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Original article

Social inequalities in the use of health care services after 8 years of health care reforms – a comparative study of the Baltic countries

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Abstract

Objective: In nineties, Estonia, Latvia and Lithuania have implemented a wide range of changes to health systems. The objective of this paper was to assess social inequalities in utilisation of, and access to, health care services in the late nineties.
Methods: The comparative NORBALT Survey conducted in 1999 is used. Direct standardization and logistic regression was applied to analyse primary, out-patient and hospital care utilisation, and self reported financial barriers, by socio-demographic and geographical variables.
Results: In all three countries social inequalities in utilization were large for out-patient specialist care, smaller or absent with regards to primary care or to hospitalisations. Inequalities were large and consistent in relationship to household income, less so in relationship to educational level. Inequalities in utilization of care were larger in Latvia as well in the self reported barriers to health care in absolute and relative terms were larger.
Conclusions: After 8 years of reforms, important pro-rich inequalities in the use of health services existed. In Latvia, these inequalities were largest, possibly due to higher ratio of cost sharing as compared to Estonia and Lithuania.

Keywords: **Health system reforms – Inequalities – Access to health care – Baltic States – Socioeconomic factors – International comparison.**

In the early nineties, a number of health system reforms were launched in Eastern Europe. These included new initiatives such as introducing health insurance systems and explicit co-payment schemes, changing the legal status of providers (e.g. corporatiation or privatization), developing provider networks (e.g. modernizing and broadening the scope of primary health care, increasing the share of private providers, restructuring in-patient and out-patient hospital care), restructuring the training of the health care workforce, and increasing access to new technologies and pharmaceuticals. As a result, the health systems of Eastern European countries have undergone major changes. The changes have been coupled by rising expectations from the public but not by substantial increases in the budgets available for the health sector. As a result, an increase occurred in private funding for health care, mainly through out-of-pocket payments.[1–4]

Since the three Baltic countries regained independence in 1991, they have implemented a wide range of changes to their health systems. This has primarily meant a move from a centralized planning based system to a health insurance based financing with decentralized service provision. Access to care, primarily in terms of geographical access, was a key concern to the policy-makers during the reform processes in the Baltic countries. Less attention was given to the accessibility of care to different socioeconomic groups and to inequalities in the utilisation of care.

Evidence on inequalities in health and health care in Baltic countries was scarce until recently.[5–9] Estonia performed its first large-scale equity study only in 2002.[10] In Lithuania,

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however, inequalities have been on both the policy as well as research agenda since the nineties[11,12] with a further studies recent years.[13] In Latvia, on the other hand, there was no information on inequalities in health and in access to care during the nineties.[14,15] An internationally comparative study on access to care and more specifically on health service utilisation in former Soviet Union countries did not includes all of the Baltic countries.[16] Comparisons among high-income countries are not sufficiently extended to the Baltic countries, nor to other parts of Eastern Europe.[17–19]

The present study aims to compare the three Baltic countries with regards to inequalities in health service utilization and in access to health care in the late nineties. The specific aim of this paper is to assess whether the countries differ in the extent to which utilization and access varies according to key socioeconomic indicators (household income, education level) and to place of residence.

Our central hypothesis is that social and geographical inequalities as observed during the end of the nineties were influenced by the health system reforms that have taken place in all three countries during the previous years. Given the dramatic nature and important national variations in these health system reforms, the Baltic countries in the nineties provided a "natural experiment" that allows us to assess the potential impact of health system reforms on inequalities in utilisation to health care services. We expect important variations between the three countries in the magnitude or pattern of inequalities in health care use. Before we turn to the analysis of these inequalities, we will first briefly describe the reforms in the Baltic countries.

Health system reforms in Baltic countries in nineties

Before independence in 1991, under Soviet rule, the three Baltic countries had developed similar system of health care. In this system, privileged groups in the society (mainly related to the rank in the Party and in bureaucracies) had better access to the services while majority of the population had virtually universal access to services with lower standards and with limited coverage as compared to services in Western Europe.[20]

When the reforms started after 1991, one of the main goals was to develop a universal system that would be accessible to the entire population regardless of the social position. This aim was planned to be achieved by (a) developing health insurance systems with common package to all insured and by (b) replacing the old service delivery system that provided different health care facilities to different population groups. Below, these two aspects will de discussed separately.

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, were not covered by health insurance. These groups, who constituted around five per cent of the population, were only eligible for emergency care or for specific public health services (e.g. treatment of tuberculosis or HIV/AIDS). At the end of nineties, Latvia achieved universal coverage through a health insurance system. However, the Latvian system was based on high level of out-of-pocket payments, which contributed nearly half of the revenue of the health care system.[21] In addition, the benefit package was considerably rationed in Latvia by means of explicit lists (compared to other countries) for health care services not covered by health insurance.[21–23]

The three countries experienced an economic recession in the early nineties, but have been enjoying economic growth in later years. The allocations to health system expressed as share of GDP were similar in all three countries – around 6 % at the end of nineties. In absolute terms, however, there were important variations between the countries, related to differences in general economic development. In 1999, in terms of purchasing power parity per person, the total health expenditure was highest in Estonia with US $510. Corresponding figures were US $326 for Latvia and US $399 for Lithuania.[24]

In spite of the similar share of health expenditures in total GDP, the role of out-of-pocket payments strongly varied between the countries. In 1999, the contribution of out-of-pocket payments were lowest in Estonia (14 % of all health care financing), followed by Lithuania (25 %), and by far highest in Latvia (41 %).[25] Similarly, there are important variations between the countries in the proportion of households having catastrophic expenditure related to health care utilisation. In late nineties, the percentages ranged from 0.31 in Estonia to 1.34 in Lithuania and 2.75 in Latvia.[26] Thus, there is a correspondence between the share of out-of-pocket payment and the financial risk of health care utilisation of the inhabitants in different countries.

The health system before nineties provided environment for informal payments and "thanksgiving" in all three countries. There are no comparative studies available about informal payments in Baltic countries in nineties. According to recent study performed in 2002 the lowest level of unofficial payments is in Estonia (1 % of users report), followed by Latvia (3 %) and Lithuania (8 %). In Latvia and Lithuania the unofficial payments were related to social status as those with higher income or education claimed to make unofficial payments for health services.[27]

Creating a well functioning primary health care system has been a main objective of health system reforms in all three countries to improve both equal access to and quality of serv-

ices. However, reforms were implemented in different ways and speed. Fast progress was made in Estonia with the start of new family physicians training programmes in 1991, the establishment of a network of family doctors serving the Estonian population in the mid nineties, and the introduction of new financing schemes with open enrolment in 1998. Two thirds of the Estonian population was subscribed to family doctors in 1998.[28] Lithuania followed the institutional model, in which patients were asked to enrol to the ambulatories or policlinics including both family doctors and selected specialists. In 1998, ninety percent of the Lithuanian population was covered by this system.[22] In Latvia, a family doctor based system was designed in early nineties and extensive new training programs were set in practice. However, this system was not consistently implemented during the nineties, thus leading to a mixed system where patients could recur to different primary health care institutions. None the less, 80 percent of the Latvian population had registered to a specific primary care provider at the end of nineties.[29]

The reforms with regards to specialist and hospital care have concentrated on the rationalisation of provider network, the centralisation of high technology, and the promotion of new treatment methods. During nineties, all three countries have reduced the number of hospitals and acute care beds while keeping the number of hospital admissions at the same level. In 1999, the number of beds per 1000 inhabitants was 7.5 in Estonia, 9.0 in Latvia, and 9.8 in Lithuania. By that time, the geographical access to specialists and hospitals was considered to be good thanks to large number of providers distributed throughout all parts of these countries. The providers were mainly public but some private providers, especially for outpatient services, emerged already in early nineties. Systems of long-term and nursing care had not yet been fully developed and as a result, in the late nineties, the utilisation of hospital services driven by social needs was still frequent.[30]

For non-emergency cases, a referral system via primary health care provides was partially implemented in all countries by the late nineties. However, in Lithuania, most of out-patient consultations to specialists were still made without referral (70 % in 1996).[22] Even though the role of gate-keeping by primary care has increased in all countries, by 1999, all countries had maintained the possibility of getting direct access to specialists within hospitals or specialist out-patient care settings with potential impact to service utilisation.

Methods

The data for this study were obtained from nationally representative household interview surveys carried out in 1999 in all three Baltic countries. The surveys were conducted by the Statistical Offices in each country and supervised by the Norwegian FAFO Institute for Applied Social Sciences.[31–34] The stratified random samples were used and response rates were over 90 % in all countries (see Tab. 1). The NORBALT survey provides detailed information about the respondents' social-demographic characteristics, health status and health care utilisation. The original survey included persons aged 18 and over. For the present study we only included the respondents aged 25 to 74 years.[35]

Table 1 provides an overview of the survey sample and the distribution of respondents according to the variables used in the quantitative analysis.

Place of residence was measured by a distinction between the urban and rural areas. Educational level was measured with a distinction into three groups: elementary or lower secondary education (9 years), higher secondary education (12 years) and university education (16 or more years). Income level was 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, in which the first household member is given weight 1, and every next household member is given weight 0.8.

The utilisation of health services was analysed by applying three variables that covered different types of health care services. The first variable measures the proportion of respondents who had visited a general practitioner in the last 6 months. This variable includes visits to all doctors working at the primary care level of the Estonian, Latvian and Lithuanian health systems. They include family doctors and 'non-specialist' physicians working in the local clinics that were characteristic for the former health care systems. Depending on the specific health system of each country, primary care doctors could also include other specialists such as gynaecologists and paediatricians, if they were working within primary care setting. The second variable measures the visits to out-patient specialists in the last 6 months before the interview. This variable includes visits to outpatient specialists (excluding dentists) and visits to a specialist as part of outpatient visits to a hospital or specialised clinic. The last variable measures the proportion of respondents who had been hospitalised during the 12 months preceding the interview. This variable measures visits to all types of hospitals, including public hospitals, private clinics and psychiatric hospitals, but excluding hospitalisation for uncomplicated child delivery or stays at homes for elderly people.

Three indicators of financial barriers were used. In the survey, respondents were asked to report the financial barriers (related to lack of money and/or absence of insurance coverage) that

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Table 1. Description of the study sample.

	Estonia	Latvia	Lithuania
Original sample size (n)	5500	3500	3159
Survey response rate	91.8	90.6	90.7
Selected 25-75 sample (n)	3990	2512	2211
Variable	**Distribution of sample (%)**		
Gender			
Women	60.5	60.2	57.3
Men	39.5	39.8	42.7
Age groups			
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
Place of residence			
Rural	30.8	33.8	32.6
Urban	69.2	66.2	67.4
Education level			
University	35.5	31.1	33.1
Upper secondary	41.3	37.7	34.8
Lower secondary	23.2	31.2	32.2
Self assessed health			
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
Everyday limiting physical disorders			
no long standing limitations	59.6	68.6	72.4
not very much limiting disorders	32.0	19.8	15.7
everyday life limiting disorders	8.4	11.7	11.9
General distress			
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

prevented them from: having a long hospital stay, having a surgical operation, and consulting "a good doctor". While the last variable might be strongly related to a persons' subjective assessment of quality of care, the first indicators more directly measure the deferral of treatment (mainly in in-patient care) that the patient would otherwise have used.

In the analyses, the respondent's health status is measured by three complementary indicators of physical and mental health.[35] The first variable is on general self-assessed health, which is measured in the survey as how respondents would characterise their general health according to five categories (ranging from "very good" to "very bad"). The second variable is on the presence of any long-standing health problem, which is measured by existence of various conditions or disabilities of prolonged nature and the level of severity to perform everyday life actions in three categories. The third

variable concentrates on mental health and measures the respondent's level of general distress by asking for the presence of various psychological complaints or problems and the level of severity in three categories.

For each country and for each indicator of health care utilisation, inequalities in health care utilisation were assessed in relation to sex, educational level, household income, and rural-urban place of residence.

In the first stage of analysis, directly standardized utilisation rates were calculated for each country and subgroup of the population, using an international standard population.[36]

In the further analysis, social differences in utilisation rates were analysed by means of logistic regression. Each regression model includes at least the social variables of interest (e.g. educational level), sex and age (a series of dummies with one for each 5 year age group). We selected as the reference categories: men, urban residents, lower secondary level education, and lower income quartile.

Two types of regression models were applied. The first model, which was used to describe social differences in health care utilisation, included only age, sex and the social variable of interest. This allows for describing differences in utilisation by one social variable. 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 these health variables as dummy variables.

Results

Table 2 presents comparative data on primary care utilisation in all three countries. The utilisation rates were lowest in Latvia. Utilisation rates in all three countries were higher for women compared to men, both before and after controlling for health needs. The utilisation by rural residents in Estonia was higher as compared to urban residents. At the same time, residents in rural areas in Latvia and Lithuania were less likely have primary care visits compared to urban residents, although the difference was not statistically significant. With regards to their education, there were contrasting patterns between countries. In Latvia individuals with a higher education level had a higher probability of using a primary care doctor, whereas in Estonia those with lower educational status used more often these services. The inequalities in Latvia were largest, especially after controlling for health needs. A strong gradient by income was found in all countries. In each country, persons with a lower income had lower utilisation rates. This gradient became even more marked after controlling for health needs. The largest pro-rich inequalities in utilisation

Table 2. Use of primary care in Estonia (EE), Latvia (LV) and Lithuania (LT).

	Prevalence rate (per 100)			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	OR	95 % CI
Gender															
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**	
Place of residence															
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**	
Education															
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**	
Household adjusted income															
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 standardized using an international standard 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

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Table 3. Use of out-patient clinics in Estonia (EE), Latvia (LV) and Lithuania (LT).

	Prevalence rate (per 100)			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	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**	9.90–1.18	**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**	
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 standardized using an international standard 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

rates were observed in Latvia, while the smallest inequalities were observed in Estonia.

In Table 3, the out-patient specialist utilization rates by different population groups are presented. Similar to primary care, women used more often out-patient specialist services as compared to men. In Latvia persons living in rural regions had lower utilisation rates, also after health needs were counted. In each country, there was a clear gradient favouring persons with higher education, especially when health needs are taken into account. After adjustment for health needs, the inequalities appear to be larger in Latvia as compared to Estonia and Lithuania. Persons with lowest income were using less out-patient care as compared to those with higher incomes. There is steep pro-rich gradient in all three countries, although slightly weaker in Estonia as compared to Latvia and Lithuania. The inequalities were larger in case of out-patient specialist visits as compared to primary care visits.

Compared to primary care and out-patient specialist visits, the hospital admissions were more equally distributed between different geographical and socioeconomic groups (Table 4). There were slightly higher rates of hospitalisations in Latvia compared to Baltic neighbours. Overall, there were no gender differences, except that in Lithuania utilisation rates appear to be lower among women after taking health needs into account. With regards to geographical differences, 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 in relationship to education or income.

Financial barriers in access to care were reported by respondents from all three countries. However the frequency strongly differed between countries and according to household income (Figure 1). For all three indicators, the frequency of reported financial barriers was two to three times higher in Latvia as compared to Estonia and Lithuania. There were steep gradients according to income quartile in both Latvia and Estonia, where the poor reported much more often to have 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.

Discussion

The present study shows that there were important socio-economic inequalities in health care utilization in all three Baltic States in 1999. Three findings stand out. First, in all three countries socioeconomic inequalities in utilization were large for out-patient specialist care, whereas they were smaller and less consistent with regards to primary care. Inequalities in

hospitalisations were small and even absent in most cases. Second, inequalities were larger and more consistent in relationship to household income as compared to educational level. No large and consistent differences were observed according to urban versus rural place of residence. Third, inequalities in utilization in access to care were generally larger in Latvia as compared to Lithuania and Estonia. Also inequalities in the self reported barriers to health care use were much larger in Latvia as compare to its neighbours.

Our findings should be interpreted with caution due to the slight differences in national health systems studied (e.g. composition of doctors working in primary care) and how the survey questions are interpreted by respondents in respective countries. However, considering the extensive preparations made to ensure comparability of questionnaire as the aim of the current NORBALT survey,[34] and generally high response rates that were achieved, the data sources used for this study are possibly the best available to perform comparisons between Baltic countries. We believe that this data source provides the best available evidence on variations between Baltic countries with regards to inequalities in health care utilisation in the late nineties.

This 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 nineties, these countries made the transition from a common Soviet-inherited system towards different variants on a new system that was based on insured-based financing and on novel ways to organising and delivering health services.[22,23,29] 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 in access, utilisation and outcomes of care has not received attention as a specific objective. Given this situation, it is important to evaluate the effects on health care reforms also in equity terms. If important inequalities would emerge during the reform process, especially in countries where less attention has been paid to equity issues, this would imply how important it would be to raise awareness on equity issues among policy makers, to advocate a stronger focus on equitable access, and to suggest ways of implementing reforms that target on vulnerable population groups.

Our results on inequalities in the primary care utilisation cannot directly be related to the precise ways in which specific health care reform had been carried out in different countries. However, there may be some associations to the stage of reform that the different countries have reached until the late nineties. For example, our finding that only in Estonia primary care utilization was higher in rural areas than in urban areas, might reflect the rapid implementation of the reform

Table 4. Use of hospital care in Estonia (EE), Latvia (LV) and Lithuania (LT).

	Prevalence rate (per 100)			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	OR	95 % CI
Gender															
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**	
Place of residence															
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**	
Education															
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**	
Household adjusted income															
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 standardized using an international standard 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

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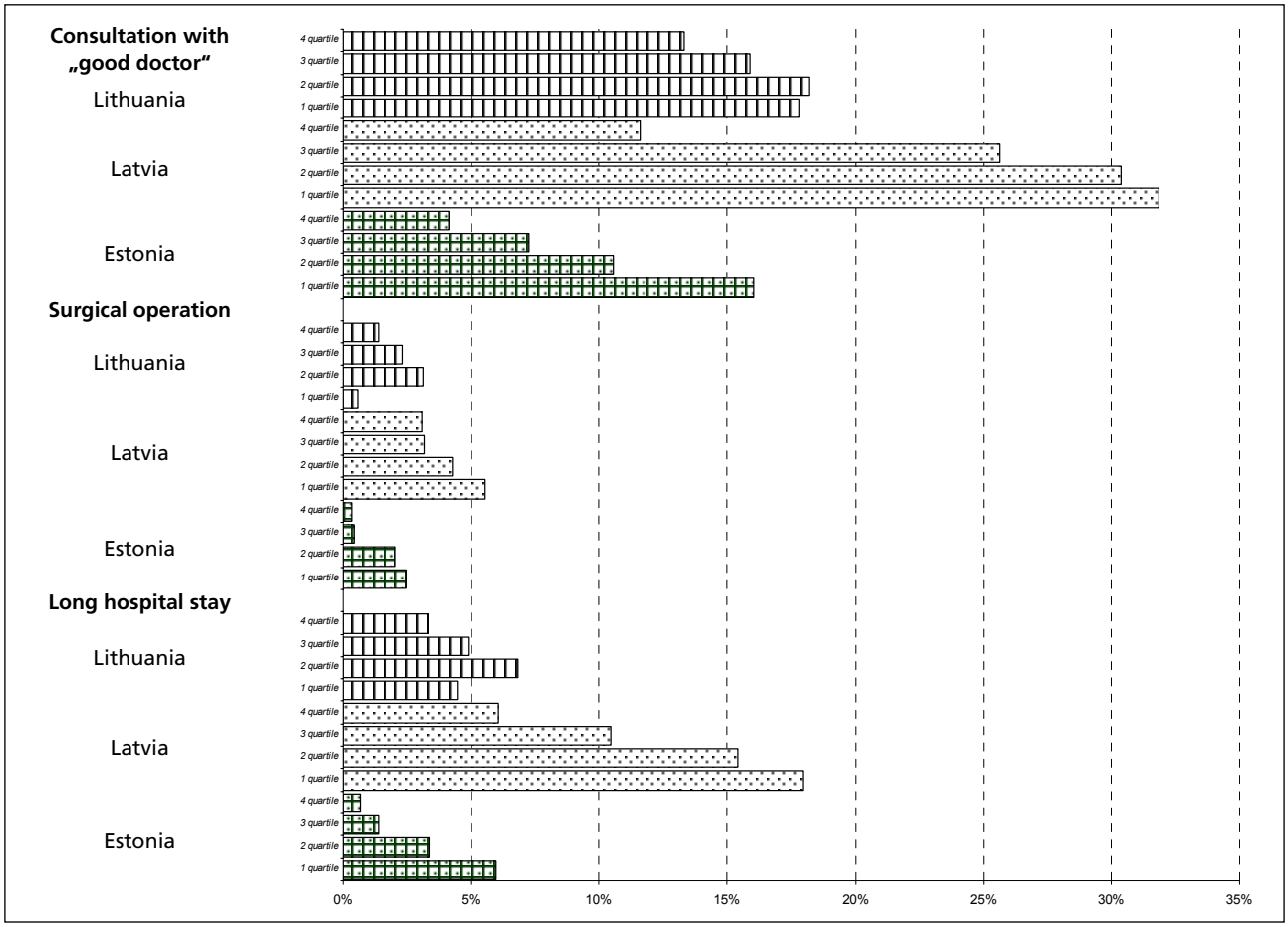

Figure 1. Proportion of population reporting difficulties to access care in 1999 because of lack of money or an absence of insurance coverage by income quartiles.

of primary health care in rural areas, with the urban areas in Estonia lagging behind and full coverage was established in 2003.[28]

Pro-rich inequalities for out-patient specialist visits have been observed in many western-European countries.[19] Such income related inequalities may reflect a generalised situation across all European countries, in which poor and low educated people have less access to specialist services because of lack of knowledge about service availability, poorer ability to navigate in the health system, and presence of monetary, social and other barriers. In addition to this generalised situation, the Baltic countries were reforming rapidly the out-patient specialist service delivery system in order to address the pre-existing overcapacity in the hospital sector and to shift towards new systems of out-patient care. Those rapid changes may have affected the utilisation of out-patient specialist services in Baltic countries, and especially so among the disadvantaged groups.

Inequalities in hospital admission rates were small in all three countries. Thus, even after several reforms in which both the number of hospitals and bed capacity had been reduced in all three countries (e.g. 35 % in Estonia over nineties),[30] no wide inequalities in hospitalisation rates emerged. At the same time, a considerable part of Latvians report financial barriers that disallowed them using hospital related care as surgery or long hospital stay (Figure 1). This figure suggests that there were unmet needs for in-patient hospital care, especially among poorer population groups.

Developing benefit packages could help to define priority health care services for the general population in the resource limited settings.[30] 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 co-payments. Our results for Latvia are particularly important here. As shown before, levels of co-payment are considerably higher for Latvia as compared to its neighbours. At the same time, for both primary health care and specialist care services, Latvia had lowest overall utilisation rates and the largest income-related inequalities. In addition, Latvian respondents, especially the poor, more

often reported facing barriers due to the financial constrains. Together, these results suggest that the steeper inequalities in health care utilisation in Latvia are ultimately related to financial barriers such as high co-payments.

Even though we could not thoroughly analyse the impact of out-of-pocket payments, the results of the comparative analysis suggest that systems that rely on high level of co-payment may widen socioeconomic inequalities in the utilisation rates. In contrast, systems that rely more on public funding may reduce the number of people who experience financial barriers to using essential health care services. Future changes in national health care systems should take into account the potential impact that out-of-pocket payments have on access to health care among socio-economically disadvantaged groups.

In reforms of service delivery systems, attention should be given to equitable access to out-patient specialist care. Our results indicate lower utilisation rates of out-patient by socio-economically disadvantaged groups. It is crucial to ensure accessibility of necessary services in situations where acute in-patient care is planned to be centralised. Even though this change might have limited impact to geographical access[37] also other barriers such as should be taken into account. Access may be improved by means of measures at both the demand side (e.g. support for transportation, enhancing "health literacy") and the supply side (e.g. mobile providers to rural areas, training of health care workers for new services and changing the available skill mix, or financial incentives) in order to ensure equality in access both in geographical and socioeconomic terms.

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