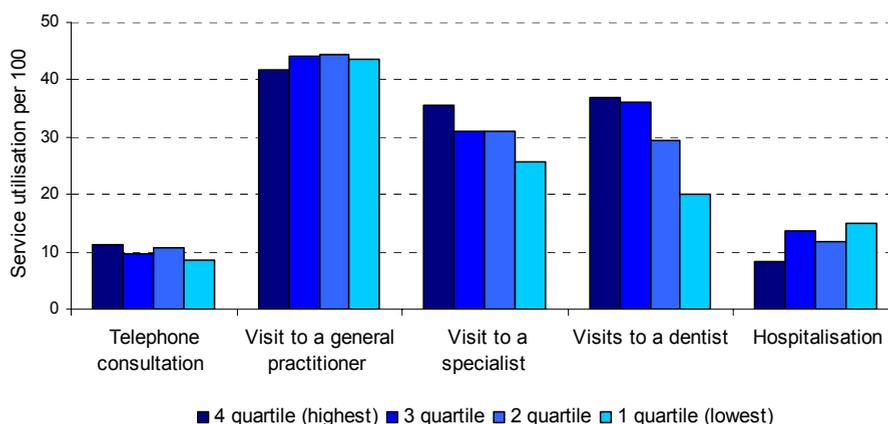
The dependent variable, high health payment, is set to 1 for a household whose OOP expenditure as a percentage of its capacity to pay is equal or greater than 20%, and 0 otherwise. The independent variables include household structure i.e. presence of members above 65 years old and of children under 16 years old, household income level (income quintile), and characteristics of the household head, such as gender and employment status (Table 4). The regression analysis was based on 5499 observations. An OR is reported for each independent variable together with a coefficient. An OR smaller than 1 for an independent variable indicates that this factor protects a household from facing high health payments, while the opposite is true if the OR is greater than one.

# RESULTS

## 6. Health care service utilisation patterns

### 6.1. Socioeconomic inequalities in health care service utilisation in Estonia

The objective of paper I is to describe service utilisation, then to analyse social inequalities in the use of different types of health care services in 1999, including hospitalisation and visits to general practitioners, specialists and dentists. In addition, telephone consultation with a health care professional is analysed. The results by service type are presented as standardised prevalence rates and by three models describing the differences in service utilisation before and after the health need is accounted for (see above and the tables in Annex 1). The analysis is carried out by gender, place of residence, ethnicity, education and income. Following charts (Figures 6–10) will provide comparative insight by socioeconomic group, using health care services presented in odds ratios; service utilisation by income is first presented in Figure 6.

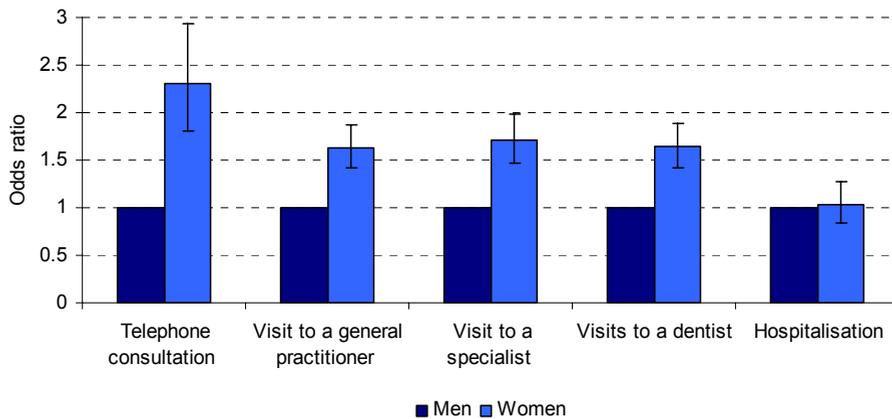


**Figure 6.** Service utilisation per 100 people by income quartiles in Estonia.

Note: Standardised prevalence rate using Estonian 2000 population (Statistical Office, 2001) as reference. The sample includes the 25 to 74 year-old population in 1999.

In the use of telephone consultations we observe substantial differences, with more by women, rural residents, ethnic Estonians and those with higher education. After adjustment for health variables, even larger differences are observed, especially in relation to education and income (Figures 8 and 10), with a lower use by those in the lowest income quartile as compared to higher income quartiles. On the other hand, differences by place of residence are reduced but remain statistically significant, where those in rural areas tend to use more phone

consultations than citizens of Tallinn. When all social variables are analysed simultaneously, education, income and place of residence appear to have independent associations with the use of telephone consultations.

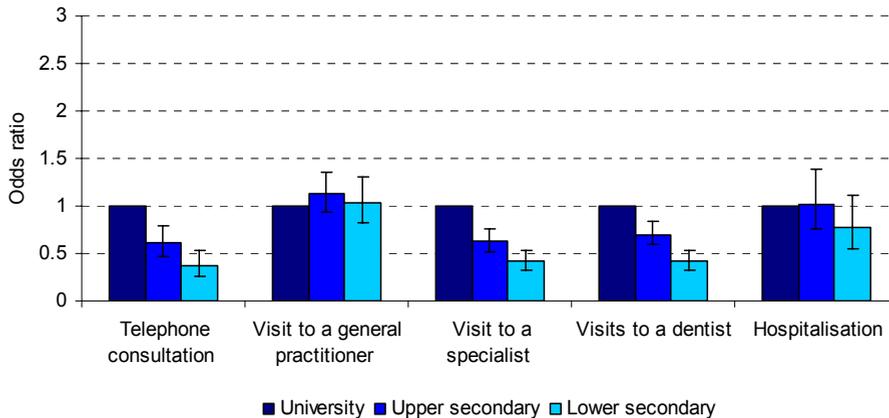


**Figure 7.** Service utilisation by gender (odds ratios with 95% confidence intervals) in Estonia.

Note: Adjusted for age, gender, health status, prolonged nature illnesses and disability, mental health. The sample includes the 25 to 74 year-old population in 1999.

In the case GP visits, higher use is reported by women, groups with lower education and by those living in rural areas. No statistically significant differences are observed in relation to income or ethnicity. When health differences are controlled for, differences by educational level and place of residence become smaller. At the same time an association with income emerges, with the lower income group visiting the general practitioner less than higher income group (Figure 10). When all social variables are analysed simultaneously, GP visits appear to be positively related to high income, being employed, and living in rural area.

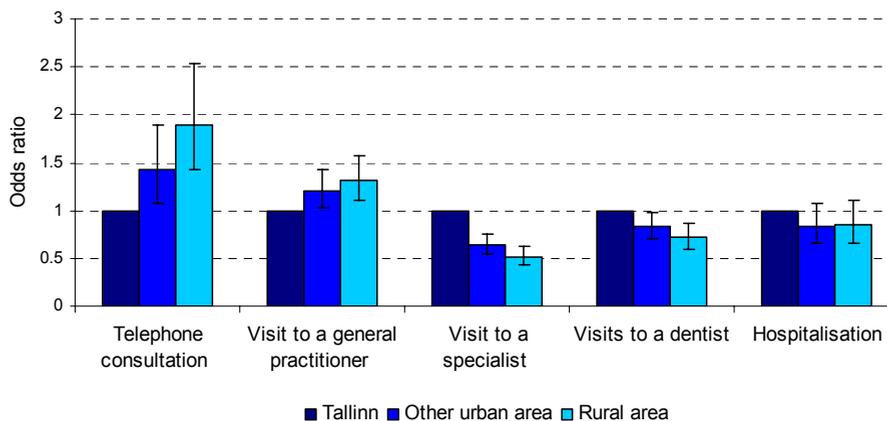
Results for specialist visits are presented reveal large variations in several social dimensions. Visits to a specialist working usually in outpatient setting are reported much more by women, residents of urban areas, ethnic Russians, and those with a more favourable socioeconomic status (higher education, higher income or being employed). These differences persist after control for the health variables thus taking the health needs into account. When all social variables are analysed simultaneously place of residence and educational level are found to be most strongly related to specialist visits.



**Figure 8.** Service utilisation by education (odds ratios with 95% confidence intervals) in Estonia.

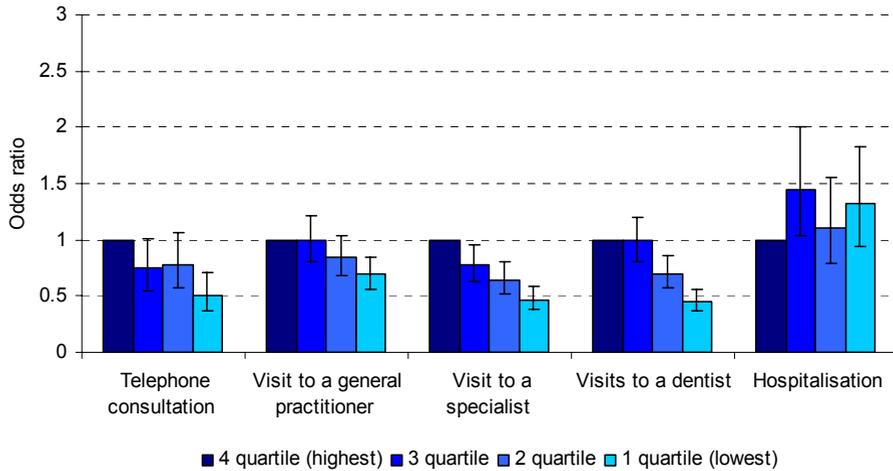
Note: Adjusted for age, gender, health status, prolonged nature illnesses and disability, mental health. The sample includes the 25 to 74 year-old population in 1999.

Similar patterns are observed with regard to visits to dentists, which are more often made by women, residents of the capital area and those of more favourable socioeconomic status (higher education, higher income or employment). As previously observed of specialist visits, social differences in dental visits persist after control for the health variables (Figures 8–10). Even though most differences diminish when all social variables are analysed simultaneously, the differences according to education, income and economic activity remain statistically significant.



**Figure 9.** Service utilisation by place of residence (odds ratios with 95% confidence intervals) in Estonia.

Note: Adjusted for age, gender, health status, prolonged nature illnesses and disability, mental health. The sample includes the 25 to 74 year-old population in 1999.



**Figure 10.** Service utilisation by income quartiles (odds ratios with 95% confidence intervals) in Estonia.

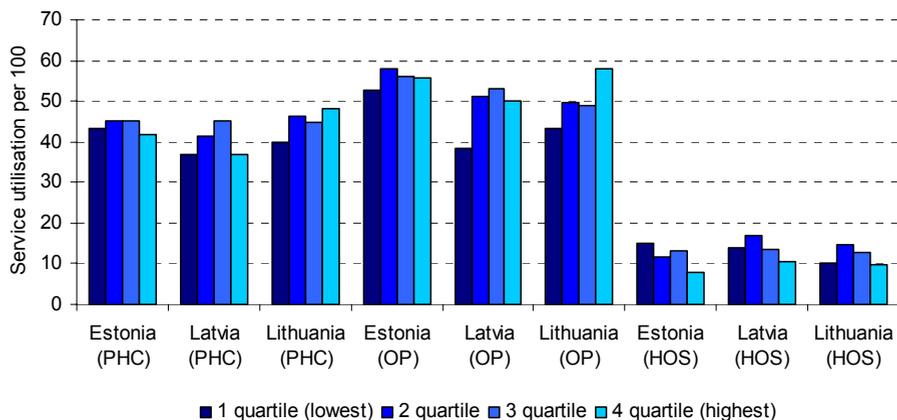
Note: Adjusted for age, gender, health status, prolonged nature illnesses and disability, mental health. The sample includes the 25 to 74 year-old population in 1999.

Quite different patterns are observed for hospitalisation. There were no gender differences in hospitalisation rates, contrary to the other health care services studied. Hospitalisation over the last year is reported more often by respondents of lower income and the economically inactive. These differences diminished after controlling for health status. Controlling for health also has the effect of increasing rural-urban differences (not significantly), as those living in rural areas are less likely to have been hospitalised in the last year. The analysis including all social variables reveals low income to be the only significant predictor of hospitalisation risk.

In further analyses, we assessed whether the magnitude of inequalities in health services utilisation varied according to age group or gender for each of the social and health service utilisation variables. In general, no strong variations by age or gender could be demonstrated (Kunst et al., 2002a). One of the few exceptions in case of hospitalisations, which shows that educational differences in hospitalisation rates were larger for women than for men, and larger for those age 25–44 years old than for older age groups.

## 6.2. Socioeconomic inequalities in health care service utilisation in Estonia, Latvia and Lithuania

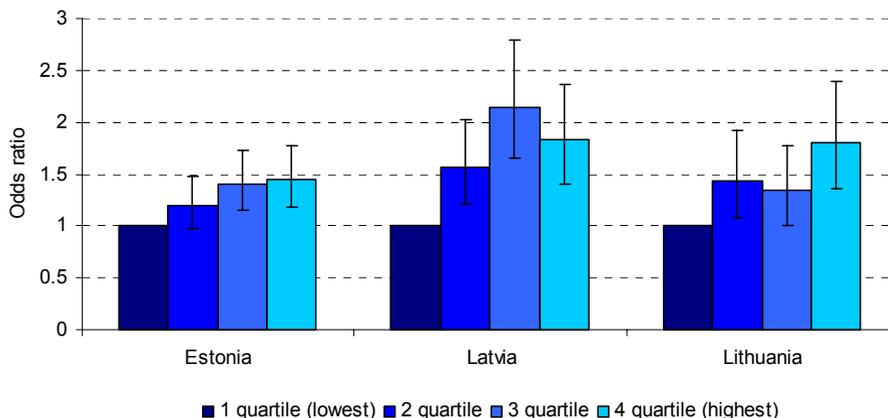
The objective of paper II is to describe service utilisation patterns and compare social inequalities in Estonia, Latvia and Lithuania in the use of different types of health care services in 1999. Figure 11 provides insight into the overall level of PHC service use in the three countries, overall outpatient care and hospitalisation by income quartiles. Figures 12 and 13 provide the income related comparisons in PHC use and hospitalisation. The detailed results by all services studied are available in tables in Annex 2.



**Figure 11.** Utilisation of PHC, outpatient clinics (OP), and hospital care (HOS) per 100 people by income quartiles in Estonia, Latvia and Lithuania.

Note: Standardised prevalence rate using European standard population (Waterhouse et al., 1976) as reference. The sample includes the 25 to 74 year-old population in 1999.

Comparative data on primary care utilisation in all three countries shows the lowest utilisation rates in Latvia. Utilisation rates in all three countries were higher for women than men, both before and after controlling for health needs. Utilisation by rural residents in Estonia was higher than that of urban residents. At the same time, residents in rural areas in Latvia and Lithuania were less likely to have primary care visits than were urban residents, although the difference was not statistically significant. There are no discernable ethnic differences in any of the countries in PHC access. There were contrasting educational patterns among the countries. In Latvia, higher education meant a higher probability of using a PHC doctor, whereas in Estonia those with lower education more often such services. The inequalities in Latvia were largest, especially after controlling for health needs (see Figure 12). A strong gradient by income was found in all three countries, where people with lower income had lower utilisation rates. This gradient became even more marked after controlling for health needs. The largest pro-rich inequalities in utilisation rates were observed in Latvia, while the smallest inequalities were observed in Estonia.



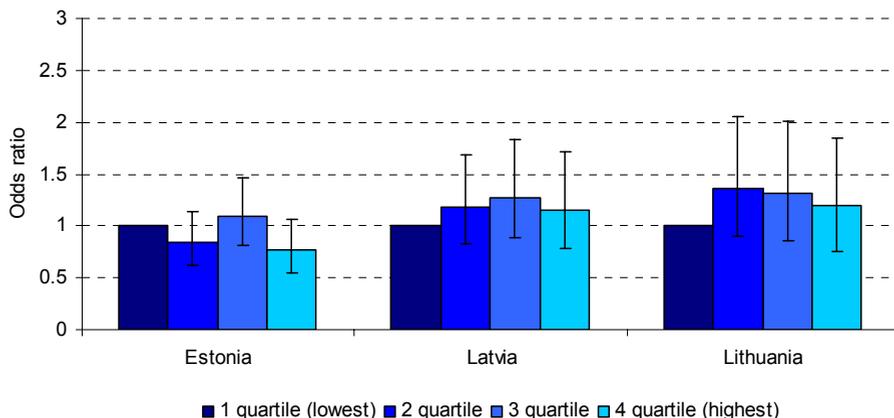
**Figure 12.** Utilisation of primary health care by income quartiles in Estonia, Latvia and Lithuania (odds ratios with 95% confidence intervals).

Note: Adjusted for age, gender, health status, prolonged nature illnesses and disability, mental health. The sample includes the 25 to 74 year-old population in 1999.

As in PHC, women more often used outpatient specialist services than men. In Latvia people in rural areas had lower utilisation rates, also after health needs were taken into account. There are no differences by ethnic groups in any of the countries, but each showed a clear gradient favouring people with higher education, especially when health needs are taken into account. After adjustment for health needs, the inequalities appear to be largest in Latvia. People with the lowest income used less outpatient care than those with higher incomes. There is steep pro-rich gradient in all three countries, although slightly weaker in Estonia. The inequalities were larger in case of outpatient specialist visits than PHC visits.

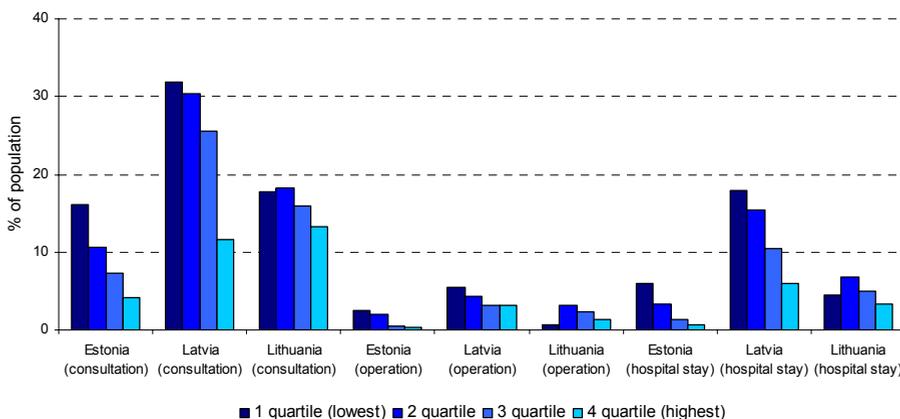
Hospital admissions were more equally distributed among different geographical and socioeconomic groups, with slightly higher rates in Latvia. Overall, there were no gender differences, except that in Lithuania utilisation rates appear to be lower among women after taking health needs into account. There was a tendency of hospitalisation rates to be lower in rural regions, especially in Lithuania. There were no steep and consistent gradients in hospitalisation rates related to ethnicity, education or income.

Financial barriers to access were reported by respondents from all three countries. However, the frequency strongly differed among them and according to household income (Figure 14). For all three variables, the frequency of reported financial barriers was two to three times higher in Latvia. There were steep gradients by income quartile in both Latvia and Estonia, where the poor reported much more often having experienced barriers. The relative and absolute differences were especially large in Latvia. In Lithuania, on the other hand, the income-related differences were small and often inconsistent.



**Figure 13.** Utilisation of hospital care by income quartiles in Estonia, Latvia and Lithuania (odds ratios with 95% confidence intervals).

Note: Adjusted for age, gender, health status, prolonged nature illnesses and disability, mental health. The sample includes the 25 to 74 year-old population in 1999.



**Figure 14.** Proportion of population reporting difficulties accessing consultation with a “good doctor”, surgery (operation), long hospital stay in 1999 because of lack of money or absence of insurance coverage, by income quartiles in Estonia, Latvia and Lithuania.

Note: The sample includes the 25 to 74 year-old population in 1999.

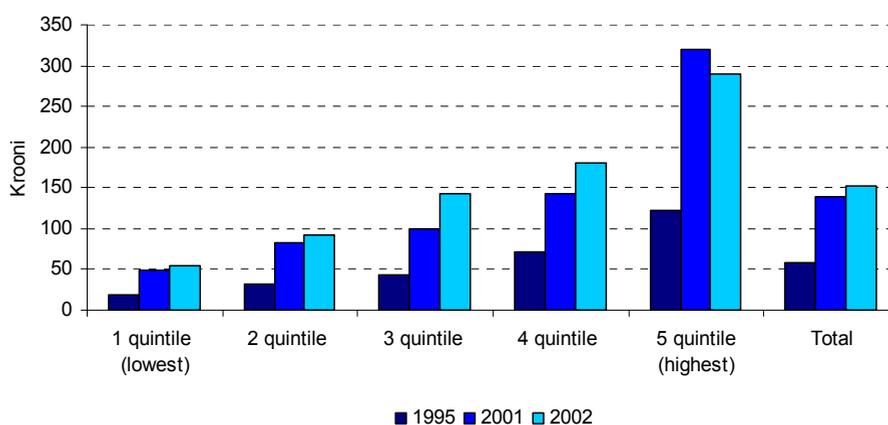
## 7. Out-of-pocket payment and financial protection in Estonia

### 7.1. The characteristics of OOP

The objective of paper III is to analyse the distribution of OOP by household income, health care services and over time. Again using surveys from 1995, 2001 and 2002, we have shed some light on the issues related to financial protection. The analysis of changes in financial protection also allows for some tentative conclusions about the impact on equity of access.

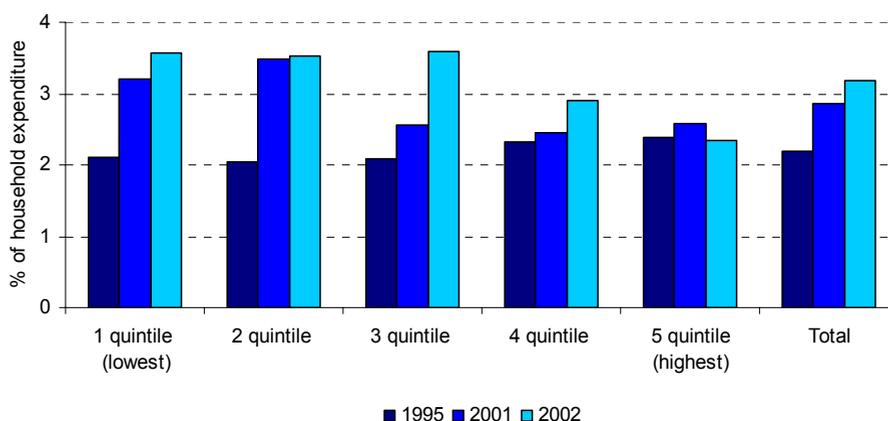
While analysing the trend according to the surveys results, in 1995, households spent on average 58 krooni (€3.7) per month out-of-pocket for health services, 139 krooni (€8.9) in 2001 and 152 krooni (€9.7) in 2002. Health payments also increased in relative terms: in 1995, they represented on average 2.2% of total household monthly expenditure and 4.1% of household capacity to pay (non-subsistence spending). These figures increased respectively to 3.2% and 5.0% in 2002, implying that health spending is increasing faster than households' other consumptions. Conversely, health spending by the government increased more slowly than other types of public expenditures in the same period.

In absolute terms, nominal out-of-pocket health payments vary dramatically across income groups for all three years (Figure 15). In fact, the level of out-of-pocket expenditure increases as income rises, since richer people spend more on health. However, comparatively small expenditures for health can have a great impact on poorer households. Indeed, comparing out-of-pocket expenditure to total expenditure, Figure 16 shows a very different picture. In 1995, the rich tended to spend relatively more on health than the poor, which means that OOPs were slightly progressive, but in 2001 and 2002 the situation was reversed.



**Figure 15.** Household OOP in absolute terms (in krooni) across income quintiles, 1995, 2001 and 2002 in Estonia.

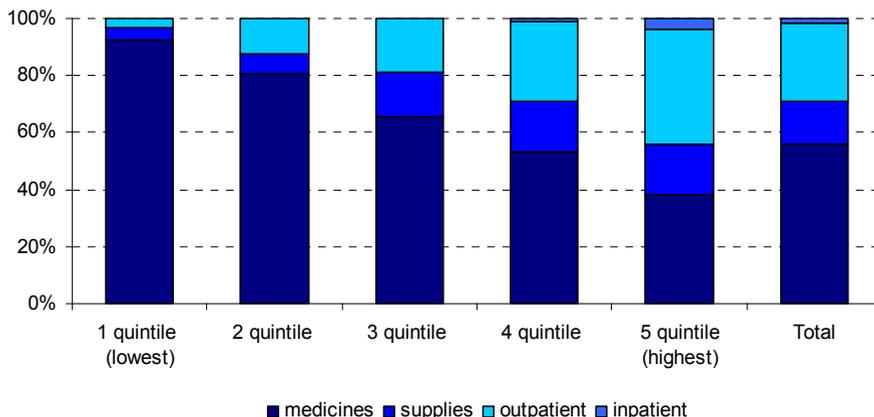
These graphs show that over the period, not only did the amount of OOPs increase, but the burden became heavier on the poorest part of the population and lighter for the richest part. Since the share of out-of-pocket spending in total health spending also increased during this period, it is likely that the distribution of the overall burden of funding the health system (not merely the OOP) became less equitable. This conclusion has to be true unless the funding of the prepaid part of the health system became much more equitable during the same period. Although we cannot measure this from the available data, there is no reason to believe that there was any significant change in the distribution of payroll and other tax contributions for health.



**Figure 16.** OOP as % of household expenditure across income quintiles, 1995, 2001 and 2002 in Estonia.

The structure of OOP in 2001 and 2002 is similar. The largest proportion was spent on medicines (both prescription and over-the-counter), which represented 52% of the total OOP in 2001 and 56% in 2002. The second largest item was outpatient services (mostly dental care), which counted for 28% in both years. The third was supplies (e.g. medical products, appliances and equipment such as medical devices, dentures, eye glasses, condoms, etc) being a bit over 15%. Very little was spent for inpatient care, which is largely covered by public insurance (see description of copayments above).

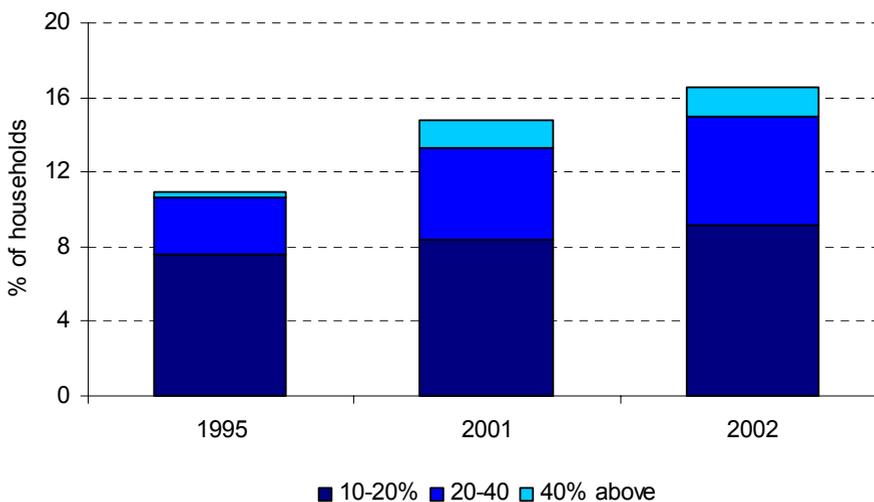
The structure of this expenditure varies across income quintiles. The poorest quintile spent almost exclusively on medicines (Figure 17). The rich spent relatively more on outpatient services. A combination of factors could explain these findings, namely that (a) higher income groups used more private services and outpatient (mostly dental) care, perhaps including some element of “discretionary” services; (b) the low income groups forewent needed outpatient (e.g., dental) health services or could not obtain the whole course of treatment.



**Figure 17.** Components of household OOP across income quintiles, 2002 in Estonia.

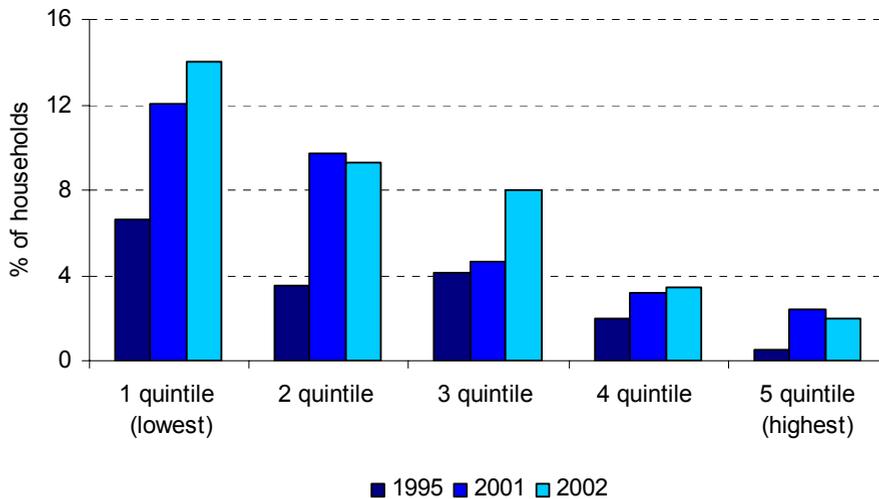
## 7.2. The household financial burden of out-of-pocket expenditure

The financial burden of a household is measured by the proportion OOP represents of the household's capacity to pay. On average, this proportion has increased continuously from 1995 to 2002. Figure 18 presents the proportion of households who spend more than given proportions of their capacity to pay in 1995, 2001 and 2002. For instance, it shows that in 1995, 11% of households, once their food needs were covered, spent more than 10% of the rest to pay for health care, 3.3% spent more than 20% and 0.3% more than 40%.



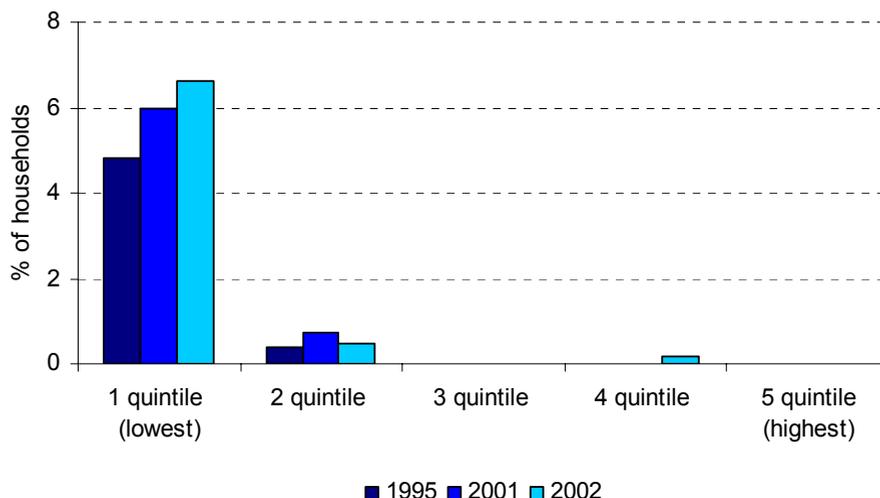
**Figure 18.** Percentage of households incurring high levels of OOP, 1995, 2001 and 2002 in Estonia.

Focusing on the 20% threshold, the proportion of households bearing a high burden increased from 3.3% in 1995 to 6.5% in 2001 and 7.4% in 2002. Figure 19 shows that the lower the income, the greater likelihood of spending more than 20% of the capacity to pay. For instance, in 2002, 13% of households did so in the first quintile versus 2% in the higher income group.



**Figure 19.** Percentage of households with high health payments (above 20%), 1995, 2001 and 2002 in Estonia.

Over the same period more households were pushed below the poverty line after paying for health services. In 1995, 1% of the population fell below the poverty line as a result of health care payments and the proportion increased to 1.3% and 1.4% in 2001 and 2002, respectively. In other words, the results show that in 2002, approximately 42 000 households faced high health expenditure and approximately 8 200 were pushed into the poverty because of OOPs who were mainly poor (Figure 20).



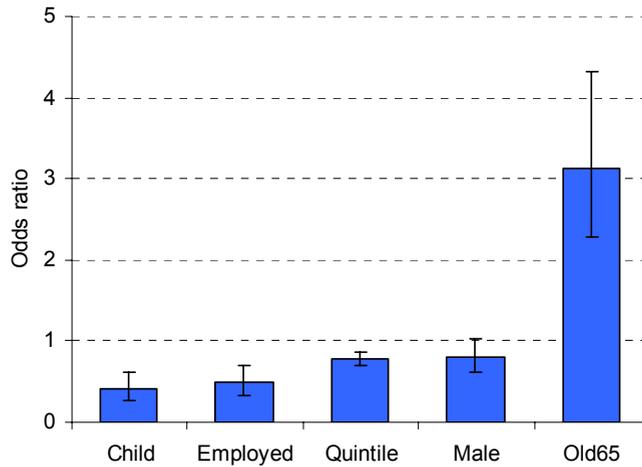
**Figure 20.** Percentage of households impoverished across income quintiles, 1995, 2001 and 2002 in Estonia.

### 7.3. Factors associated with a high financial burden

Results from the multiple logistic regression provide further insight into the financial risk and socioeconomic variables. An odds ratio greater than 1 means the factor increases the risk while an OR smaller than 1 indicates a decrease in the risk of incurring high health payments (Figure 21). The results suggest that household income, family structure and the characteristics of the household head are related to the probability of a household facing high expenditure. Variables of urban/rural locations and education of the household head were also tested in the model but none of them was statistically significant.

One of the main determinants of high expenditure is having senior (over 65 years old) family members. Since the elderly are statutorily covered by public insurance, we can attribute this result to a limited depth of coverage<sup>3</sup> rather than a lack of coverage per se. In other words, those at risk do not appear to be so much the uninsured, but insured individuals for whom the coverage does not offer sufficient protection against OOPs. The probability of facing high expenditures for a household having members over 65 is 3.14 times (coefficient 1.14) that of those without senior members.

<sup>3</sup> Depth of coverage is the extent to which services are covered from prepaid, pooled sources (i.e. available without out-of-pocket copayment). The other dimension of coverage is breadth, which is the proportion of the population that is covered, i.e. has some degree of protection against the costs of care from prepaid sources. In other words, “depth” refers to service coverage, whereas “breadth” refers to population coverage (see Kutzin 2000, 1999).



**Figure 21.** Socioeconomic factors influencing the risk of high health expenditures (20%) measured as odds ratios, 2002 (odds ratios with 95% confidence intervals) in Estonia.

Controlling for other variables, the higher the income the smaller the likelihood of facing catastrophic expenditure. This confirms the results from the descriptive analysis. A household headed by a male who is currently employed is less likely to face catastrophic expenditure than a household heading by an unemployed person or a female. The “protective effect” of having children under 16 years suggests that they were not a frequent source of high health expenditures compared to adults and older people.

# DISCUSSION

## 8. Socioeconomic determinants and health care utilisation

### 8.1. Socioeconomic inequalities in health care services utilisation in Estonia

This study revealed important variations in health care services utilisation in 1999 according to each of the social dimensions studied in Estonia.

- Gender differences, with higher use by women, were found for all services except hospitalisation.
- Residents of rural areas were more likely to visit a general practitioner or to use telephone consultation, but less often used outpatient specialist care or dentist care.
- Ethnic differences were generally small, with no consistently higher use by either Russians or ethnic Estonians.
- Differences were observed in relation to socioeconomic status (education, income, employment), with a more favourable socioeconomic status being associated with higher probability of using health care services, especially after controlling for health needs.
- In the case of hospital care, however, no notable social inequalities were found.

#### *Income*

The results of this study are to a large extent in agreement with those observed in other European countries. For example, in their comparative study of western European countries, van Doorslaer et al. (2000) observed that, compared to higher income groups, lower income groups visited specialists less than one would expect on the basis of their health needs. Whereas we found the same pattern for Estonia, the Estonian situation seems to differ with regard to visits to the general practitioner in late 1990s. While income-related differences in GP visits were approximately in line with differences in health needs in most western European countries, in Estonia the lower income groups visited GPs less often than would be expected on the basis of their health needs in the end of 1990s.

#### *Education*

A similar comparison can be made to the large body of literature on health services utilisation in relation to educational level. A common finding of these studies is that people with low education less often visit dentists and specialists (Alberts et al., 1997), but they partially could compensate that by more frequent visits to GPs (van der Meer, van den Bos, Mackenbach, 1996). This pattern was usually found to persist after control was made for health status. In Estonia, however, after controlling for health needs there are no significant differences in

visits to the general practitioner among people with different education levels. Thus, the lower use of specialist care by less educated groups in Estonia is not compensated for by a clearly higher frequency of visits to GPs.

#### *Place of residence*

Previous studies of geographical differences showed that residents of urban communities make more visits to specialists and GPs than do rural residents (Dunlop, Coyte, McIsaac, 2000). In Estonia, a different pattern existed: although specialist care was more likely to be used in urban areas, more telephone consultations and general practitioner visits were reported by those living in rural areas.

## **8.2. Evaluation of data used and methods applied in Estonia**

When interpreting the results of our study, some potential limitations of the data and methodology used should be taken into account.

#### *Health needs*

We aimed to determine whether differences in health care utilisation corresponded to, and could be explained by, differences in health. This assessment requires an accurate and detailed health measurement, thereby taking into account all health dimensions that are relevant for determining need for health care services. Due to limitations in the data, we could measure health only by means of the three self-reported health variables that were available in the Norbalt survey.

Ideally, one would also include objective measures of the prevalence of specific health conditions such as chronic and mental health problems. However, the additional effect of a more complete measurement of health at the population level might be small. Van der Meer et al. (1996) and Fylkesnes (1993) have observed that few self-reported health variables are related to health care utilisation variables as strongly as objective health measures, and that additional control for these objective measures would have little effect on estimates of inequalities in health services utilisation.

#### *Over-time comparisons*

Because our data are from a cross-sectional survey that was carried out in one specific year (1999), it was not possible to determine whether social inequalities in health care utilisation had changed during the preceding eight years of large-scale health care reforms in Estonia. In addition, it is uncertain to what extent these inequalities persisted during the most recent years. An indication of the degree of change could be obtained by performing a parallel analysis of data from a survey in 1994 with an identical survey design and identical questions only available on hospitalisation. Comparable inequality estimates for both 1994 and 1999 showed the same magnitude of inequalities for both years, with higher rates of hospitalisation among those with low income (Kunst et al., 2002a). But

the difficulty for other utilisation variables is a change of survey questions over the period, making proper comparison problematic.

#### *Regional analysis*

Due to the relatively small size of the survey, it was not possible to analyse differences in health care utilisation according to a detailed geographical classification, such as counties or municipalities. In order to fill in this gap, we used registry-based data from the Estonian Health Insurance Fund to analyse differences in health care utilisation in the 15 counties of Estonia (Kunst et al., 2002b). Although this study showed important geographical variations in the use of ambulatory services and prescription medicines, the variations observed were smaller than the individual-level social variations that we have found in the present study.

#### *Service utilisation probability and volume*

A further improvement of this type of study would have been to not only analyse the probability of health care utilisation, but also to analyse its volume, for example in terms of a number of visits, or in the amount of costs incurred. Often, data on the volume of health care utilisation are not available from interview surveys.

However, our previous analyses of the registry-based data from EHIF (Kunst et al., 2002b) showed that regional differences are much larger when expressed in terms of volume of health care utilisation (e.g., the total number of visits per person in the last year) than when expressed in terms of its probability (e.g., the percentage of people with at least one visit in the last year). The only limitation is the lack of social variables in the registry and restrictions in data linkage in Estonia. Further research in transition countries is therefore needed to assess social inequalities not only in terms of probability, but also in terms of the amount, quality, and effectiveness of health services utilisation (Andersen, 1995).

### **8.3. Explanations of key results in Estonia**

#### *Financial barriers*

In the multivariate analyses, a low income was found to be associated with lower utilisation of specialist, dental and GP services. As this effect persisted after control for other social variables, it suggests that it might be attributable to financial barriers that inhibit the poor from using health care in case of minor illnesses but as copayments for services are limited this is not the single explanation and the financial barriers might be those outside of the health sector.

#### *Insurance coverage*

In 1999 around 5% of the population was not covered by health insurance. This proportion was especially large among the unemployed (46.7%) compared to the employed (6.1%), but was also higher among the lower income quartile (21.2%) compared to the highest income quartile (4.3%). Differences in insurance

coverage may not only have contributed to large differences in specialist, dentist and GP utilisation. Indirectly, it might also have contributed to the higher rates of hospitalisation by the poor and the unemployed, as in the Estonian health care system emergency care (in most cases at hospital level) is the only care provided free of charge to the uninsured.

#### *Education, knowledge and communication*

Although education is generally related in similar ways as income to health care utilisation, there are some differences. Education is especially related to the likelihood of visits to specialists and dentists, even after control for income and employment status. This association has been reported for many countries, and the suggested explanations usually refer to the specific advantages related to high education, such as a better knowledge of the health care system, and a more effective communication with both the gate keepers and the specialists themselves (Alberts et al., 1997; McIsaac, Goel, Naylor, 1997). The advantages of a high education may weigh even more in a situation such as that of Estonia in 1999, where health care reforms were implemented relatively quickly, without broad public discussion, and limited campaigns aimed to educate the general public on ways to deal with the new systems.

#### *Care seeking patterns*

A particular feature of the Estonian situation is the presence of a large minority of ethnic Russians. In 1999 we found that after taking into account differences in health needs, the Russians had comparable levels of health care utilisation to those of ethnic Estonians, despite their lower social and civil position and poorer health (Leinsalu, 2002).

Slightly different patterns of health care utilisation are observed, however, where the Russians have fewer telephone consultations and more often recur directly to specialist care. We expect that language barriers may in part explain that Russians were less likely to consult physicians by telephone. The relatively higher use of specialist care by Russians could perhaps reflect the former health care system based mostly on specialist care available through polyclinics.

#### *Availability of services*

Geographical patterns were different for specialist care, which is used more often in urban areas, than for GP, which is used more often by residents of rural areas. The higher rates of specialist visits in urban areas may be due to the closer proximity of most specialist services to urban residents while rural residents may more often resort to GPs because of their availability and also to compensate for the lack of nearby specialist care. In addition, there is evidence from 1998 that, compared to residents of Tallinn, rural populations were more informed about the new family doctor based PHC, and they more often preferred to visit their GP instead of a specialist (Põlluste, Kalda, Lember, 2000).

#### **8.4. Further research describing utilisation patterns and the changes in Estonia**

The regional aspects of health inequalities have been analysed earlier, from survey-based data for 1994 and 1999, and it was found that on average the inequalities were decreasing in 1999. However the decomposition analysis shows that income-related inequalities have increased in the past decade. Further the regional analysis shows that regions with lower development have also worse health status (Habicht T, 2003). The analysis of the burden of disease from registry-based data and its regional and sub-regional distribution has the same results where the northeast and southeast regions have higher disease burdens for both 2002 (Lai et al., 2009) and 2006 (Lai, Köhler, 2009).

The further analysis of the 1999 Norbalt survey provided further insight into the situation provided in first paper on satisfaction with the essential health care services, with no differences by education or economic activity, but lower satisfaction among poorer people and those living in rural areas. The study allowed analysis of (self-assessed) preventive services used in 1999, with no differences found by education, ethnicity or place of residence. However, relatively less use was noted by the lowest income quartile, the unemployed and men (Habicht, Habicht, Võrk, 2003). Lack of health insurance limits access to and use of services, but is not a single factor explaining inequalities in service utilisation.

A large-scale study involving EU countries conducted from 2005–2007 highlighted the health system improvements (including curbing direct payments by patients and improving access to both preventive and curative services), and is an important entry point for reducing health inequalities, especially in eastern Europe (Kunst, 2007). The comparison of countries using data from 2000–2004 describes inequalities related to education in Estonia (with a clearer gradient for women) benefiting higher-educated groups, however the inequalities are slightly smaller than those in Latvia and Hungary (Mielck et al., 2007). The study also concludes that epidemiological methods (e.g., logistic regression, relative index of inequality) provide conclusions similar to those of health economics (e.g., concentration indices).

The updates on the situation in the mid 2000s (Habicht et al., 2007) and also data on access to care show improvement or maintenance on average but highlight concerns whether all in need are receiving care (Aaviksoo, Paat, 2007). Lately health and inequality have been recognised as important for development in the 2008 *Human Development Report* (Estonian Cooperation Assembly, 2009). Income-related inequalities were recently analysed using data from 2006 (Saluse, 2008; Võrk et al., 2009), and applying comparative methods to OECD countries (van Doorslaer, Masseria, 2004). In parallel the decomposition of inequalities by socioeconomic and other variables (for various health care services) showed health status and income as main variables influencing service utilisation in 2006 (Saluse, 2008), confirming earlier results where income had an increasing role in determining inequalities in the period 2000–2002 (Habicht, Habicht, 2004). The 2006 study applied the volume of services used (instead of

probability to use), and found no inequality in PHC use or emergency care once controlled for health need variables. But wealthier households had an advantage concerning specialist outpatient care, as in other OECD countries, and there was no indication of inequality in access to hospital care after measuring need. The analysis also shows that dental care, telephone consultations and other specialist care are problematic areas of inequity, where the poorer population is at a disadvantage. Because the main obstacle to dental care is high OOPs for adults, little can be done to improve access without an increase the EHIF benefit package coverage. For telephone consultations and specialist care other, less costly interventions could be appropriate, for example, educating patients, or improving the specialist referral system (Võrk et al., 2009). In general, the results for Estonia are comparable those of the OECD countries.

### **8.5. Socioeconomic inequalities in health care utilisation in Estonia, Latvia and Lithuania**

The study showed that there were important socioeconomic inequalities in health care utilisation in Estonia, Latvia and Lithuania in 1999. Three findings stand out.

- In all three countries there were great inequalities in outpatient specialist care, whereas they were smaller and less consistent with regard to PHC. Inequalities in hospitalisation were small or non-existent in most cases.
- Inequalities were larger and more consistent in relation to household income than to education. No large and consistent differences were observed for urban versus rural places of residence.
- Inequalities of access to care were generally greatest in Latvia, as were self-reported barriers to health care use.

#### *Potential limitations of comparative data*

Our findings should be interpreted with caution due to the slight differences in the national health systems, as described earlier, and possible differences in how the survey questions were interpreted by respondents in the respective countries.

However, considering the extensive preparations made to ensure comparability of the questionnaire in the current NORBALT survey (Aasland, Tyldum, 2002), and the generally high response rates achieved, the data sources used for this study are possibly the best available for comparisons of the Baltic countries. Thus it is used to provide the best available evidence on variations between them in the late 1990s.

## 8.6. The results in the light of national health systems

The current comparative survey was especially important as it provided us with a unique opportunity to evaluate the Baltic “natural experiment” of health care reform. During the 1990s, these countries made the transition from a common Soviet-inherited system towards different variants of a new system of insurance-based financing and novel ways of organising and delivering health services (European Observatory, 2000, 2001; Jesse et al., 2004, Bankauskaite, O’Connor, 2008).

Even though improving access to care has been one of the key objectives, less attention had been paid to distributional issues, most notably in Latvia. As a result, equity of access, utilisation and outcomes has not received attention as a specific objective. Given this situation, it is important to evaluate the effects of health care reforms also in equity terms. If important inequalities should emerge during the reform process, especially in countries where less attention has been paid to equity issues, this would signal the importance of raising awareness of equity issues among policy-makers, advocating a stronger focus on equitable access and suggesting ways of implementing reforms that target vulnerable population groups.

### *Primary health care*

Our results for PHC utilisation cannot be directly related to the precise ways in which specific health care reform had been carried out in different countries (Bankauskaite, O’Connor, 2008; Ritsatakis et al., 2000). However, there may be some associations to the stage of reform that the countries had by the late 1990s. For example, our finding that PHC utilisation was higher in rural areas than in urban areas only in Estonia might reflect the rapid implementation of the PHC reforms in rural areas, with the urban areas lagging behind until full coverage was established in 2003 (Atun et al., 2006).

### *Outpatient specialist care*

Pro-rich inequalities in outpatient specialist visits have been observed in many western-European countries (van Doorslaer, Masseria, Koolman, 2006). Such income-related inequalities may reflect a generalised situation across all of Europe, in which poor and low-educated people have less access to specialist services because of a lack of knowledge of service availability, poorer ability to navigate the health system and monetary, social and other barriers. In addition to this generalised situation, the Baltic countries rapidly reformed outpatient specialist service delivery in order to address the pre-existing overcapacity in the hospital sector. Those rapid changes may have affected the utilisation of outpatient specialist services, especially among the disadvantaged groups. Due to ongoing reforms in this area the situation would need continuous monitoring.

### *Hospital care*

Inequalities in hospital admission rates were small in all three countries; even after several reforms in which both the number of hospitals and bed capacity had been reduced (e.g., 35% in Estonia over the 1990s) (Healy, McKee, 2002), no

wide inequalities in hospitalisation rates emerged. At the same time, a considerable number of Latvians report financial barriers that prevented them from using surgery or other services requiring long hospitalisation (Figure 14). The figure also suggests that there were unmet needs for inpatient hospital care, especially among poorer population groups.

#### *Benefit package and copayment policy*

Developing benefit packages could help to define priority health care services for the general population in resource-limited settings (Healy, McKee, 2002). However if this is related to considerable cost sharing for services provided with public sector financing, access to these services may be restricted for those who cannot afford the requested copayments. The results for Latvia are particularly important here. As shown before, levels of copayment are considerably higher in Latvia, it has lowest overall utilisation rates and the largest income-related inequalities in both PHC and specialist services. In addition, Latvian respondents, especially the poor, more often reported facing barriers due to financial constraints. Together, these results suggest that the steeper inequalities in health care utilisation in Latvia are ultimately related to financial barriers such as high copayments.

Even though we could not thoroughly analyse the impact of OOPs in all three countries comparatively over time, the results of the current analysis suggest that systems that rely on high copayments may widen socioeconomic inequalities in utilisation. In contrast, systems that rely more on public funding may reduce financial barriers to using essential health care services. Future changes in national health care systems should take into account the potential impact that OOPs have on access among socioeconomically disadvantaged groups.

### **8.7. Access to care barriers in the countries studied**

The international EU-SILC survey has been regularly available since 2004 and provides an opportunity to compare the access, care and particularly unmet needs in the EU. Meanwhile, more detailed analysis on long-term trends, linkage with utilisation of services and specifying the unmet needs should be carried out to be policy relevant and lead to concrete suggestions (Allin, Masseria, 2009). Bearing in mind the potential limitations, some observations can be made.

The Estonian Social Survey (a version of the EU-SILC survey) from 2004 to 2008 shows that people from lower income quintiles much more frequently report problems visiting a doctor, but lack of financial resources was the main barrier only in the case of dental care. For primary and specialised care, the main reported barrier was long waiting time. Access barriers to primary and dental care in the period declined on average (dental care from 15% to 10%), but the inequalities between wealthy and poor remained (Võrk et al., 2010). The reported unmet need for dental care in Estonia was higher than the EU average in 2007 and economic barriers were more prevalent than in other EU countries. Estonian survey respondents most frequently cited long waiting times as a

barrier to meeting other needs, similar to responses in Lithuania and the United Kingdom (Eurostat, 2010).

While the unmet needs were low in most EU countries in 2005, in Estonia, Lithuania, Germany, Poland and Latvia more than 5% of the population reported unmet needs. In Latvia almost 20% of the overall population reported access problems (European Commission, 2008). The situation persisted in Latvia in 2007, with over 5% also reporting barriers in Greece, Italy, Cyprus, Hungary and Portugal, compared to an EU25 average of around 6.8%. The rates of unmet medical needs were 12% in Estonia, 24% in Latvia 24% and 9.9% in Lithuania. The leading causes are cost in Latvia and long waiting times in Estonia and Lithuania (Baert, de Norre, 2009). The 2005 study highlights differences in unmet needs across income distribution in all EU countries. The proportion of people who reported unmet needs in the lowest quintile of income distribution is always higher than among those in the highest quintiles. Whilst the United Kingdom reports the smallest difference between the two quintiles in proportional terms, Belgium reports the highest. Nevertheless, although the proportional difference is highest in Belgium, the overall level is lower. The levels for the poorest quintile were highest in Latvia, Poland and Germany, and among the Baltic countries, the highest difference between rich and poor was in Latvia (over four-fold) (European Commission, 2008).

## **9. Financial burden of out-of-pocket payments**

### **9.1. Financial protection and the trends until 2002**

Estonia relies relatively less on OOPs than do many middle-income countries and in particular the other Baltic countries, consequently the health financing system provides adequate financial protection for the vast majority of the population. The results also show clearly that the financial protection has eroded over the period under consideration, particularly for more vulnerable groups in Estonia. We believe that there is sufficient cause for concern, particularly with regard to the trend, to bring this to the attention of policy-makers. The key findings on financial protection are listed below.

- The proportion of households spending more than 20% of their payment capacity on health increased from 3.4% in 1995 to 7.4% in 2002. Over that time the role of OOP in health financing increased both absolutely and in the relative burden on the lower income groups.
- In 2002, 1.3% of the population fell into poverty because of health payments.
- The population most at risk of high health expenditures are elderly patients in poor households who require medicine.

## 9.2. Evaluation of data to analyse OOPs and financial protection

### *Data constraints and measuring financial protection*

Some obvious limitations to this study result from constraints imposed by the data, but do not fundamentally challenge the results. For instance, no information is available on the volume of health service utilisation or on health status; the message that coverage is eroding over time and that low income groups are bearing too high a burden would only be reinforced if we could take these factors into account. Because low-income people tend to be in worse health in Estonia as in other countries (Kunst et al., 2002a), that they spend relatively more is unlikely to result from choice. In addition, evidence is available that for a given health status, low income groups tend to use less care (Habicht, Kunst, 2005) than high income groups. In other words, the observed financial burden probably understates the “true” financial barriers because poorer people are more likely to forego needed care because of its cost (and this non-use is not captured by the expenditure data collected from the survey). This lower rate of service utilisation relative to need is, by definition, contrary to the objective of solidarity, and more specifically equity in utilisation.

Some additional insight into the underestimation of the financial barriers is based on an analysis of other data sources of the reasons people give for not consulting a doctor, since the data we have on expenditures does not allow for this. The 2004 EU-SILC survey (Statistical Office, 2005) shows that 2% of people experienced a need for care but did not consult their GP and 3% did not consult outpatient services in the prior year for economic reasons, while the figure for dental care was nearly 13%. As previously seen, the pattern of non-use of all three services is that people reporting need are not distributed evenly; decisions to seek care were almost three times lower among poorer quintiles than in richer quintiles (Statistical Office, 2005). Still, when this pattern of access is compared to that in other countries of the former Soviet Union (Balabanova et al., 2004), Estonia seems to be in a more favourable situation.

In the third paper survey-based poverty lines are calculated and used. By comparison, the poverty line calculated in other research in Estonia was at 1538 krooni per month for 2001 and 1593 krooni for 2002. The direct poverty lines remain above but closer to those used here, at 1230 krooni for 2001 and 1274 krooni for 2002 (Ministry of Social Affairs, 2003). As a consequence of these different measures, this study could underestimate the poverty impact of OOP. In subsequent research (Võrk et al., 2009) the assessment of different poverty lines is performed to provide information for both international comparison and contextualising results to the country environment.

### *Improve the datasets to analyse financial protection*

To fully understand the challenge that OOP represents to both financial access and financial risk, the ideal data source would be a household survey that included both utilisation and expenditure questions. When only expenditure questions are available (as in the surveys we analyse for this paper), we can be

confident that the observed response understates the true barriers, because those who are deterred from any service use for financial reasons do not have any expenditures captured by the survey. By connecting our survey analysis to the other available survey data on utilisation patterns in Estonia, the case for policy makers to be concerned about deteriorating financial protection is strengthened.

#### *Contextualised analysis*

The tools we used to measure the extent of the problem are contextualized for Estonia: we look at “high” out-of-pocket expenditure (20% of capacity to pay) rather than “catastrophic” (40%). On the other hand, our poverty line is higher than the national one (see earlier), and therefore we may be underestimating the impact of OOP on poverty. In other words, the monitoring tool used here was adapted to reflect differing value judgments of a problematic situation. Such flexibility with regard to different country contexts and value assessment is an important asset for a monitoring tool.

### **9.3. Distribution of OOP in the Estonian health system**

According to the study results of Xu et al., (2003a) for “catastrophic” expenditure (40% threshold), in 1995 0.3% of Estonian households faced such expenditure, 2.9% in Latvia (1997–98) and 1.4% in Lithuania (1999), a lower level than that of Estonia in 2002 (1.6%). By comparison, among the 59 countries studied, this proportion reaches 10% for Vietnam and Brazil but remains below 0.1% in a number of western European countries (France, Germany, Belgium, Denmark and the United Kingdom). A more recent update shows the figures in Estonia to be below the average among 89 countries (Xu et al., 2007).

#### *Out-of-pocket payments and medicines*

The study shows that medicines comprise the largest share of OOPs for those who are the most at risk of experiencing financial hardship. Furthermore, the data analysis showed that poor households with elderly members are the most vulnerable. The increase in private expenditure over the period probably resulted from a combination of factors, predominantly changes in the user charges policy for pharmaceuticals, price increases and changes in the positive list as more effective medicines became available. The last is illustrated by the share allocated to pharmaceuticals in the EHIF budget grew from 8% in 1995 to 26% in 2002. In addition, according to pharmacy sales statistics, consumption of over-the-counter drugs (not reimbursed by insurance in Estonia) increased, but more slowly than that of prescription medicines (Jesse et al., 2004).

By considering this evidence together, we conclude that there is a need to extend greater protection against outpatient medicine costs for the impoverished elderly (especially those with chronic conditions), and for more means-tested user charges. At the same time, it is important to keep in mind that improvements in financial protection can be achieved by other means than decreasing copayment rates, for instance by influencing physicians’ prescription practices

through guidelines or by encouraging the development and use of generics. Disease management programmes could also be used to address both quality and cost issues for the chronically ill.

Lack of health insurance coverage cannot be an explanation for the heightened risk of impoverishment for the elderly because all people of pensionable age are automatically covered. Thus the problem has to do not with the fact of insurance coverage but rather with its depth (i.e., the extent to which patients have to copay for services and especially medicines), and a lack of targeted copayment exemptions for the poor elderly. We are confident in this conclusion even though the data did not include variables to capture specific concerns such as health insurance status, health service needs or even just utilisation.

#### *Cost-sharing policies and financial protection*

In 2003, the copayment policy was changed in many respects (see details Habicht J et al., 2006). On the one hand, additional financial protection was provided to those facing high pharmaceutical costs: EHIF now reimburses 50% of a yearly cost of prescriptions between €383 and €639, and 75% beyond, up to a limit of €1278. Our data do not allow us to establish whether the high expenditure on medicines comes from prescription or over-the-counter drugs. Yet, general sales statistics show that prescription medicines account for about 75% of the entire market, so this measure could have improved the situation.

In any case, whether this measure led to an improvement of the population's depth of coverage still needs to be evaluated in view of all aspects of the reforms and their overall impact on OOP. The 2003 reform package included the introduction of reference prices for pharmaceuticals to make generic drugs more accessible and applying ceiling to each prescription that could increase the OOPs in real term. This would depend much on the behaviour of doctors, pharmacies and patients, and has to be evaluated separately. Additional cost-sharing for services included in the benefits package (primary health care home visit fee, inpatient bed-day fee and regulated maximum visit fee applied by private entities) to make the health system more transparent on user fees. The visits to GP office were kept free of charge for the patients. At the same time the exclusion of most adult dental care from the benefit package was introduced.

In addition to the changes described for medicines, the second explanatory factor for the OOP increase could be the development of the private sector (as providers as hospitals and dentists were working as private entities) where fees are unregulated and providers were allowed to establish their own rates before 2002. This is particularly true for dental services, but also for some outpatient services when health insurance did not contract with providers (though the magnitude of this is not well documented). Interacting with the first and possibly the second of these factors is, as noted above, the decline in the real level of government health spending, which, combined with changes in co-payment policy, shifted greater responsibility for funding directly onto patients. In addition, the growth of demand and spending for private care may also have been stimulated by the decline in public spending. And of course, another likely explanation for the rise in real private health spending was growth in real income, on the assumption that the demand for health care was income elastic.

While analysing the situation it was found that in 2004 PHC home visit fees on average are a barrier to fewer patients than in previous years. But it was reported that the home visit fee's current level (€3.20) is limiting access to care for 70% of the lowest income group compared to 28% among the highest income group (Faktum, 2004). The only regulation setting rules for private patients (when services are not covered by public insurance) is that the fees applied have to be "reasonable", which subject to interpretation by the providers.

While we cannot determine a causal link, National Health Account data show that OOP increased by more than 30% in 2003. From 2002 to 2004 more people had health-related expenditures where prescription and over-the-counter medicines were the most common expenditures (ibid.). In this context, it is possible but doubtful that the burden of OOP shifted dramatically in a pro-poor direction and that applied additional coverage introduced on high pharmaceutical expenditure provides financial protection for chronic patients. Recent survey evidence shows older patients, especially those over 65 consider the price of pharmaceuticals more important than clinical efficiency (ibid.).

We believe that our analysis should be replicated to assess the distribution of these increased private payments and to monitor the impact of the changes in co-payment policy.

#### *OOP and overall health financing in Estonia*

Next and closely related to the increase in patient obligations for co-payments, trends in Estonia show that as government spending on health declined in both real terms (slightly) and as a share of total government spending (significantly), the role of out-of-pocket spending increased. The burden of this spending has fallen relatively most heavily on the poor.

While the solution to the problem of improving financial protection for the poor will not come from increasing government health spending alone, it is likely that the success of reforms to improve financial protection, e.g., targeted copayment exemptions, will have to be supported by increased public spending in order to "purchase" this extra protection for the poor. One suggested option is to extend the health insurance revenue base to ensure long-term sustainability and availability of funds (Couffinhal and Habicht, 2005; Thomson et al., 2010).

Options for targeted exemptions include indirect measures such as regulating a positive list of prescription medicines that have impact on those in the worst economic situation or health condition to direct means such as including annual medicinal spending ceilings to cover costs incurred by patients. Still, as pharmaceuticals are increasing in cost for both the insurer and patients, the effects of such arrangements have to be evaluated, and that is beyond the scope of this study.

## 9.4. Changes and trends in OOP in 2000–2007

The role of OOP in financing health care and its impact on Estonian households has been continuously monitored since the early 2000s. More recent analysis (Võrk et al., 2009) provides an overview until 2007. Average OOP per household increased almost threefold from 2000–2007, from 59 krooni per month per household to 160 krooni. OOP has also increased as a share of total household expenditure, from 2.6% in 2000 to 3.6% in 2007. The share of OOP for pharmaceuticals in 2000–2007 was around 50–60%; outpatient care comprised 20–30%, various other supplies 15–22% and inpatient care 2–5% on average.

Those with OOPs of more than 20% of household expenditure increased from 2.6% in 2000 to 6.2% in 2007. Compared to earlier study presented in paper III (Habicht et al., 2006) the proportion of households who spent more than 20% on their capacity to pay increased from 6.4% in 2000 to 12.1% in 2007 (Võrk et al., 2009), and the burden of OOP increased relatively more among poorer households, as about 3% of households dropped below the national absolute poverty line after OOPs. Fortunately, the trend declined from 3.7% in 2000 to 2.1% in 2007 due to the overall economic improvement in the country. The main risk group falling to poverty was single pensioners, about 11% of whom fell below the absolute poverty line due to OOPs (Võrk et al., 2009).

While lack of health insurance limits the services available for the uninsured, the absence of health insurance does not seem to increase the risk of having high health payments (Habicht & Habicht, 2008; Koppel et al., 2008; Võrk et al., 2009). Spending on drugs and dental care are the largest categories of OOP. In relative terms poorer households spend considerably more on drugs, including prescription drugs, than richer households. While there is evidence that policy measures implemented in the pharmaceutical sector have been able to deliver cost containment for public sector expenditures (Möttte et al., 2007), more detailed recent analysis shows the complexity of the sector and relatively high cost sharing by patients for medicines in the European context (Kanavos et al., 2009). Richer households spend more on dental care.

For those services more dependent on OOP, there were either more inequalities in utilisation, as clearly demonstrated in adult dental care, or there was more risk of being pushed into poverty, as in case of spending on prescription and over-the-counter drugs by pensioners. Conversely, for those services for which EHIF provides “deep” coverage (i.e., no or minimal copayments), such as primary care and hospitalisation, the objectives of financial protection and equity in utilisation are well-served.

## **10. Health policy implications**

### **10.1. Implications for health policy and further reforms**

Equity issues should be taken into account during the design, implementation and evaluation of fundamental health care reforms. For example, the Estonian PHC reforms, which started in early 1990s and took substantial turn in 1998, were evaluated in terms of efficiency (Koppel et al., 2003), but not in terms of equity, in part due to the lack of information. Our study indicates that the general efficiency of the Estonian health system has been achieved at a price of certain social inequity in utilisation, at least in the short term at the end of the 1990s.

Current and future phases of the health care reforms should aim to address the inequities observed in our study, first in the monitoring and evaluation and later acting on the results. For example, evaluations of the 2004 PHC reforms (Atun, 2004; Atun et al., 2006) have already integrated the equity dimension into the framework.

A new series of changes in health system aims to increase efficiency of secondary care by means of geographical centralisation of hospital areas. An important aim for these reforms should also be to ensure better and equitable access to specialist care by the poor, the unemployed, the low educated, and residents of remote areas. Our results indicate lower utilisation rates of outpatient specialist care by socioeconomically disadvantaged groups. It is crucial to ensure accessibility of necessary services in situations where acute inpatient care is to be centralised. Even though this change might have limited impact on geographical access, as shown by Rooväli and Kiivet (2006), other barriers should also be taken into account. Access may be improved by both demand side (support for transportation, enhancing health literacy) and supply side (mobile providers to rural areas, training of health care workers for new services, changing the skill mix, financial incentives) measures.

A lesson learned in Estonia in past twenty years is that for equitable service coverage, a comprehensive provider network should be put in place on every level of care. Estonia did this by developing family medicine centred on primary care, restructuring ambulance services, and reorganizing the hospital sector by introducing high-technology services and providing access to modern medicines. These changes were sequenced. Health financing reforms supported the development of the provider network by developing appropriate financial mechanisms (as incentives for primary care). A new balanced system was achieved for the provider network, providing coverage for a wide range of services. New issues have arisen related to continuity of care, coordination between levels of care, and integrating disease prevention and health promotion services into the current service provision system (led by primary health care). The ongoing challenge has been to improve the depth of coverage, step by step (e.g., by providing new curricula, staff training, equipment, facilities and financial incentives) at different levels of care (Habicht & Habicht, 2008).

A remaining area of concern is dental care, where around 15% of the population claim difficulties of access (Habicht & Habicht, 2005). Furthermore,

the benefit package for adult dental care was decreased to limited monetary benefits in 2003 and excluded in 2009 (except for certain most vulnerable groups). While health insurance coverage is not a major obstacle to access, universal coverage with health insurance similar to western European countries (Saltman et al., 2004) could be considered as the welfare state develops.

While large-scale reforms can cause substantial short-term inequities, they also offer a unique opportunity to ensure more equitable access to health care services. Measuring the access to care is the first step to informing and improving policy.

## **10.2. Research as a tool informing the health policy**

This study of OOP and financial protection suggest that even with general population surveys not specifically oriented to the health system, and with a fairly simple tool, but a good understanding of how a country's health system is organized and knowledge of its reforms, policy-makers can monitor something that is extremely important to the health system: the role of OOP and the degree of financial protection provided. Furthermore, the analysis can be disaggregated for subgroups or per type of care. Hence, we could reach quite specific conclusions about the nature of the problem that has to be addressed, and target policy responses to improve financial protection against the risk of catastrophic health care costs.

In Estonia, the results of this analysis have been conveyed to policy-makers in a manner that they could easily interpret (i.e., Figure 21 showing odds ratios for high health expenditures) and are now playing a role in the policy debate. Thus, the results have raised awareness among specialists and politicians about the financial protection the health system provides and the people at risk as well the possible causes. Further inspired by the current study, continuous monitoring of the situation was conducted for the period until 2007 (Võrk et al., 2009). We believe that the relevance of this approach is not limited to Estonia but could be used anywhere there are regular household surveys undertaken with some questions on health expenditures.

It is important to note that papers presented are closely related to the health policy environment in Estonia and part of the processes to generate knowledge. Some of the proposals made have been already reached to decisions to improve data availability;<sup>4</sup> inspired further research on various topics related to service utilisation with more recent data or detailed questions; and informed policymakers about existing inequalities in service utilisation and the burden of OOP.

Observing the situation for the past fifteen years, we see OOP playing a large and growing role in health financing but it should not be allowed to become a barrier to care for the less well-off. The Estonian health financing system relies

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<sup>4</sup> E.g., the 2006 Household Budget Survey included an additional module on health and health care services, and the biannual Finbalt Health Behaviour Surveys have for past decade included additional information on service utilization and volume.

mainly on public resources, enabling it to protect most of the public from illness-related financial hardships, but the growth of OOP poses a risk to be analysed and monitored. To some extent, this growth is related to increased incomes and changing consumption patterns. OOP is used to ration health care and are an important source of revenue for many countries' health systems. For some people, however, they are a serious access barrier to necessary care, especially for prescription medicines. Their impact on access to care for different population groups should therefore be evaluated and monitored regularly. If necessary, income- or health-related targeted exemptions should be introduced and other options as spending ceilings or limiting and abolishing user charges considered (Habicht & Habicht, 2008; Thomson et al., 2010).

## CONCLUSIONS

1. The current study provides first evidence on the utilisation patterns of health care, the socioeconomic inequalities in health services use, distribution of OOP in household expenditures and the financial burden incurred from cost-sharing arrangements in health care in Estonia.
2. Following the principles of solidarity, equitable access (especially geographical), limited cost-sharing has delivered relatively good access to care until now.
3. After extensive health reforms since early 1990s, the situation in Estonia in terms of access to care and financial protection is comparable to that of other EU and OECD countries. Estonia's situation seems to be more favourable than those of the Baltic neighbours, especially Latvia.
4. The socioeconomic inequalities in service use exist by income, education and employment status, and geographical variation in use is observed. The inequalities were present in telephone consultations, specialist outpatient visits and dental care, in favour of those of higher socioeconomic status. There was small pro-rich inequality in primary care use in late 1990s, but not a consistent gradient and later research has showed more equal distribution of both primary care (family medicine) and emergency care utilisation lately. In access to hospital inpatient care, there are no socioeconomic inequalities on utilisation observed.
5. The perceived barriers to access to specialist outpatient consultations and hospitalisation are reported where those lower on the social gradient claim to have higher barriers, however less so in Estonia than in Latvia or Lithuania. Nonetheless, these call for further attention.
6. While the health financing system generally provides adequate financial protection to the vast majority of the population, the results show clearly that the financial protection has eroded over the period under consideration, particularly for poorer Estonians.
7. There is sufficient evidence that OOP is a serious access barrier to necessary care, especially prescription medicines and dental care. This calls for the introduction of income- or health-related targeted and means tested copayment exemptions and other policies in the near future. The impact on access by different population groups should be evaluated and monitored regularly.
8. The analysis shows that for those services more dependent on OOP, there were either more inequalities of utilisation or access barriers reported, as clearly demonstrated in adult dental care, or there was greater risk of being pushed into poverty, as in case of spending on prescription and over-the-counter drugs. Conversely, for those services covered by health insurance (i.e., with no or minimal copayments), such as primary care and hospitalisation, the objective of financial protection is well-served.
9. The research on health services utilisation is at an early stage in Estonia and more in-depth analysis should be promoted, building on current knowledge. The recommendations made in the 2002 Equity Study called for descriptive

research, explanatory research, monitoring and policy evaluation and improving data availability with clear proposals to analyse variations in health and health care. While there has been progress on many fronts, many of the research objectives are still applicable to study inequalities in health. They should be further extended to include bridging research and policy.

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## Annex I. Inequalities in service utilisation in Estonia

**Table A1.1.** Telephone consultation with a doctor during last 6 months. Standardised prevalence rate per 100 people (SPR) and odds ratios (OR) with 95% confidence intervals (CI) in 1999

Variable	SPR	I Model <sup>b</sup>		II Model <sup>c</sup>		III Model <sup>d</sup>	
		OR	95% CI	OR	95% CI	OR	95% CI
Total	9.94						
Gender							
Men	6.21	1.00		1.00		1.00	
Women	13.67	2.39	1.89–3.02	2.30	1.81–2.93	2.36	1.82–3.07
Place of residence							
Tallinn	7.02	1.00		1.00		1.00	
Other urban area	9.68	1.59	1.20–2.09	1.42	1.07–1.89	1.64	1.20–2.24
Rural area	13.03	2.14	1.61–2.84	1.90	1.42–2.54	2.09	1.48–2.93
Ethnicity							
Estonian	11.71	1.00		1.00		1.00	
Russian	5.89	0.49	0.37–0.64	0.44	0.34–0.58	0.52	0.38–0.70
Other	7.69	0.68	0.45–1.02	0.60	0.39–0.92	0.73	0.46–1.14
Education							
University	13.11	1.00		1.00		1.00	
Upper secondary	10.08	0.74	0.58–0.94	0.61	0.47–0.79	0.66	0.50–0.89
Lower secondary	7.36	0.51	0.36–0.73	0.37	0.26–0.54	0.33	0.21–0.50
Household adjusted income							
4 quartile (highest)	11.30	1.00		1.00		1.00	
3 quartile	9.59	0.85	0.63–1.14	0.75	0.55–1.01	0.78	0.57–1.08
2 quartile	10.66	0.96	0.71–1.28	0.78	0.57–1.06	0.84	0.60–1.18
1 quartile (lowest)	8.65	0.71	0.52–0.95	0.51	0.37–0.71	0.56	0.39–0.82
Economic activity <sup>a</sup>							
Employed	10.68	1.00		1.00		1.00	
Unemployed	6.93	0.62	0.38–1.01	0.52	0.32–0.86	0.80	0.46–1.37
Economically not active	13.32	1.13	0.86–1.49	0.83	0.62–1.13	1.08	0.77–1.52

SPR is directly standardised using an Estonian 2000 population (Statistical Office, 2001). The sample includes the 25 to 74 year-old population.

<sup>a</sup> SPR calculated for age 25–59

<sup>b</sup> Model I – Odds ratios adjusted for age, gender

<sup>c</sup> Model II – Odds ratios adjusted for age, gender, health status, prolonged nature illnesses and disability, mental health

<sup>d</sup> Model III – Odds ratios adjusted for age, gender, place of residence, ethnicity, education, household adjusted income, economic activity, health status, prolonged nature illnesses and disability, and mental health

**Table A1.2.** Visit to a general practitioner during last 6 months. Standardised prevalence rate per 100 people (SPR) and odds ratios (OR) with 95% confidence intervals (CI) in 1999

Variable	SPR	I Model <sup>b</sup>		II Model <sup>c</sup>		III Model <sup>d</sup>	
		OR	95% CI	OR	95% CI	OR	95% CI
Total	42.40						
Gender							
Men	36.25	1.00		1.00		1.00	
Women	48.55	1.70	1.49–1.94	1.63	1.42–1.87	1.75	1.50–2.03
Place of residence							
Tallinn	37.67	1.00		1.00		1.00	
Other urban area	43.19	1.31	1.12–1.54	1.21	1.03–1.43	1.27	1.06–1.52
Rural area	46.00	1.44	1.22–1.71	1.32	1.10–1.58	1.56	1.26–1.94
Ethnicity							
Estonian	41.82	1.00		1.00		1.00	
Russian	43.42	1.09	0.94–1.26	1.01	0.86–1.18	1.19	1.00–1.43
Other	42.42	1.09	0.86–1.39	1.01	0.78–1.30	1.25	0.95–1.64
Education							
University	36.26	1.00		1.00		1.00	
Upper secondary	42.74	1.29	1.08–1.54	1.13	0.93–1.36	1.21	0.99–1.49
Lower secondary	44.23	1.36	1.10–1.69	1.04	0.83–1.31	1.21	0.93–1.56
Household adjusted income							
4 quartile (highest)	41.66	1.00		1.00		1.00	
3 quartile	44.03	1.09	0.90–1.32	0.99	0.81–1.21	0.93	0.76–1.15
2 quartile	44.39	1.08	0.89–1.31	0.84	0.68–1.03	0.80	0.64–0.99
1 quartile (lowest)	43.50	0.96	0.80–1.17	0.69	0.56–0.85	0.69	0.54–0.87
Economic activity <sup>a</sup>							
Employed	38.48	1.00		1.00		1.00	
Unemployed	27.04	0.64	0.48–0.84	0.50	0.37–0.67	0.55	0.39–0.76
Economically not active	37.96	1.03	0.86–1.24	0.71	0.58–0.87	0.73	0.59–0.91

SPR is directly standardised using an Estonian 2000 population (Statistical Office, 2001). The sample includes the 25 to 74 year-old population.

<sup>a</sup> SPR calculated for age 25–59

<sup>b</sup> Model I – Odds ratios adjusted for age, gender

<sup>c</sup> Model II – Odds ratios adjusted for age, gender, health status, prolonged nature illnesses and disability, mental health

<sup>d</sup> Model III – Odds ratios adjusted for age, gender, place of residence, ethnicity, education, household adjusted income, economic activity, health status, prolonged nature illnesses and disability, and mental health

**Table A1.3.** Visit to a specialist during last 6 months. Standardised prevalence rate per 100 people (SPR) and odds ratios (OR) with 95% confidence intervals (CI) in 1999

Variable	SPR	I Model <sup>b</sup>		II Model <sup>c</sup>		III Model <sup>d</sup>	
		OR	95% CI	OR	95% CI	OR	95% CI
Total	30.74						
Gender							
Men	24.93	1.00		1.00		1.00	
Women	36.56	1.78	1.54–2.05	1.71	1.47–1.98	1.65	1.41–1.94
Place of residence							
Tallinn	37.31	1.00		1.00		1.00	
Other urban area	29.68	0.73	0.62–0.86	0.64	0.54–0.76	0.73	0.60–0.87
Rural area	26.34	0.62	0.52–0.74	0.52	0.43–0.62	0.61	0.49–0.76
Ethnicity							
Estonian	28.77	1.00		1.00		1.00	
Russian	35.03	1.33	1.14–1.55	1.28	1.09–1.51	1.14	0.95–1.38
Other	31.91	1.17	0.90–1.51	1.09	0.84–1.43	1.04	0.78–1.39
Education							
University	38.65	1.00		1.00		1.00	
Upper secondary	30.54	0.75	0.63–0.90	0.63	0.52–0.76	0.73	0.59–0.90
Lower secondary	27.16	0.60	0.48–0.75	0.42	0.33–0.54	0.57	0.43–0.74
Household adjusted income							
4 quartile (highest)	35.59	1.00		1.00		1.00	
3 quartile	31.14	0.87	0.71–1.06	0.78	0.63–0.96	0.87	0.70–1.08
2 quartile	31.05	0.84	0.69–1.02	0.64	0.52–0.80	0.79	0.63–1.00
1 quartile (lowest)	25.68	0.66	0.54–0.81	0.47	0.38–0.59	0.66	0.52–0.85
Economic activity <sup>a</sup>							
Employed	28.94	1.00		1.00		1.00	
Unemployed	18.80	0.61	0.45–0.83	0.49	0.35–0.69	0.54	0.38–0.78
Economically not active	36.36	1.14	0.95–1.38	0.83	0.67–1.02	1.00	0.80–1.26

SPR is directly standardised using an Estonian 2000 population (Statistical Office, 2001). The sample includes the 25 to 74 year-old population.

<sup>a</sup> SPR calculated for age 25–59

<sup>b</sup> Model I – Odds ratios adjusted for age, gender

<sup>c</sup> Model II – Odds ratios adjusted for age, gender, health status, prolonged nature illnesses and disability, mental health

<sup>d</sup> Model III – Odds ratios adjusted for age, gender, place of residence, ethnicity, education, household adjusted income, economic activity, health status, prolonged nature illnesses and disability, and mental health

**Table A1.4.** Visits to dentist during last 6 months. Standardised prevalence rate per 100 people (SPR) and odds ratios (OR) with 95% confidence intervals (CI) in 1999

Variable	SPR	I Model <sup>b</sup>		II Model <sup>c</sup>		III Model <sup>d</sup>	
		OR	95% CI	OR	95% CI	OR	95% CI
Total	30.96						
Gender							
Men	25.63	1.00		1.00		1.00	
Women	36.29	1.66	1.45–1.92	1.64	1.42–1.88	1.64	1.40–1.91
Place of residence							
Tallinn	35.33	1.00		1.00		1.00	
Other urban area	30.59	0.85	0.72–0.99	0.83	0.71–0.98	0.90	0.75–1.08
Rural area	27.44	0.73	0.61–0.87	0.72	0.60–0.86	0.81	0.66–1.01
Ethnicity							
Estonian	31.20	1.00		1.00		1.00	
Russian	29.34	0.93	0.80–1.09	0.94	0.81–1.10	0.91	0.76–1.09
Other	30.66	1.01	0.78–1.30	1.03	0.79–1.33	1.02	0.77–1.34
Education							
University	40.80	1.00		1.00		1.00	
Upper secondary	32.00	0.72	0.60–0.85	0.70	0.59–0.84	0.83	0.69–1.01
Lower secondary	23.10	0.42	0.33–0.53	0.42	0.33–0.53	0.56	0.43–0.73
Household adjusted income							
4 quartile (highest)	36.81	1.00		1.00		1.00	
3 quartile	36.16	0.99	0.82–1.20	0.99	0.81–1.20	1.10	0.90–1.35
2 quartile	29.29	0.71	0.58–0.86	0.70	0.57–0.86	0.87	0.69–1.08
1 quartile (lowest)	20.13	0.46	0.38–0.57	0.45	0.37–0.56	0.62	0.48–0.78
Economic activity <sup>a</sup>							
Employed	35.63	1.00		1.00		1.00	
Unemployed	17.66	0.46	0.33–0.63	0.45	0.33–0.62	0.66	0.47–0.93
Economically not active	22.15	0.61	0.50–0.74	0.60	0.49–0.73	0.76	0.61–0.96

SPR is directly standardised using an Estonian 2000 population (Statistical Office, 2001). The sample includes the 25 to 74 year-old population.

<sup>a</sup> SPR calculated for age 25–59

<sup>b</sup> Model I – Odds ratios adjusted for age, gender

<sup>c</sup> Model II – Odds ratios adjusted for age, gender, health status, prolonged nature illnesses and disability, mental health

<sup>d</sup> Model III – Odds ratios adjusted for age, gender, place of residence, ethnicity, education, household adjusted income, economic activity, health status, prolonged nature illnesses and disability, and mental health

**Table A1.5.** Hospitalisation during last year. Standardised prevalence rate per 100 people (SPR) and odds ratios (OR) with 95% confidence intervals (CI) in 1999

Variable	SPR	I Model <sup>b</sup>		II Model <sup>c</sup>		III Model <sup>d</sup>	
		OR	95% CI	OR	95% CI	OR	95% CI
Total	12.14						
Gender							
Men	11.67	1.00		1.00		1.00	
Women	12.61	1.15	0.94–1.40	1.04	0.84–1.28	1.01	0.80–1.27
Place of residence							
Tallinn	12.39	1.00		1.00		1.00	
Other urban area	11.88	0.99	0.78–1.26	0.84	0.65–1.08	0.83	0.63–1.08
Rural area	12.51	1.08	0.84–1.40	0.85	0.65–1.11	0.81	0.59–1.11
Ethnicity							
Estonian	11.72	1.00		1.00		1.00	
Russian	12.74	1.07	0.86–1.34	1.00	0.79–1.27	0.94	0.72–1.23
Other	12.66	1.22	0.86–1.74	1.09	0.75–1.58	1.06	0.71–1.57
Education							
University	10.21	1.00		1.00		1.00	
Upper secondary	12.97	1.27	0.95–1.68	1.02	0.76–1.38	1.04	0.75–1.45
Lower secondary	13.88	1.23	0.88–1.71	0.78	0.55–1.11	0.77	0.52–1.13
Household adjusted income							
4 quartile (highest)	8.18	1.00		1.00		1.00	
3 quartile	13.62	1.64	1.20–2.25	1.45	1.04–2.00	1.48	1.06–2.07
2 quartile	11.76	1.57	1.15–2.16	1.11	0.79–1.55	1.18	0.82–1.68
1 quartile (lowest)	14.84	2.05	1.51–2.80	1.32	0.94–1.83	1.51	1.04–2.20
Economic activity <sup>a</sup>							
Employed	8.53	1.00		1.00		1.00	
Unemployed	9.12	1.11	0.72–1.72	0.88	0.56–1.38	0.75	0.46–1.24
Economically not active	20.79	2.02	1.56–2.61	1.19	0.89–1.59	1.13	0.83–1.55

SPR is directly standardised using an Estonian 2000 population (Statistical Office, 2001). The sample includes the 25 to 74 year-old population.

<sup>a</sup> SPR calculated for age 25–59

<sup>b</sup> Model I – Odds ratios adjusted for age, gender

<sup>c</sup> Model II – Odds ratios adjusted for age, gender, health status, prolonged nature illnesses and disability, mental health

<sup>d</sup> Model III – Odds ratios adjusted for age, gender, place of residence, ethnicity, education, household adjusted income, economic activity, health status, prolonged nature illnesses and disability, and mental health

## Annex 2. Inequalities in service utilisation in Estonia, Latvia and Lithuania

**Table A2.1.** Utilisation of primary care in Estonia (EE), Latvia (LV) and Lithuania (LT) in 1999

Variable	Prevalence rate			Model I			Model II								
	EE	LV	LT	Estonia	Latvia	Lithuania	Estonia	Latvia	Lithuania						
				OR	95% CI	OR	95% CI	OR	95% CI						
<b>Gender</b>															
Women	47.8	42.9	50.7	1.70	1.49–1.94	1.66	1.40–1.96	1.86	1.56–2.22	1.63	1.42–1.88	1.48	1.24–1.77	1.62	1.34–1.96
Men	35.0	31.1	36.8	1.00		1.00		1.00		1.00		1.00		1.00	
<b>Place of residence</b>															
Rural	45.8	37.3	42.1	1.22	1.06–1.40	0.93	0.78–1.11	0.92	0.77–1.12	1.17	1.01–1.36	0.92	0.77–1.11	0.91	0.74–1.11
Urban	41.3	38.3	45.3	1.00		1.00		1.00		1.00		1.00		1.00	
<b>Ethnicity</b>															
Estonian/Latvian/Lithuanian	42.0	37.5	43.4	0.92	0.80–1.05	0.90	0.76–1.06	0.78	0.61–1.00	0.99	0.86–1.14	0.99	0.83–1.18	0.82	0.63–1.07
Other	43.9	38.9	49.4	1.00		1.00		1.00		1.00		1.00		1.00	
<b>Education</b>															
University	40.6	41.5	45.6	0.82	0.68–0.99	1.36	1.09–1.69	0.99	0.78–1.27	1.04	0.86–1.27	1.79	1.41–2.27	1.19	0.91–1.55
Upper secondary	43.5	38.8	42.4	0.94	0.78–1.12	1.23	0.99–1.53	0.91	0.71–1.16	1.06	0.87–1.28	1.38	1.10–1.73	0.98	0.75–1.28
Lower secondary	42.6	33.0	42.4	1.00		1.00		1.00		1.00		1.00		1.00	
<b>Household adjusted income</b>															
4 quartile (highest)	41.8	36.7	48.2	1.04	0.86–1.26	1.30	1.02–1.66	1.48	1.14–1.92	1.45	1.18–1.78	1.83	1.41–2.37	1.81	1.36–2.39
3 quartile	45.0	45.3	44.8	1.12	0.93–1.36	1.83	1.44–2.34	1.23	0.94–1.60	1.41	1.15–1.73	2.15	1.66–2.79	1.34	1.01–1.78
2 quartile	45.2	41.3	46.4	1.12	0.92–1.36	1.53	1.20–1.96	1.37	1.05–1.78	1.20	0.98–1.48	1.56	1.21–2.02	1.44	1.08–1.92
1 quartile (lowest)	43.4	36.7	39.8	1.00		1.00		1.00		1.00		1.00		1.00	

Prevalence rate is directly standardised using an European standard population (Waterhouse et al., 1976). The sample includes the 25 to 74 year-old population.

Model I: Odds ratios adjusted for age, gender

Model II: Odds ratios adjusted for age, gender, self assessed health status, prolonged illnesses and disability, mental health

**Table A2.2.** Utilisation of outpatient clinics in Estonia (EE), Latvia (LV) and Lithuania (LT) in 1999

Variable	Prevalence rate			Model I			Model II								
	EE	LV	LT	Estonia	Latvia	Lithuania	Estonia	Latvia	Lithuania						
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI					
Gender															
Women	60.8	53.9	55.7	1.87	1.65-2.13	1.77	1.51-2.09	1.79	1.51-2.12	1.83	1.59-2.10	1.60	1.35-1.91	1.51	1.25-1.81
Men	45.1	38.9	41.2	1.00		1.00		1.00		1.00		1.00		1.00	
Place of residence															
Rural	54.4	44.5	46.2	1.03	0.90-1.18	0.83	0.70-0.98	0.87	0.72-1.04	0.96	0.83-1.11	0.82	0.68-0.97	0.85	0.70-1.03
Urban	54.6	49.3	51.0	1.00		1.00		1.00		1.00		1.00		1.00	
Ethnicity															
Estonian/Latvian/Lithuanian	53.6	47.6	49.2	0.89	0.78-1.02	0.96	0.81-1.12	0.91	0.72-1.16	0.96	0.83-1.11	1.05	0.89-1.25	0.99	0.77-1.28
Other	56.3	47.8	50.5	1.00		1.00		1.00		1.00		1.00		1.00	
Education															
University	56.6	54.7	53.8	1.09	0.91-1.31	1.58	1.27-1.96	1.33	1.05-1.70	1.47	1.21-1.80	2.14	1.69-2.70	1.68	1.29-2.20
Upper secondary	53.6	46.5	47.9	1.00	0.84-1.20	1.16	0.94-1.44	1.10	0.86-1.40	1.16	0.96-1.41	1.31	1.04-1.63	1.25	0.96-1.62
Lower secondary	51.5	40.5	43.6	1.00		1.00		1.00		1.00		1.00		1.00	
Household adjusted income															
4 quartile (highest)	55.7	49.9	58.0	1.28	1.06-1.54	1.62	1.28-2.04	1.93	1.49-2.49	1.89	1.53-2.32	2.35	1.83-3.02	2.42	1.83-3.19
3 quartile	56.1	52.9	48.8	1.23	1.02-1.49	1.79	1.41-2.27	1.32	1.02-1.70	1.59	1.30-1.96	2.12	1.64-2.73	1.46	1.11-1.93
2 quartile	57.9	51.2	49.8	1.27	1.05-1.54	1.61	1.27-2.04	1.35	1.04-1.75	1.40	1.13-1.72	1.65	1.29-2.13	1.37	1.04-1.82
1 quartile (lowest)	52.7	38.4	43.1	1.00		1.00		1.00		1.00		1.00		1.00	

Prevalence rate is directly standardised using an European standard population (Waterhouse et al., 1976). The sample includes the 25 to 74 year-old population.

Model I: Odds ratios adjusted for age, gender

Model II: Odds ratios adjusted for age, gender, self assessed health status, prolonged illnesses and disability, mental health

**Table A2.3.** Utilisation of hospital care in Estonia (EE), Latvia (LV) and Lithuania (LT) in 1999

Variable	Prevalence rate			Model I			Model II								
	EE	LV	LT	Estonia	Latvia	Lithuania	Estonia	Latvia	Lithuania						
	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI	OR	95% CI					
<b>Gender</b>															
Women	12.3	13.8	12.3	1.15	0.94–1.40	1.06	0.84–1.35	1.02	0.79–1.32	1.04	0.84–1.29	0.91	0.70–1.18	0.75	0.57–1.00
Men	11.2	12.6	11.6	1.00		1.00		1.00		1.00		1.00		1.00	
<b>Place of residence</b>															
Rural	12.2	13.1	10.7	1.09	0.88–1.34	0.97	0.76–1.23	0.83	0.63–1.09	0.95	0.76–1.18	0.90	0.69–1.17	0.81	0.60–1.09
Urban	11.6	13.3	12.6	1.00		1.00		1.00		1.00		1.00		1.00	
<b>Ethnicity</b>															
Estonian/Latvian/Lithuanian	11.4	12.9	11.9	0.90	0.74–1.11	0.89	0.71–1.12	1.00	0.69–1.43	0.98	0.79–1.21	0.97	0.76–1.25	1.05	0.71–1.54
Other	12.8	13.8	11.9	1.00		1.00		1.00		1.00		1.00		1.00	
<b>Education</b>															
University	10.9	11.7	11.8	0.87	0.83–1.40	0.77	0.56–1.04	0.91	0.64–1.28	1.30	0.96–1.74	1.13	0.80–1.58	1.05	0.72–1.55
Upper secondary	12.8	13.7	12.0	1.08	0.66–1.15	0.92	0.69–1.23	0.92	0.65–1.31	1.35	1.02–1.78	1.07	0.78–1.47	1.22	0.83–1.78
Lower secondary	13.6	15.4	14.3	1.00		1.00		1.00		1.00		1.00		1.00	
<b>Household adjusted income</b>															
4 quartile (highest)	8.0	10.4	9.9	0.49	0.36–0.67	0.72	0.51–1.03	0.97	0.65–1.47	0.77	0.55–1.07	1.16	0.79–1.71	1.19	0.76–1.85
3 quartile	13.0	13.7	12.9	0.80	0.61–1.05	1.01	0.72–1.42	1.22	0.83–1.81	1.10	0.81–1.47	1.27	0.89–1.83	1.32	0.86–2.01
2 quartile	11.7	17.0	14.5	0.77	0.58–1.02	1.19	0.86–1.65	1.40	0.95–2.05	0.84	0.62–1.14	1.18	0.83–1.68	1.36	0.90–2.06
1 quartile (lowest)	14.9	13.9	10.2	1.00		1.00		1.00		1.00		1.00		1.00	

Prevalence rate is directly standardised using an European standard population (Waterhouse et al., 1976). The sample includes the 25 to 74 year-old population.

Model I: Odds ratios adjusted for age, gender

Model II: Odds ratios adjusted for age, gender, self-assessed health status, prolonged illnesses and disability, mental health

## SUMMARY IN ESTONIAN

### **Tervishoiuteenuste kasutamine Eestis: sotsiaal-majanduslikud tegurid ja omaosalusest tingitud finantskoormus**

Tervise, tervisevajaduste, tervise mõjurite ja tervisesüsteemi kontseptsioonid on viimase kuuekümne aasta jooksul kiiresti arenenud. Seejuures ei piirduta kontseptsioonides üksnes haiguse ja arstiabi seostega, vaid hõlmatakse lisaks terviseendust ja haiguste ennetust ning käsitletakse tervist laiemas indiviidi ja sotsiaalse arengu kontekstis (Evans, Stoddart, 1990; Sen, 1999; Commission on Social Determinants of Health, 2008).

Sotsiaal-majanduslike erinevusi tervises on täheldatud paljudes Euroopa riikides. On leitud, et kvaliteetsete tervishoiuteenuste vähene kättesaadavus moodustab ühe osa madalama sotsiaal-majandusliku staatuse ja halva tervise vahelises põhjuslikust ahelas. Seda järeldust on kinnitanud olulised erinevused meditsiiniliste sekkumistega välditavas suremuses sotsiaal-majanduslike rühmade vahel (Mackenbach *et al.*, 2007).

Tervishoiuteenuste kättesaadavuse mõiste ühendab teenuste pakkumise, nõudluse ja vajaduse. Pakkujapoolsed tegurid mõjutavad teenuste olemasolu, näiteks mõjutavad seda kättesaadavust füüsilise ja inimressursi jaotus, ooteajad, suunamise seaduspärasused, patsiendi kohtlemise viis, ravi järjepidevus ja kvaliteet (Whitehead, 1990; Gulliford *et al.*, 2002). Nõudluse poolt mõjutab samuti tervisesüsteem ja sellised tegurid nagu eelsoodumuste, võimaldavate ressursside ja vajadusega seotud tunnused, tervisekäitumine ja teenuste kasutamine ning tervisetulemiga seotud näitajad alates inimeste hinnangust oma tervisele kuni rahuloluni (Andersen, 1995). Tervisevajadus ja selle arvestamine uuringutes on kompleksne meetodiline ülesanne. Kui teoorias tuginetakse vajaduse arvestamisel inimese võimele saada kasu tervishoiuteenustest, siis empiirilistes uuringutes kasutatakse enamasti lähendina isiku hinnangut oma tervisele (Smith *et al.*, 2009).

Arstiabi kättesaadavuse mõõtmiseks kasutatakse mitmeid indikaatoreid ning muu hulgas on võimalik jälgida tervishoiuteenuste kasutamist. Selleks, et hinnata ebavõrdsust tervishoiuteenuste kättesaadavuses, on välja pakutud kolm kättesaadavuse definitsiooni: a) olemasolevate teenuste võrdne kättesaadavus võrdse vajaduse korral, b) võrdne teenuste kasutamine võrdse vajaduse korral ja c) võrdne teenuste kvaliteet kõigile (Whitehead, 1990). Ehkki poliitikas ja praktikas on kõige kohasem variant a, siis enamasti mõõdetakse ja analüüsitakse varianti b. Ebavõrdsuseks loetakse olukorda, kus pärast tervisevajaduste arvestamist saavad kõrgema sotsiaal-majandusliku staatusega isikud suurema tõenäosusega kasutada või kasutavad tervishoiuteenuseid rohkem (Smith *et al.*, 2009). Üks tervisesüsteemi eesmärkidest on jaotada rahastamiskoormus õiglaselt, lähtudes maksevõimest ning eesmärgist, et inimesed ja leibkonnad ei vaesuks haiguse või arstiabi kasutamise tulemusena (World Health Organization Regional Office for Europe, 2008). Seega vajavad omaette analüüsi ja

tähelepanu sellised rahalised barjäärid nagu omaosalus tervishoiuteenuste kasutamisel.

Alates taasiseseisvumisest on Eesti jõuliselt ja suhteliselt edukalt korraldanud ümber oma majandust ja sotsiaalvaldkonda. Kui laiaulatuslikud seadusandlikud muudatused, mis mõjutasid ka arstiabi kättesaadavust, leidsid aset 1990. aastate alguses ja käesoleva sajandi alguses, siis viimastel aastatel on tähelepanu liikunud süsteemi väiksematele muudatustele. Praegune tervisesüsteem rajaneb solidaarsuse põhimõttest lähtuval tervishoiu rahastamisel ja ühe rahastaja (haigekassa) süsteemil, kusjuures ravikindluskate on peaaegu universaalne; nüüdisaegsel teenuseosutajate võrgustikul, mis põhineb perearstikesksetel esmatasandi arstiabil; nüüdisaegsetel haiglateenustel ning ravimite paremal kättesaadavusel. Suuremat tähelepanu pööratakse rahvatervisele ja e-tervise lahendustele. Muutustega on püütud tagada ka piisavat arstiabi kättesaadavust (Habicht & Habicht, 2008; Koppel *et al.*, 2008).

## **Uurimistöö eesmärk**

Käesoleva töö eesmärk oli analüüsida tervishoiuteenuste kasutamist Eestis, hinnates arstiabi kättesaadavust, sotsiaal-majanduslike tegurite mõju ja omaosalusest tingitud finantskoormust.

Uurimistöö alameesmärgid olid:

- analüüsida tervishoiuteenuste (telefonikonsultatsioonid, esmatasandi visiidid, hambaarsti külastused, ambulatoorse eriarstiabi visiidid ja hospitaliseerimine) kasutamist ja sellega seotud sotsiaal-majanduslikku ebavõrdsust;
- pakkuda rahvusvahelist võrdlust, analüüsides tervishoiuteenuste kasutamist ja sotsiaal-majanduslikku ebavõrdsust Balti riikides;
- analüüsida tervishoiu rahastamissüsteemi poolt pakutavat finantskaitset, pöörates tähelepanu omaosaluse jaotusele leibkondade sissetulekurühmade ja eri tervishoiuteenuste tüüpide lõikes ning muutustele perioodil 1995–2002.

## **Uurimistöö andmed ja meetodika**

Käesolevas uurimistöös on kasutatud 1999. aastal Eestis, Lätis ja Leedus läbi viidud läbilõikelist uuringut NORBALT II (I ja II artikkel) ja sama meetodika alusel aastatel 1995, 2001 ja 2002 läbi viidud Eesti leibkonna eelarve uuringuid (III artikkel). Analüüsides tervishoiuteenuste kasutamist Eestis (I artikkel), on statsionaarse haiglaravi kasutamise võrdluseks kasutatud 1994. aastal läbi viidud NORBALT I uuringut.

Läbilõikelised küsitlusuuringud viisid läbi vastavate riikide statistikaametid, keda juhendas Norra Fafo instituut (Central Statistical Bureau of Latvia, 1999; Marksoo *et al.*, 2000; Ministry of Social Security and Labour of the Republic of Lithuania, 2000; Aasland and Tyldum, 2002). Kõigis kolmes riigis oli vastamismäär oli üle 90%. Käesolevas töös kasutati täiskasvanud rahvastiku

valimit vanuses 25–74 aastat (Kunst *et al.*, 2002b). 1999. aastal analüüsitud valim hõlmas Eestis 3990, Lätis 2512 ja Leedus 2211 isikut.

Tervishoiuteenuste kasutamist on analüüsitud Eestis telefonikonsultatsioonide, esmatasandi visiitide, hambaarsti külastuste, ambulatoorse eriarstiabi visiitide ja hospitaliseerimiste lõikes (I artikkel). Kõiki arstiabi liike on analüüsitud sotsiaal-majanduslike (sissetulek, haridus, staatus tööturul) ja teiste tegurite (sugu, elukoht, rahvus) lõikes. Lisaks võeti arvesse vajadust arstiabi järele, kasutades selleks erinevaid tervist iseloomustavaid näitajaid (nt. isiku hinnang oma tervisele, ning kehalisi ja vaimse tervise piiranguid). Arstiabi kasutamist Eestis, Lätis ja Leedus on võrreldud esmatasandi visiitide, ambulatoorsete eriarstiabi visiitide ja hospitaliseerimiste lõikes ning lisaks uuriti arstiabi kättesaadavuse barjääre (sh võimalust konsulteerida „hea” arstiga, minna operatsioonile või olla haiglaravil) (II artikkel). Sarnaselt eelmisele analüüsile on teenuste kasutamist analüüsitud sotsiaal-majanduslike ja teiste tegurite lõikes.

Tervishoiuteenuste kasutamist on esmalt kirjeldatud otseselt standarditud kasutusmääradena, kasutades soole-vanusele kohandamist (Eesti analüüs (I artikkel) Eesti rahvastikku 2000. aastal (Statistical Office, 2001) ja Balti riikide võrdluses (II artikkel) Euroopa standardrahvastikku (Waterhouse *et al.*, 1976)). Järgmise sammuna on kasutatud logistilist regressiooni, täpsemalt kolme eri mudelit, et iseloomustada teenuste kasutamist: a) sotsiaal-majanduslike rühmade lõikes, võttes arvesse soo-vanuskoostise struktuuri; b) pärast tervisevajaduse arvestamist ning c) kui kõik sotsiaal-majanduslikud tegurid on samaaegselt arvesse võetud. Erinevalt Eesti analüüsist on Balti võrdluses kasutatud ainult kahte esimest mudelit. Tulemused on esitatud šansisuhtena ja 95% usalduspiiridega.

Omaosaluse analüüsiks (III artikkel) on kasutatud 1995., 2001. ja 2002. aastal tehtud leibkonna eelarve uuringut, mida on läbi viinud statistikamet (EMOR, 1996; Statistical Office, 2002, 2003a, 2003b). Uuringus kasutatud valimite suurused aastati on vastavalt 2816, 6053 ja 5721 vaatlust.

Omaosaluse analüüsil on kirjeldatud leibkondade poolt tervishoiule tehtavate kulutuste suurust ja jaotust leibkonna sissetuleku kui ühe sotsiaal-majandusliku teguri kaudu. Järgnevalt on kirjeldatud eri tervishoiuteenustele (sh käsimüügi- ja retseptiravimid, ambulatoorne abi ja hambaravi, hospitaliseerimine) tehtavaid kulutusi viimastel aastatel. Seejärel on analüüsitud finantskaitset, võttes vaatluse alla leibkondade suured tervishoiukulud (üle 20% maksevõimest), mis toovad kaasa allapoole vaesuspiiri langemise (Xu *et al.*, 2003b). Lõpuks on analüüsitud, millised sotsiaal-majanduslikud tegurid (sh sissetulek, staatus tööturul, perestruktuur, sugu) seonduvad suurte tervishoiukulude riskiga ja mõjutavad seda.

## Tulemused

- (I) Olukorra analüüs 1999. aastal tõi välja olulise variatsiooni tervishoiuteenuste kasutamises kõigi uuritud sotsiaal-majanduslike tegurite lõikes.
  - a) Maapiirkondade elanikud kasutavad võrreldes linnaelanikega enam telefonikonsultatsioone ja esmatasandi visiite, kuid vähem ambulatoorset

- eriarstiabi või hambaravi. b) Rahvusega seotud erinevused teenuste kasutamises on väiksed ja ebaolulised. c) Kõiki uuritud teenuseid kasutavad naised rohkem kui mehed. d) Pärast tervisevajaduse arvesse võtmist on kõrgema sotsiaalse staatusega isikutel (sissetulek, haridustase ja staatus tööturul) suurem tõenäosus kasutada arstiabi, mis viitab ebavõrdsusele tervishoiuteenuste kättesaadavuses. e) Haiglaravi kasutuses märgatavaid sotsiaal-majanduslikke erinevusi ei leitud.
- (II) Võrreldes Eesti, Läti ja Leedu olukorda, on näha riigiti sotsiaal-majanduslikke erinevusi tervishoiuteenuste kasutamises. a) Kõigis kolmes riigis esineb sotsiaal-majanduslik ebavõrdsus ambulatoorsete eriarstiabi visiitide puhul, samas esmatasandi visiitide korral esineb seda vähem. Ebavõrdsus haiglaravi kasutuses on väike ega ole enamasti tuvastatav. b) Ebavõrdsus teenuste kasutamises on sissetulekuti suurem ja pidevam kui haridustasemeti. Elukohast lähtuvaid suuri ja selgeid erinevusi teenuste kasutamises ei tuvastatud. c) Ebavõrdsus teenuste kasutamises oli suurim Lätis, kus võrreldes Eesti ja Leeduga oli enim tunnetatud barjääre arstiabi kasutamises.
- (III) Võrreldes muutusi ajas leiti, et omaosalus tervishoiu rahastamisel on Eestis kasvanud. a) Leibkondade omaosalus tervishoiuteenuste eest tasumisel 1995–2002 on kasvanud ligi kolm korda absoluutväärtuses ja poolteist korda osatähtsusena leibkonna kuludest, samas on osatähtsuse kasv väiksema sissetulekuga leibkondades olnud suurem kui rikkamates. b) Suurim osa 2002. aasta omaosalusest kulus leibkondadel ravimitele, seejärel ambulatoorsele arstiabile ja hambaravile. Väiksema sissetulekuga leibkondadel kulus enamik omaosalusest ravimite väljaostmiseks. c) Leibkondade hulk, kes teevad suuri kulutusi (st rohkem kui 20% oma maksevõimest) omaosalusele, on kasvanud 3,4%lt 1995. aastal kuni 7,4%ni 2002. aastal. d) 2002. aastal langes 1,3% leibkondadest omaosalustasude tõttu allapoole vaesuspiiri. e) Kõige enam on suurtest kuludest ohustatud madala sissetulekuga ja vanemate (üle 65aastased) pereliikmetega leibkonnad eeskätte ravimitele tehtavate kulutuste tõttu.

## Järeldused

1. Käesolev uuring annab esmakordse ülevaate tervishoiuteenuste kasutamise muistritest, sotsiaal-majanduslikest erinevustest teenuste kasutamisel, omaosaluse osatähtsusest leibkonna kuludes ja omaosalusest tingitud finantskoormustest Eesti tervishoius.
2. Järgides tervisesüsteemis solidaarsuse, õiglase kättesaadavuse (st peamiselt võrdset geograafilist kättesaadavust) ja piiratud omaosaluse printsiipi, on seni tagatud suhteliselt hea teenuste kättesaadavus.
3. Pärast 1990. aastate alguse ulatuslikke reforme on Eestis arstiabi kättesaadavus ja finantskaitse võrreldav teiste ELi ja OECD riikidega. Eesti olukord on parem kui teiste Balti riikide, eriti Läti oma.
4. Sotsiaal-majanduslikud erinevused arstiabi kasutamises ilmnevad seoses isikute sissetuleku, hariduse ja staatusega tööturul. Samuti on teenuste

kasutamises piirkondlikke erinevusi. Ebavõrdsus, mis väljendub kõrgema sotsiaalse staatusega isikute soosimises, esineb telefonikonsultatsioonide, ambulatoorse eriarstiabi visiitide ja hambaarsti külastuste puhul. 1990. aastate lõpus oli täheldatav väike ebavõrdsus ka esmatasandi arstiabi kasutamises kõrgema sissetulekuga isikute kasuks, kuid ilma selge gradiendita. Hilisemad uuringud on näidanud õiglast teenuste jaotust perearsti- ja kiirabiteenuste kasutamises. Statsionaarses haiglaravis sotsiaal-majanduslikke erinevusi teenuste kasutamises ei leitud.

5. Inimesed on tunnetanud barjääre arstiabi kasutamises seoses ambulatoorse eriarstiabiga ja statsionaarse haiglaraviga, seejuures on barjääridele osutanud pigem madala sotsiaalse staatusega isikud. Eestis on barjääride mõju madalam kui Lätis ja Leedus. Sellegipoolest vajavad need edasist tähelepanu.
6. Eesti tervishoiu rahastamissüsteem pakub üldjoontes adekvaatset finantskaitset suuremale osale rahvastikust. Samas näitavad uuringu tulemused finantskaitse vähenemist läbi aja ja eelkõige vaesemate leibkondade hulgas.
7. Uuringus tuleb selgelt välja, et omaosalus on oluline barjäär arstiabi kasutamisel, seda eriti retseptiravimite ja hambaravi puhul. Omaosaluse vähendamiseks tuleks kehtestada omaosaluse erandid madalama sissetuleku ja suurema tervisevajadusega inimestele. Omaosaluse mõju arstiabi kättesaadavusele eri rahvastikurühmades tuleb hinnata ja seirata regulaarselt.
8. Analüüsides järeldub, et suurema omaosalusega teenuste kasutamises ilmneb suurem ebavõrdsus, esinevad kättesaadavuse barjäärid (nt täiskasvanute hambaravis) või on suurem risk langeda vaesusesse (nt ravimite kasutamise tulemusena). Seevastu on finantskaitse tagatud esmatasandi teenuste ja statsionaarse haiglaravi puhul, mida kaetakse ravikindlustusest kas omaosaluseta või minimaalse omaosalusega.
9. Eestis on terviseteenuste kasutamise analüüside koostamine algusjärgus ja see temaatika väärib arendamist. 2002. aasta esimeses tervise sotsiaalse ebavõrdsuse uuringus esitati soovitusel tervise ja tervishoiu variatsioonide uurimiseks, sh kirjeldavateks ja analüütilisteks uuringuteks, seiresüsteemi loomiseks, strateegiate ja poliitikate hindamiseks ning andmete olemasolu parandamiseks. Kuigi mitmes valdkonnas on näha edasiminekut, on seatud eesmärgid seni ajakohased tervise ebavõrdsuse uurimiseks. Rohkem tuleks käsitleda teaduse ja praktika ühendamise teemasid.

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## **PUBLICATIONS**

# CURRICULUM VITAE

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### Education

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| 1991–1994 | Gustav Adolf Gymnasium, Tallinn   |
| 1994–2000 | University of Tartu, Faculty of Medicine, medicine<br>(Qualification of Medical Doctor, MD) |
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### Professional Employment

- |           |   |
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| 2003–...  | Head of Country Office, WHO Country Office in Estonia,<br>WHO Regional Office for Europe, World Health Organization   |
| 2001–2003 | Health Specialist, Estonian Health Insurance Fund, Bureau of<br>Health Economics  |
| 1998–2002 | Expert and consultant to various health services research<br>projects and health statistics initiatives related to Department of<br>Public Health (University of Tartu) and Ministry of Social<br>Affairs in Estonia among others |

### Scientific work

Main research interest has constantly been related to health policy and its development; health system reforms and complex approaches; organising health financing; service provision in public health and health care; inequalities in health and health care utilisation and bridging the research and policy.

Since 2000, lecturing at the University of Tartu, Department of Public Health in undergraduate and post-graduate courses related to health systems, health sector reform processes, health financing, measuring performance of the health system and its functions, databases in public health and international health. The same topics have been covered in short-term national and international courses in other settings.

Selected materials published in English in peer reviewed journals (8 articles), co-author of five books, four book chapters, and number of reports. In addition over 25 presentations have been made in international and national conferences. In addition, presentations of the research results have been made in various conferences in Estonia and internationally, targeting the non-scientific community, as well articles written to general audience.

### **Peer reviewed international articles**

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6. Habicht J, Xu K, Couffinhal A, Kutzin J (2006). Detecting changes in financial protection: creating evidence for policy in Estonia. *Health Policy and Planning*, 21(6):421–431.
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# ELULOOKIRJELDUS

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### Hariduskäik

1991–1994 Gustav Adolfi Gümnaasium  
1994–2000 Tartu Ülikool, arstiteaduskond, ravi eriala  
2000–2010 Tartu Ülikool, arstiteaduskond, tervishoiu instituut,  
doktorantuur

### Ametikäik

2003–... WHO esindaja Eestis, WHO esindus Eestis, WHO Euroopa  
Regionaalbüroo, Maailma Terviseorganisatsioon  
2001–2003 tervishoiu spetsialist, Eesti Haigekassa (tervishoiuökonoomika  
büroo)  
1998–2002 ekspert, konsultant ja projektijuht mitmete (teadus)projektide  
meeskonnas Tartu Ülikooli tervishoiu instituudis ja  
Sotsiaalministeeriumis

### Teadustöö

Läbi aastate on enim uuritud tervisepoliitikat ja selle arengut, tervisesüsteemi reforme, tervise valdkonna rahastamise korraldust, rahvatervise- ja tervishoiuteenuste pakkumist, ebavõrdsust tervises ja tervishoiuteenuste kasutamises ning kuidas teadust ja praktikat ühendada.

Alates 2000. aastast läbi viidud tervishoiu instituudis põhiõppe ja kraadiõppe kursusi järgmistel teemadel: tervisesüsteemid ja reformid, tervise valdkonna rahastamine, tervisesüsteemi toimivuse mõõtmine, andmebaasid rahvatervises ja rahvusvaheline tervis. Samasid teemasid on käsitletud lühikursustel Eestis ja rahvusvaheliselt.

Kokku avaldatud 8 teadusartiklit eelretsenseeritavates rahvusvahelise levikuga ajakirjades. Lisaks on avaldatud artikleid riigisisese levikuga ajakirjades ja publikatsioone raamatute, raamatupeatükkide ning aruannete kujul. Konverentsiteese on esitatud üle 25 konverentsil. Ettekannetega on esinetud mitmel teemadel Eesti ja rahvusvahelistel konverentsidel.

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